

Round # 1 1st Section Toss-up Questions

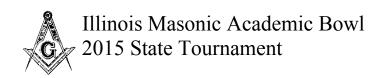
Question #1: Science – Chemistry

10 points

This element was the primary fuel in Space Shuttle solid	<u>aluminum</u> [or <u>aluminium</u>]
rocket boosters. This metal exists in cryolite	
[KRY-oh-"light"], which is used to isolate it. This element	
is the most abundant metal in the Earth's crust, where it	
coexists with silicon and oxygen in all feldspars. This	
element is isolated by a combination of the Bayer process	
and the Hall-Heroult [air-ohl] process. There is a scientific	
controversy as to whether this element increases the risk of	
Alzheimer's disease. This element is found in bauxite	
[BAWK-"site"] and is the namesake of the company Alcoa.	
Name this lightweight metal that replaced tin as the most	
common one used to make foil.	

Question #2: Social Studies – Geography

This river's namesake dolphins have the nickname "white	Rio de la Plata [accept River
ghosts," as they grow lighter with age. Samborombon	<u>Plate</u>]
[sam-boe-roem-BONE] Bay is found at the mouth of this	
river, where the German warship Admiral Graf Spee	
[shpay] lost a World War Two battle. The Paraná	
[pah-rah-NAH] river joins with it at Santa Fe. Montevideo	
[mohn-tay-vee-DAY-oh] and Buenos Aires [BWAY-nohss	
"EYE-race"] lie on its shores. Name this river that	
separates Argentina and Uruguay, whose name is Spanish	
for "river of silver."	



Round # 1 1st Section Toss-up Questions

Question #3: Literature – U.S. Literature

10 points

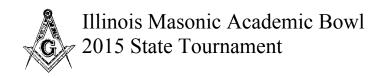
This poet wrote about a "deluge of new woes" overwhelming	Anne Bradstreet
"the glories of thy ever-famous realm" in "A Dialogue	
Between Old England and New." In one poem by this author,	
the narrator prays that "the heavens reward manifold" the	
title dedicatee. This author wrote of love that "rivers cannot	
quench," and that is prized "more than whole mines of gold"	
in "To My Dear and Loving Husband." Name this colonial	
poet, colloquially referred to as the "Tenth Muse."	

Question #4: Math – Math Concepts

10 points

Sierpinski [seer-PIN-skee] numbers of the second kind are	com
used to generate an infinite number of these integers, and a	com
subset of these integers is the sphenic [s'FEH-nik]	
numbers. Fermat [fair-mah] liars and Carmichael numbers	
are this type of number even though they satisfy Fermat's	
[fair-mah'z] little theorem. Numbers classified as "highly"	
this type of number have more divisors than any number	
less than themselves. The fundamental theorem of	
arithmetic states that these numbers can be factored using	
numbers not in this category. These numbers have proper	
factors besides one. Name these numbers that are not	
prime.	
-	

composite numbers [or composites]



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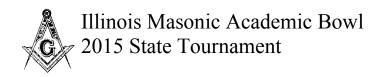
Question #5: Social Studies – World History

10 points

This leader's wife sought financial support from Pope Pius	Maximilian the First of Mexico
the Ninth but suffered from paranoia when he refused to see	
her. This leader's wife was also the namesake of the largest	
part of New Virginia Colony, which housed former	
Confederate soldiers. This person was defeated at Queretaro	
[kay-ray-TAH-roe] by Benito Suarez. Name this brother of	
Franz Joseph the First who was supported by Napoleon the	
Third in his role as Emperor of Mexico but was eventually	
killed by a firing squad.	

Question #6: Fine Arts – Classical/Opera

This instrument's lowest notes are part of its "chalumeau"	<u>clarinet</u>
[shah-loo-moh] register, named for the instrument it was	
derived from. Mozart composed an A major concerto	
[kon-CHAIR-toe] for this instrument, to be performed by	
Anton Stadler. This instrument usually plays the basset horn	
parts found in classical-era music. This instrument plays a	
trill, then a glissando upwards to open Gershwin's	
Rhapsody in Blue. Name this single-reed woodwind.	



Question #7: Science – Biology

10 points per part

Thi	s chromosome contains only 19 ancestral genes.	
1	Name this chromosome that only males have.	<u>Y</u> chromosome
2	Despite its small number of ancestral genes, the Y chromosome is very helpful when tracing male ancestors because most of it does not go through this process during meiosis [my-OH-siss] that includes crossing over.	genetic <u>recombination</u> [accept word forms]
3	This gene on the Y chromosome is coded to produce testis-determining factor.	SRY [or sex-determining region on Y]

Question #8: Science – Biology

	s term refers to a visual display of an organism's omosomes.	
1	Name this arrangement of chromosomes, usually starting with the longest ones and ending with the sex chromosomes.	karyotype [KAIR-ee-oh-"type"] [or karyotyping]
2	Karyotypes often have lines to show the placement of these structures that exist where sister chromatids join together and where kinetochores [kih-NEH-tuh-kors] are generated.	centromeres [SEN-troh-meerz]
3	The letter G is often used for karyotype stains, which are named for this German scientist.	Gustav Giemsa [GHEEM-sah]

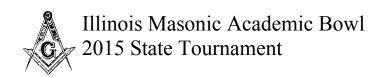
Question #9: Literature - U.S. Literature

10 points per part

	e protagonist of this novel was inspired by Jean-Baptiste my [john bap-teest lah-mee].	
	Name this novel in which vicar Joseph Vaillant travel	Death Comes for the Archbishop
1	with the title figure from Sandusky, Ohio to a new	
	diocese [DY-oh-seez].	
	This author of <i>Death Comes for the Archbishop</i> wrote	Willa Sibert <u>Cather</u>
2	about the Shimerda [shih-MEHR-dah] family in My	
	Ántonia [AN-toh-nee-ah].	
	In Death Comes for the Archbishop, Vaillant and Jean-	New Mexico Territory
3	Marie [zhahn ma-ree] Latour travel to a new diocese	
	established in this territory.	

Question #10: Literature – U.S. Literature

	l Cairo offered one man five thousand dollars to procure object, a gift to the King of Spain.	
1	Name this object whose value was hidden under a layer of black enamel. In the end, the one being pursued was a knock-off.	the Maltese Falcon
2	The Maltese Falcon appears in a novel by the same name, which was written by this man. He also wrote of amateur detectives Nick and Nora Charles in The Thin Man.	Samuel Dashiell <u>Hammett</u>
3	The authentic version of the Maltese Falcon was likely still in the hands of a general from this country.	Russia [accept Soviet Union]



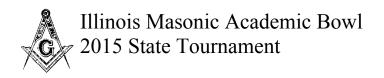
Question #11: Social Studies - Religion

10 points per part

[]	The	eighth pope of this name excommunicated Formosus,	
V	vhi	le the ninth oversaw the proper burial of Formosus'	
l	od	y, which was chucked into the Tiber following the	
(Cor	pse Synod.	
		The most recent pope of this name called the Second	John [accept John VIII] or John
1	1	Vatican Council and issued the encyclical <i>Pacem</i>	XXIII
		[PAH-chem] in Terris.	
		The corpse of Formosus was later reburied within the	St. Peter's Basilica
_	,	confines of this Vatican City building, primarily	
2	_	designed by Donato Bramante [brah-MAHN-tay] and	
		Michelangelo.	
		The sixth pope of this name conducted the Corpse	Stephen
	,	Synod. The saint of this name gave a rousing speech to	
3	•	the Sanhedrin [saan-HEE-drin] before being stoned to	
		death.	

Question #12: Social Studies - Religion

son	slims who perform this action are called "kafir," and in ne interpretations of Sharia it is punishable by cution.	
1	Name this practice of renouncing one's faith in a particular religion.	<pre>apostasy [accept variations like becoming an apostate]</pre>
2	In Christianity and Judaism, the first recorded act of apostasy was performed by the people who created this object while Moses was receiving the Ten Commandments.	golden calf [prompt on calf]
3	Chapter 6 of this New Testament book compares apostates to watered ground yielding thorns and thistles, indicating that apostates cannot be redeemed as Christians.	Letter to the <u>Hebrews</u>



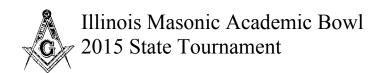
Question #13: Math - Statistics

10 points per part

Thi	s is the value that has the highest frequency in a data set.	
1	Name this highest point on a histogram.	mode
2	This adjective is used for distributions that have two values tied for the highest frequency.	bimodal distributions [prompt on multimodal]
3	Find the first skewness coefficient if a distribution has a mode of twenty-five, a mean of thirty-seven, and a standard deviation of four.	3

Question #14: Math - Statistics

This quantity is calculated by taking the square root of the mean of the squares of the differences between values and		
the	mean.	
1	Name this commonly used measure of the spread of data.	population standard deviation [or sample standard deviation]
2	This Greek letter is often used to represent standard deviation.	sigma
3	Each trial of an experiment consists of tossing a fair coin 64 times. Find the standard deviation for the number of heads according to the de Moivre-LaPlace [mauv la-plahs] theorem.	4



Round # 1 3rd Section Toss-up Questions

Question #15: Literature – British Literature

10 points

This author wrote of a man who will "roast like a herrin" in	Robert Burns
Hell, and who was cited as an example of what alcohol	
could do to a man. This poet wrote of a love that will last	
"until the seas run dry" and "the rocks melt with the sun."	
This author of "Tam O'Shanter" and "A Red Red Rose"	
wrote a poem in which "the best laid schemes of mice and	
men oft go awry." Name this author of "To a Mouse," a	
Scottish poet.	

Question #16: Science – Earth Science

This region of the atmosphere undergoes a quasi-biennial	stratosphere	
oscillation that includes its sudden warming. This region		
includes the Junge [YOON-guh] layer, which contains a		
significant amount of sulfuric [sul-FYOOR-ik] acid and is		
sometimes referred to as the aerosol layer. This region		
experiences very little convection, which is why chemicals		
that enter this region tend to stay there. This region exists		
just above the tropopause [TROH-poh-"pause"] and under		
the mesosphere [MEH-zoh-"sphere"], and it contains the		
ozone layer. Name this region of the atmosphere that		
includes the cruising altitude of airplanes.		

Round # 1 3rd Section Toss-up Questions

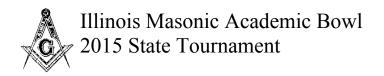
Question #17: Miscellaneous – Consumer Education

10 points

Following allegations that this company paid for information	Walmart
regarding the United Food and Commercial Workers' Union,	
CEO Tom Coughlin [KAWG-lin] was forced to resign. In	
2012, the UFCW also organized strikes regarding this	
company's employees working on Thanksgiving Day. Its	
effect on local mom-and-pop stores was outlined in the	
documentary The High Cost of Low Price. It is	
headquartered in Bentonville, Arkansas. Name this retail	
chain founded by Sam Walton.	

Question #18: Social Studies – U.S. History

10 penne
Nathaniel Bacon [or Bacon's
Rebellion]



Round # 1 3rd Section Toss-up Questions

Question #19: Science – Biology

10 points

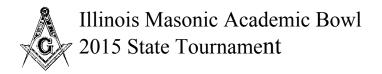
The combination of this structure and an endosome	<u>lysosome</u> s
[EN-doh-sohm] is called a hybrid organelle, and these	
structures are classified as either conventional or secretory.	
A deficiency of lipase [LY-"pace"] inside these structures	
causes Wolman [VOHL-mun] disease. The defect of	
another enzyme in this structure can lead to the enlargement	
of the spleen and liver in Gaucher's [goh-shay'z] disease.	
Mannose [MAAN-ohss] 6-phosphate is attached to proteins	
that belong in these vesicles [VES-ik-ulz]. The insides of	
these structures are acidic. Name these organelles that break	
down macromolecules.	

Question #20: Literature – World Literature

10 points

One character in this novel, the "terror of Klosterberg," forced two bed-wetters to share a bed. The protagonist of this novel, the killer of Gerard Duval, was inspired by the words of his teacher, Kantorek. After having a leg amputated, Franz Kemmerich gave Muller his footwear. Name this novel chronicling the experiences of Paul Bäumer [BOY-mur] during World War I, by Erich Maria Remarque ["remark"].

All Quiet on the Western Front [accept Im Westen nichts Neues]



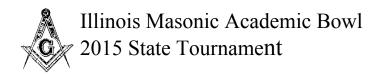
Question #21: Math – Geometry

10 points per part

	s segment in a regular polygon is often contrasted with radius.	
1	Name the segment from the center of the polygon to the center of a side.	apothem [AA-puh-thum]
2	If a hexagon has a side of length of four, what is the length of its apothem?	two root two [or two times the square root of two or two radical two or equivalents]
3	A polygon with many sides has an apothem of length one unit and a perimeter of total length 6.4 units rounded to the nearest tenth. Find the area of the polygon rounded to the nearest tenth. Ignore units.	3.2 square units

Question #22: Math – Geometry

	s type of solid consists of two parallel congruent polygons the space between them.	
1	Name this type of solid that contains several faces that are parallelograms in addition to the two that may not be parallelograms. Those parallelograms are often rectangles.	prism s
2	How many total faces does a decagonal [deh-KAAG-uh-nul] prism have?	<u>12</u>
3	Face diagonals are along a face of the prism rather than inside the prism. How many total face diagonals does a triangular prism have?	<u>6</u>



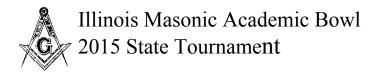
Question #23: Fine Arts – Art History

10 points per part

pain dea	ro Cannata claimed that a model who worked with the nter Veronese [vair-oh-NAY-zay] came back from the d and told him to attack this sculpture's foot with a namer.	
1	Name this sculpture made of Carrara marble that for a long time was located near the entrance of the Palazzo Vecchio [pah-LAH-zoh VAY-kee-oh].	<u>David</u>
2	This man sculpted <i>David</i> , as well as a sculpture of Moses with horns.	Michelangelo Buonarotti [accept either]
3	David was sculpted for this city, where it is currently on display in the Galleria dell'Accademia.	Florence [or Firenze]

Question #24: Fine Arts – Art History

	s painting shows a woman who is wearing a blue and low headwrap, and a yellow dress.	
1	Name this painting kept in the Mauritshuis [mor-IT-shoyss] gallery, which uses as its focal point the title jewel.	The Girl with the Pearl Earring [or Het Meisje met de Parel]
2	The Girl with the Pearl Earring was painted by this artist, who also created View of Delft.	Jan <u>Vermeer</u>
	Jan [yahn] Vermeer was an artist from this nation,	The Netherlands [or Holland]



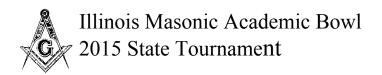
Question #25: Science – Chemistry

10 points per part

	s thermodynamic concept is very similar to thermal rgy and is generally represented by the letter Q .	
1	Name this quantity that can be transferred from higher-temperature systems to lower-temperature systems.	<u>heat</u>
2	This adjective describes a process that occurs without any exchange of heat.	adiabatic [ay-dee-uh-BAA-tik] process
3	The theorem named for this person gives the ideal efficiency of a heat engine.	Sadi <u>Carnot</u> [sah-dee kar-noh]

Question #26: Science – Chemistry

bon	ds.	
1	This diatomic [dy-uh-TAH-mik] gas makes up most of the Earth's atmosphere.	nitrogen
2	The chemical formula of this compound is C ₂ H ₂ ["C two H two"]; it has a triple bond between the two carbon atoms.	acetylene [uh-SEE-tuh-leen] [or ethyne [EH-"thine"]; do not accept "ethene" [EH-theen] or "ethane" [EH-thayn]]
3	Acetylene is the simplest example of these hydrocarbons that contain a carbon-carbon triple bond.	alkyne [AAL-"kine"] [do not accept "alkane" [AAL-kayn] or "alkene" [AAL-keen]]



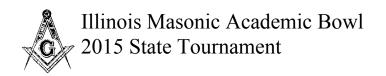
Question #27: Social Studies – U.S. History

10 points per part

Thi	s spokesman for the Nation of Islam said that African	
Americans would gain the right to be treated as humans		
"by	any means necessary."	
	Name this activist whose so-called "autobiography"	Malcolm X [or Malcolm Little or
1	was written by Alex Haley.	El-Hajj Malik El- Shabazz ; prompt
		on Malcolm
	Malcolm X's father, Earl Little, was a follower of this	Marcus Garvey
2	native of Jamaica who started the United Negro	
	Improvement Association.	
	Malcolm X was suspended by the Nation of Islam after	President John Fitzgerald Kennedy
3	he claimed that this person's death was a case of	[or <u>JFK</u>]
	"chickens coming home to roost."	

Question #28: Social Studies – U.S. History

Thi	s person's autobiography was All in the Day's Work.	
1	Name this muckraker whose articles in <i>McClure's Magazine</i> were compiled into the book <i>The History of the Standard Oil Company</i> .	Ida <u>Tarbell</u>
2	Tarbell was particularly critical of this billionaire who started Standard Oil Company with his brother William and other investors.	John Davison Rockefeller , Sr.
3	This writer's articles on political machines, which were mostly published in <i>McClure's</i> , were turned into the book <i>The Shame of the Cities</i> .	Lincoln Steffens



Round # 1 5th Section Toss-up Questions

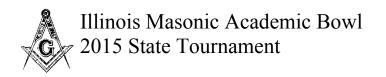
Question #29: Literature - U.S. Literature

10 points

One of this author's stories sees musicians promised noble titles for playing their best before the teenager who made the offer was shot by Diana Moon Glampers. This author created a "polymorph" that melted at 46°C, but acted as a seed crystal below it. That product, ice-nine, ends up destroying the world in *Cat's Cradle*. Name this author who used the bombing of Dresden as a backdrop for *Slaughterhouse-Five*.

Question #30: Math – Math Concepts

	TO POILIG
The Picard–Lindelöf theorem addresses the Lipschitz	continuous [accept word forms
version of this concept, which depends on the absolute	such as continuity]
value of slope being bounded. Thomae's [toh-MAY'z]	
function only has this property at irrational numbers. The	
Dirichlet [dir-ih-KLAY] function notably does not have	
this property anywhere, while the Weierstrass	
[VY-ur-shtrass] function has this property over its entire	
domain even though it is not differentiable anywhere. This	
property does not exist at vertical asymptotes, holes, and	
jumps. Identify this property of functions that have values	
equal to their limits.	



Round # 1 5th Section Toss-up Questions

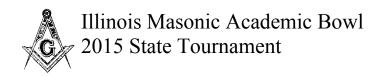
Question #31: Social Studies – World History

10 points

This person was blamed for not supporting Eucles	Thucydides
[YOO-klees] when Brasidas [brah-SEE-dahs] was	
victorious at Amphipolis [am-FI-poe-lis]. The works of	
Cratippus [KRAH-tih-pus] and Theopompus	
[thay-OE-pom-pus] started at the same point at which this	
person's work suddenly ended in 411 B.C, in which he	
described the surrender of Plataea and the ensuing trials.	
This person's use of speeches is controversial, and much	
attention has been given to this person's version of a	
funeral oration delivered by Pericles [PEHR-ih-klees].	
Name this historian who wrote History of the	
Peloponnesian [pel-uh-puh-NEE-shun] War.	

Question #32: Science – Physics

The Verdet [vair-day] constant measures the strength of the	Michael Faraday [do not accept
effect named for this person in a given material. That effect	"farad"]
consists of the rotation of polarized light in a magnetic field.	
The waves on the surface of a vibrating fluid are also named	
for this person. The law named for this person states that the	
curl of an electric field equals the opposite of the time	
derivative of a magnetic field, and the negative sign in that	
equation represents Lenz's law. That law summarizes this	
person's discovery of induction. Identify this person whose	
name is shortened to give the SI unit of capacitance [kuh-	
PAA-sih-tuhnss].	



Round # 1 Extra Section Toss-up Questions

Extra Question #1: Social Studies – U.S. History

1<u>0 points</u>

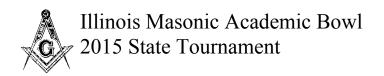
This person established the Marseilles [mar-"sales"]	George Marshall
Training Center when he was an instructor in the Illinois	
National Guard during the 1930s. He earlier helped John	
Pershing plan the Meuse ["moose"]-Argonne Offensive.	
This person headed a mission to China to prevent civil war	
after World War II, but he was unsuccessful. That mission	
followed his work as Army Chief of Staff during World	
War II. This person gave a speech at Harvard after he	
became Secretary of State in 1947 outlining a plan of	
foreign aid. Identify this namesake of the European	
Recovery Program.	

Extra Question #2: Science – Astronomy

10 points

Some of the stars in this constellation have Arabic names
referring to the leaps of a gazelle. This constellation is the
location of Bode's [BOH-duh'z] Galaxy and the Pinwheel
Galaxy. The animal represented by this constellation has a
tail that is very slowly moving down because of the shifting
relative position of Alkaid compared to Mizar. This
constellation's brightest star is Alioth [AA-lee-oth], though
its alpha star is Dubhe [DOOB-huh]. This constellation
includes the Big Dipper. Identify this constellation
commonly referred to as the Great Bear.

<u>Ursa Major</u> [prompt on <u>Ursa</u> or <u>Bear</u> or <u>Great Bear</u>]



Round # 1 Extra Section Toss-up Questions

Extra Question #3: Literature – British Literature

10 points

This person was called by Solomon Caw a "Betwixt and Between." Maimie Mannering gave him an imaginary goat. Queen Mab granted him two wishes during his time in Kensington Gardens in the novel *The Little White Bird*. This character's encounters with Jane and Margaret mirrored his interactions with their older relative Wendy Darling. He was the savior of Piccaninny princess Tiger Lily and the enemy of Captain Hook. Name this fictional boy, created by James Barrie, who never grew up.

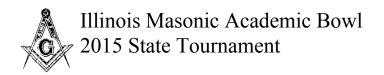
Peter Pan [accept either]

Extra Question #4: Math – Math Concepts

10 points

The prime numbers named for this person are congruent to one mod four. The three classic means are collectively named for this person. The fractions named for this person are of the form a squared minus b squared, all over 2 a b. Three trigonometric identities are named for this person, including the one stating that the sine squared of x plus the cosine squared of x equals 1 for every x. The theorem named for this ancient Greek mathematician is a special case of the law of cosines. Name this man whose theorem relates the squares of the lengths of sides in right triangles

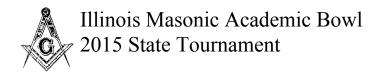
Pythagoras of Samos [prompt on **Pythagorean**]



Round # 1 Extra Section Toss-up Questions

Extra Question #5: Fine Arts – Art History

One of these institutions includes the Santiago Calatrava	art <u>museum</u> s
[sahn-tee-AH-goh kah-lah-TRAH-vah]-designed Quadracci	
[kwad-RAH-chee] Pavilion in Milwaukee. One of these	
institutions contains the Winter Palace in St. Petersburg.	
One of these buildings in Madrid contains an image of the	
Duchess of Alba nude, and is named the Prado [PRAH-	
doh]. One of these buildings in New York has a helical	
spiral ramp on its inside and was designed by Frank Lloyd	
Wright. The largest of these institutions in Florence is the	
Uffizi [ooh-FEET-see]. Name this kind of building,	
examples of which include the Hermitage [air-mee-TASH]	
and the Guggenheim [GOO-ghin-hyme], that contains	
artwork.	



Round # 1 Extra Section Teamwork Questions

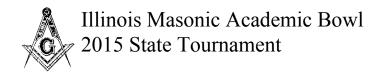
Extra Question #6: Math – Algebra

10 points per part

Thi	s property does not hold for matrix multiplication.	
1	Name this property which states that <i>x</i> times <i>y</i> equals <i>y</i> times <i>x</i> .	commutative [kuh-MYOO-tuh-tive property of multiplication [accept commutativity]
2	This adjective is used to describe a group that follows the commutative property.	abelian [uh-BEE-lee-in] group
3	There are two matrices that are each two-by-two. One matrix has fives in the top row and zeroes in the bottom row. The other matrix has fives in the left column and zeroes in the right column. If you multiply the matrices in the two orders possible, what is the difference between the result you get in the top row left column in the two answers?	<u>25</u>

Extra Question #7: Math – Algebra

		o pointe por part
	his notation, also known as postfix notation, both rands are given before the operator.	
1	Name this notation abbreviated RPN.	reverse Polish notation [do not prompt on "Polish"]
2	Reverse Polish notation uses this type of data structure that operates on a "last in, first out" principle.	<u>stack</u>
3	Using reverse Polish notation, evaluate one two three plus multiply.	5



Round # 1 Extra Section Teamwork Questions

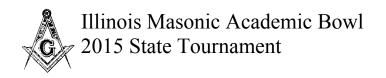
Extra Question #8: Literature - British Literature

10 points per part

	she pursued an affair, her husband grew closer to his etaker, Ivy Bolton.	
1	Name this daughter of Sir Malcolm Reid, who turned down a proposal from the playwright Michaelis	Lady <u>Chatterley</u> [accept Constance or Connie]
	[mih-KAY-liss].	
2	This lover of Constance Chatterley was the gamekeeper at Wragby.	Oliver Mellors [accept either]
3	Lady Chatterley's Lover is by this British author, who wrote of a union man and talented flautist in Aaron's Rod.	David Herbert <u>Lawrence</u>

Extra Question #9: Literature - British Literature

	namesake game, taught to him by Lurgan, involves nembering a group of objects after a single viewing.	
1	Name this orphaned son of Irish parents who befriended a lama seeking the "river of the arrow."	Kimball O'Hara
2	Kimball O'Hara was created by this British author of "The White Man's Burden."	Joseph Rudyard Kipling
3	Kim confesses to the lama that he dreamed of a red one of these animals in a green field. These animals feature prominently in Ernest Hemingway's <i>Death in the Afternoon</i> .	<u>bull</u> s [prompt on "cow"]



Round # 2 1st Section **Toss-up Questions**

Question #1: Literature – Mythology

10 points

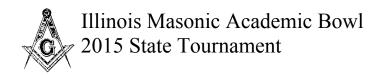
Coroebus' [kuh-REE-buss'z] actions during the Trojan War	Cassandra
were driven by his love for this woman. This twin of	
Helenus [HEH-luh-nuss] was raped by the Lesser Ajax. She	
was killed by Clytemnestra [kly-tim-NESS-truh] and	
Aegisthus [uh-JISS-thus] along with Agamemnon	
[aa-guh-MEM-nahn], who took her as a war prize. Name	
this prophetess who lacked the power to persuade, as	
evidenced by her warning about the Trojan Horse.	

Question #2: Science – Astronomy

10 points

A new example of this phenomenon was caused in 2014 by	meteor showers [a
an object called 209P/LINEAR. That phenomenon occurred	outbursts or mete
in the direction of a constellation known as the giraffe, or	
Camelopardalis [kaa-mih-loh-par-DAH-liss]. These events	
are named for the constellation they appear to be located in,	
and these events are generally caused by comet dust in the	
path of Earth's orbit. Name these events that include the	
Leonids [LEE-uh-nidz] and the Perseids [PUR-see-idz]	
during which it is easy to see large numbers of so-called	
shooting stars.	

accept meteor eor storms



Round # 2 1st Section Toss-up Questions

Question #3: Social Studies – U.S. History

10 points

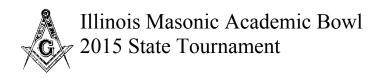
This person's observations of Europe were explained in his book *The Man Farthest Down*. He was recommended for his primary job by Samuel Armstrong, the principal of the Hampton Institute. This person's fame increased after he gave a speech at the Cotton States and International Exposition calling for a decreased emphasis on social inequality as part of what became known as the Atlanta compromise. Those policies would lead to a rivalry between this person and civil rights leaders such as W.E.B. DuBois [doo-BOYS]. Name this person who wrote *Up From Slavery* and headed the Tuskegee [tuhs-KEE-gee] Institute.

Question #4: Miscellaneous – Pop Culture

10 points

This person directed a film based on the story of Mehran Karimi Nasseri [MAY-rahn kah-REE-mee nahs-SHE-ree], who stayed at an airport for seventeen years. In another of his films, the title character is lured into a home via Reese's Pieces. This producer of the cartoon show *Animaniacs* [aa-nih-"maniacs"] had a cameo as a tax clerk in *The Blues Brothers*. He also briefly appeared as a life-station worker in *Jaws*, which he directed, and he also directed *Raiders of the Lost Ark*. Name this director of *E.T.* and *Jurassic Park*.

Steven **Spielberg**



Round # 2 1st Section Toss-up Questions

Question #5: Literature – British Literature

10 points

In this novel, a minor character is described as "an	<u>Ulysses</u>
ignoramus that doesn't know poetry from a cabbage." That	
man's lover in this tale was a woman who described	
herself as a "flower of the mountain" when putting a rose	
in her hair "like the Andalusian girls." In this novel, that	
lover later put her arms around a man saying "yes I said	
yes I will yes." It chronicles June 16, 1904 in the life of	
Leopold Bloom, and it is celebrated each year in Dublin.	
Name this novel by James Joyce.	

Question #6: Science – Biology

10 points

The lowest part of this human bone is the origin of the teres [TAIR-eez] major muscle. Two extensions at the top of this bone are the acromion [uh-KROH-mee-ahn] and the coracoid [KOR-uh-koyd] process. This bone's infraspinatous fossa [IN-fruh-spih-NAA-tuss FOH-suh] is a large triangular region located behind the thoracic [thor-AA-sik] cage, or rib cage, and it is connected to the ribs by the pectoralis [PEK-tor-AA-liss] minor. This bone is attached to both the humerus ["humorous"] and the clavicle [KLAAV-ih-kul]. Name this bone commonly referred to as the shoulder blade.

scapula [SKAAP-yoo-luh]
[prompt on shoulder blade]

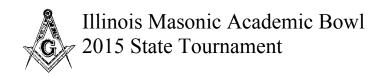
Question #7: Social Studies – Psychology

10 points per part

Its	various states are commonly referred to as "alters."	
	Shirley Mason, also known as Sybil Dorsett, was	dissociative identity disorder
1	diagnosed with this disorder. Formerly known as a	[accept multiple personality
1	"hysterical neurosis," name this disorder cited by Ian	disorder]
	Hacking as an example of "making up people."	
	This other dissociative disorder involves a sudden loss	dissociative <u>fugue</u> [fyoog]
2	of memory, along with the assumption of a new	
	identity in a different location.	
	Coming from the Greek for "split mind," sufferers of	<u>schizophrenia</u>
	this other disorder often create neologisms	
3	[nee-AH-luh-jizmz]. The DSM V removed explicit	
	subtypes of this disorder, but kept specifiers, such as	
	catatonia [kat-uh-TAHN-yuh] and delusion.	

Question #8: Social Studies – Psychology

		i o pointe per part
acc	pert Sternberg's triarchic [try-AR-kik] theory took into ount three forms of it: analysis, creativity, and cticality.	
1	Name this ability to mentally process information, solve problems, and adapt to one's environment.	<u>intelligence</u>
2	Intelligence can be contrasted with this ability to learn certain things or perform certain tasks. Tests for it often look at one's potential.	<u>aptitude</u>
3	Developed by Lewis Terman, this intelligence scale is often used to measure someone's IQ. Its tests measure abstract and visual reasoning.	Stanford-Binet Intelligence Scale [prompt on partial answer]



Question #9: Science – Physics

10 points per part

The	e principle named for this person states that the more	
pre	cisely one knows a particle's position, the less precisely	
it is	possible to know the particle's momentum.	
	Name this person who formulated his namesake	Werner Heisenberg [VAIR-nur
1	uncertainty principle.	HY-sin-bairg]
	Heisenberg was able to develop the uncertainty	Louis de Broglie [duh broy]
2	principle soon after this scientist hypothesized that all	[prompt on Broglie]
	particles have wave properties.	
	Position and momentum are not the only conjugate pairs	<u>time</u>
3	described by the uncertainty principle; another pair is	
	energy and this quantity.	

Question #10: Science – Physics

	ommon example of these devices uses helium and neon produce light with a wavelength of 632.8 nanometers.	
1	Name these devices used to read barcodes and compact discs.	<u>laser</u> s
2	Laser light exhibits the spatial type of this property, which means it has a fixed phase relationship.	coherence [or coherent]
3	Lasers amplify light by putting more molecules in an excited state than in a ground state, which is known by this two-word name.	population inversion [accept word forms]

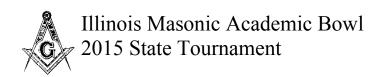
Question #11: Literature – World Literature

10 points per part

	ortly after the death of Jean Tarrou [zhahn tah-roo], this n received word of this death of his wife.	
	Name this man who, along with Dr. Castel, clashed	Dr. Bernard Rieux [ree-yoo]
1	with Dr. Richard, who wanted to wait it out rather than	[accept either]
	alarm the public.	
	During a quarantine in this city, Dr. Rieux chastised	Oran, Algeria
2	Father Paneloux [pah-nuh-loe] for a sermon following	
	the death of the son of Monsieur Othon.	
	Dr. Rieux is the narrator of this author's novel <i>The</i>	Albert Camus [kah-moo]
3	Plague.	

Question #12: Literature – World Literature

	s banker foolishly hired Huld as a lawyer on the advice is uncle Karl.	
1	Name this man whose participation in the title event makes him attractive to Ludi. Titorelli convinces him	Joseph K [YOH-seff KAH] [prompt on K]
1	to buy identical landscapes.	[prompt on K]
2	Joseph K was killed in a quarry on his 31st birthday in this novel.	The <u>Trial</u> [accept Der <u>Prozess</u>]
4	this novel.	
2	The Trial was penned by this author, who wrote about	Franz <u>Kafka</u>
3	Gregor Samsa turning into an insect in <i>The Metamorphosis</i> .	



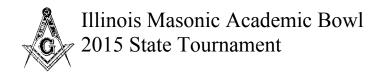
Question #13: Math – Probability

10 points per part

	nathematics, this adjective is often contrasted with ntinuous".	
1	Name this adjective that refers to a branch of mathematics that focuses on the integers rather than the real numbers.	<u>discrete</u>
2	Discrete probability distributions are often based on a function named for Paul Dirac and this Greek letter; that function can be thought of as being zero everywhere except when its input is zero, where it has an infinitely high "spike".	Dirac <u>delta</u> function
3	The total area under any probability distribution function has to add up to what number?	1

Question #14: Math – Probability

Thi	s shape consists of a circle missing an interior circle.	
1	Name this shape that looks like a ring.	annulus [AAN-yoo-luss]
2	If a point inside the larger circle is selected at random, the event of the point being inside the annulus and the event of the point not being inside the annulus are described by this term. This term refers to two events that have an empty intersection and whose union is the universal set.	complement ary [or complement s]
3	If the outer circle of an annulus has a radius of six, and the inner circle has a radius of two, what is the probability that a random point inside the larger circle is also inside the annulus?	<u>8/9</u> [or 0 <u>.8 repeating</u>]



Round # 2 3rd Section Toss-up Questions

Question #15: Social Studies – World History

10 points

This country's armed forces massacred a number of residents of the Dalnik ghetto in the Odessa massacre. The title of "Conducator" was used by Carol the Second of this country, as well as a dictator executed on the orders of the People's Tribunal in 1946. Another Communist dictator of this nation was found guilty of genocide in Timisoara [tih-mih-SHOR-uh] before being executed with his wife Elenea. Its prime minister recently has been Victor Ponta. Name this Eastern European nation formerly ruled by Ion Antonescu [EE-on an-toe-NES-koo] and Nicolae Ceausescu [chou-SES-koo] with capital Bucharest.

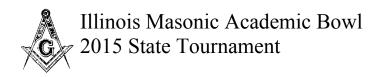
People's Republic of Romania

Question #16: Fine Arts – Art History

10 points

One of these places includes a Great Hall of Polychromes, decorated with a multi-colored bull. The oldest of these structures known to be decorated is named Chauvet [shoh-vay]. One of these structures contains a "Hall of the Bulls" and is threatened by the presence of black mold, forcing it to be closed. That location also is decorated by pictures of Aurochs [AW-ruks] and the Megaloceros [MEH-guh-loh-SAIR-ohss] deer. Name these underground structures, including Altamira and Lascaux [laas-koh], which early humans painted.

caves [accept caverns]



Round # 2 3rd Section Toss-up Questions

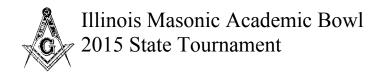
Question #17: Math – Math Concepts

10 points

Lawson's conjecture addresses a four-dimensional version	ring torus [or toroid]
of this solid, which is named for Clifford. The double and	
triple versions of this solid have genuses of two and three,	
respectively. The spindle version of this shape is self-	
intersecting. Pappus' theorem is commonly used to find the	
volume of these figures by tracing the path of a circle as it	
revolves around an axis in its own plane. The volume of this	
shape equals equal two pi squared times a large radius times	
a smaller radius squared. Identify this shape that looks like a	
doughnut.	

Question #18: Social Studies – Economics

The First Fundamental Theorem of Welfare Economics is	invisible hand
also referred as the theorem of this concept. Described by	
Milton Friedman as "the possibility of cooperation without	
coercion," this phrase was used to describe how one who	
"intends only his own security" promotes and end that	
"was no part of his intention." Name this metaphor used in	
The Wealth of Nations by Adam Smith, which describes	
how a market is designed to self-regulate.	



Round # 2 3rd Section Toss-up Questions

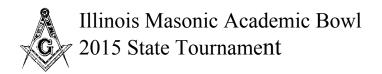
Question #19: Science – Chemistry

10 points

When this value depends on conditions, a rheometer	viscosity
[ree-AH-mih-tur] is used to measure it. One equation	
multiplies this quantity by six pi times radius times velocity	
to find frictional force. The kinematic [ky-nuh-MAA-tik]	
type of this quantity is found by dividing the dynamic type	
by density. This quantity equals shear stress divided by	
velocity gradient. The product of density, velocity, and	
diameter is divided by this quantity to calculate the	
Reynolds number, which is used to differentiate between	
laminar and turbulent flow. Name this quantity measured in	
poise [pwahz] that gives a fluid's resistance to flow.	

Question #20: Literature - U.S. Literature

One character in this novel compares marriage to bees	Their Eyes Were Watching God
pollinating a pear tree. During a hurricane in this novel, the	
protagonist's husband is bitten by a rabid dog; the ensuing	
illness led him to attempt to shoot his wife, who was	
charged with his murder. This novel is told through	
flashbacks as described to Phoeby [FEE-bee] Watson	
following the protagonist's return from the Everglades to	
Eatonville. Name this novel featuring Tea Cake and Janie	
Crawford, by Zora Neale Hurston.	



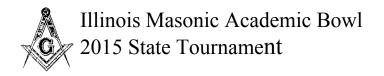
Question #21: Math - Algebra

10 points per part

	natural version of this function uses base e , while the amon version uses base ten.	
1	Name this type of function, popularized by John Napier, used to invert exponential functions.	logarithms [or logs]
2	Evaluate the log base eight of two.	<u>1/3</u> [or 0 <u>.3 repeating</u>]
3	Find the product of the log base six of four times the log base six of nine. Give a fully simplified answer.	2

Question #22: Math – Algebra

		re perme per part
Thi	s type of problem can be solved by the simplex method.	
1	Name this type of problem in which the goal is to maximize or minimize a first-degree expression based on first-degree constraints.	linear programming [prompt on optimization problem]
2	Find the area of the feasible region in a problem if the constraints are that <i>x</i> is greater than or equal to zero, <i>y</i> is greater than or equal to zero, and two <i>x</i> plus <i>y</i> is less than or equal to ten.	<u>25</u>
3	Given those constraints, find the maximum value of the objective function three <i>x</i> plus <i>y</i> . You do not need to give <i>x</i> and <i>y</i> —just give the maximum value of the function.	<u>15</u>



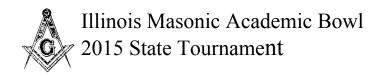
Question #23: Social Studies – World History

10 points per part

	target was en route to an interview with Peter Ustinov O-stee-nawff].	
loc	9-stee-nawii].	
	Name this action committed by Beant [beant] and	assassination of Indira Gandhi
1	Satwant Singh [sat-wahnt seeng], in retaliation for	[accept equivalents, prompt if the
	Operation Blue Star.	first initial/name is omitted]
	Operation Blue Star was a military assault on the	<u>Amritsar</u>
2	Harmandir Sahib [har-MAHN-deer sah-HEEB], the	
	"Golden Temple" in this city and a Sikh holy site.	
	Indira Gandhi's son, Rajiv, was assassinated in a	Tamil Tigers [accept Liberation
2	suicide bombing by Thenmozhi Rajaratnam	Tigers of Tamil Eelam or LTTE;
3	[ten-MOH-zhee RAH-juh-RAHT-nahm] on behalf of	prompt on partial answer]
	this separatist group.	

Question #24: Social Studies – World History

	sident under the Malolos Congress, he was later tured by Frederick Funston.	
1	Name this revolutionary who lost a 1935 landslide to Manuel Quezon [KAY-zahn]. Earlier, he had become	Emilio Aguinaldo [ah-gwee-NAL-doh] [prompt on "Miong" or
_	head of the Katipunan society following the execution of Andres Bonifacio.	"Magdalo"]
2	Aguinaldo fought for the independence of this island archipelago, where Ferdinand Marcos declared martial	Republic of the Philippines
	law following the First Quarter Storm.	
	The Philippines achieved independence by signing the	United States of America [or
3	the Treaty of Manila with this occupying power.	<u>US</u> A; accept any underlined portion]



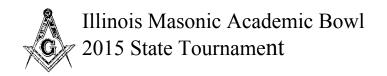
Question #25: Fine Arts - Classical/Opera

10 points per part

Cha	arles Auguste de Beriot [sharl oh-goost day bair-ee-oh]	
wro	te ten of these works for solo violin, and Max Bruch	
[bro	ook] collaborated with Joseph Joachim [YOH-ah-keem]	
to r	efine his first one for violin.	
	Identify these works that are written for a soloist to be	concerto
1	accompanied by an orchestra.	
	This kind of passage is often found near the end of the	cadenza [kuh-DEN-zuh]
	first movement of a concerto [kon-CHAIR-toe]. In it,	
2	the soloist plays an unaccompanied virtuosic passage	
2	that is often improvised by the performer.	
	Mendelssohn's violin concerto is one of the first	
	examples of a composer writing a standard one.	
	The first movement of a concerto is often written in	sonata form [accept sonata-
	this "form," which is named for the kind of solo	allegro form]
3	instrument composition it was first found in. Bach	
	wrote a collection of three of these and three partitas	
	for solo violin.	

Question #26: Fine Arts – Classical/Opera

Thi	s man opens one of his works with the piano playing 8	
mea	asures of slow, bell-like chords.	
1	Name this Russian composer of <i>Rhapsody on a Theme by Paganini</i> .	Sergei Vasilievich Rachmaninoff [rok-MAH-nee-nof]
2	Rachmaninoff composed four concerti [kun-CHAIR-tee] for this instrument, which is also the featured soloist in <i>Rhapsody on a Theme By Paganini</i> .	<u>piano</u>
3	Rachmaninoff briefly quit composing after his first symphony was disastrously premiered by this conductor, who was drunk at the time. This man composed the ballets <i>The Seasons</i> and <i>Raymonda</i> .	Alexander Konstantinovich Glazunov



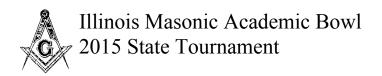
Question #27: Literature – British Literature

10 points per part

	his poem, the narrator claims that "any man's death inishes me, because I am involved in mankind."	
1	Name this poem in which the speaker describes every man as "a piece of the continent."	"No Man is an Island" [accept "Meditation XVII"; prompt on "Devotions Upon Emergent Occasions"]
2	"No Man is an Island" was penned by this author, whose collection of <i>Holy Sonnets</i> includes "Death be not proud."	John <u>Donne</u>
3	Exact quote required. At the conclusion of "No Man is an Island," the speaker indicates that one should never "send to know" this five-word phrase, which titled a novel by Ernest Hemingway.	" <u>for whom the bell tolls</u> , it tolls for thee"

Question #28: Literature – British Literature

	ce Poole was hired by her husband to keep her under finement.	
1	Name this insane woman responsible for burning down Thornfield Hall before jumping off the roof.	Bertha Mason [accept either; accept, but do not otherwise mention, Bertha Rochester]
2	Bertha's husband was this man, who was blinded in the fire. He was betrothed to Blanche Ingram before proposing to his second wife, whom he had hired as a governess for his ward, Adele.	Edward Rochester [accept either]
3	Edward Rochester fell in love with this woman, the title character of the Charlotte Brontë novel in which they appear.	Jane Eyre [accept either]



Round # 2 5th Section Toss-up Questions

Question #29: Science - Physics

10 points

A parameter named for this phenomenon is used to calculate absolute vorticity [vor-TIH-sih-tee]. The standard derivation demonstrating this phenomenon uses the time derivatives of the tangential unit vector and the length of the radius. The size of this phenomenon is twice the surface rotation rate times the sine of latitude. Though this phenomenon has a negligible impact on water going down a drain, it does explain why major storms rotate differently in different hemispheres. Name this effect caused by rotating reference frames.

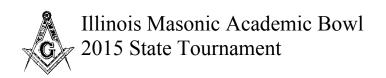
Coriolis [kor-ee-OH-liss] effect [or Coriolis force]

Question #30: Literature – World Literature

10 points

In one of this writer's stories, a performance of *The Geisha* leads to Gurov reuniting with Anna. In a letter to Aleksandr Lazarev, this writer stated that if a gun is placed in the setting of a story, at some point during the story the gun must be fired. He made frequent use of a metaphor of the title animal being killed "because there is nothing better to do" in a play featuring Trigorin [trih-GOR-in]. Another play centers around the fate of the Ranevskaya [rah-nev-SKY-ya] estate. Name this Russian dramatist who wrote *The Three Sisters* and *The Cherry Orchard*.

Anton Pavlovich Chekhov



Round # 2 5th Section Toss-up Questions

Question #31: Math – Math Concepts

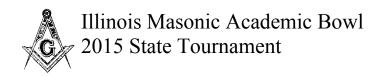
10 points

When this Platonic solid is truncated, the resulting solid
has faces that are hexagons and squares. The dihedral
[dy-HEE-drul] angles of this figure have a cosine equal to
negative one-third. This figure can be placed in coordinate
space so that each vertex has one coordinate that is plus or
minus a constant and two coordinates that are zero. There
are only three diagonals that can be drawn through this
figure, which has twelve edges and six vertices. Name this
Platonic solid that can be thought of as two square
pyramids joined at the base.

octahedrons [or octahedral, prompt on square bipyramid]

Question #32: Social Studies – U.S. History

This person wrote, "My country is the world, and my religion is to do good" in a book that was critical of Edmund Burke. This person also designed an inheritance tax that could be used to fund a national pension in his work <i>Agrarian Justice</i> . In addition to <i>Rights of Man</i> , he wrote a work that begins, "These are the times that try men's souls." That work, which was read to the Continental Army, was <i>The American Crisis</i> . Name this supporter of the American Revolution who wrote the pamphlet <i>Common Sense</i> .	Thomas <u>Paine</u>	
Revolution who wrote the pamphiet Common Sense.		



Round # 2 Extra Section Toss-up Questions

Extra Question #1: Science – Biology

10 points

This scientist extended Matthias Schleiden's

[SHLY-dun'z] cell theory from plants to animals. He also was the first person to isolate a human enzyme, which he named pepsin [PEP-sin]. The anatomical objects named for this person are attacked in tuberculoid

[too-BURK-yoo-loyd] leprosy and in the most common type of Guillain-Barré [ghee-yahn bar-ay] syndrome.

Those objects named for this person surround Remak bundles and are known as neurolemmocytes

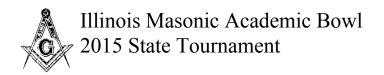
[NUR-oh-LEM-oh-"sites"]. Name this scientist whose namesake cells are often surrounded by a myelin sheath.

Extra Question #2: Fine Arts – Classical/Opera

10 points

The sixth of these works is in F major and unusually has a fifth movement, representing a Shepherd's song of Joy after a thunderstorm. Composer and work type required. The third of these works has a funeral march in its second movement, and on its autograph, a dedication to Napoleon Bonaparte is scratched out and its new dedication was "to the memory of a great man." The fifth of these works opens with a motif that is described as "fate knocking at the door" and consists of the notes "G-G-G-E flat." Name these 9 works, the last of which ends with a chorus singing Friedrich Schiller's "Ode To Joy."

symphonies by Ludwig van **Beethoven** [accept similar answers that include both underlined words]



Round # 2 Extra Section Toss-up Questions

Extra Question #3: Math – Math Concepts

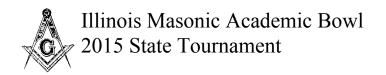
10 points

Cayley's theorem states that every group is isomorphic to a subgroup of one of these groups. The parity of these groups depends on whether there is an even or odd number of inversions. This word also describes an operation that is equivalent to a factorial if its two inputs are equal. This operation is found by dividing the factorial of a number by the factorial of a difference. Name this operation which determines how many ordered sets of cardinality r can be made from a set of cardinality n.

permutation [accept symmetric or symmetry during the first sentence; prompt on nPr]

Extra Question #4: Social Studies – World History

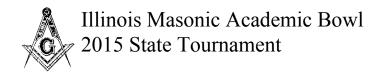
This event was followed by an interrogation by Sir William	Gunpowder Plot
Wade. Planned at Ashby St. Ledgers, its instigators tried to	
hold out at Holbech House. During it, John Grant was to	
kidnap Princess Elizabeth. It is alleged that Francis	
Tresham penned the letter to Lord Monteagle that led to its	
discovery. Name this failed attempt to blow up James the	
First of England and Parliament, whose perpetrators	
included Guy Fawkes.	



Round # 2 Extra Section Toss-up Questions

Extra Question #5: Literature – U.S. Literature

In describing its use of first-person narration, this work's	Walden, or Life in the Woods
author wrote "I should not talk so much about myself if	
there were anybody else whom I knew as well." Its narrator	
recounts being mistaken for a Fitchburg Railroad, and the	
narrator made a comparison to slavery when recounting his	
arrest for refusing to pay a poll tax. Name this recounting of	
Henry David Thoreau's time spent by a pond in the woods.	



Round # 2 Extra Section Teamwork Questions

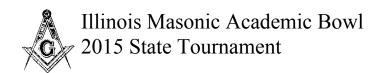
Extra Question #6: Science - Chemistry

10 points per part

	ence shell electron pair repulsion theory is used to lain the shapes of many molecules.	
1	Give the two-word name of the molecular shape that exists when there are three atoms around a central atom and no lone pairs.	<u>trigonal planar</u>
2	This is the name of the sum of the number of atoms bonded to the central atom plus the number of lone pairs. This number corresponds to the coordination number in a crystal.	steric ["STARE"-ik] number
3	Using the standard combination of orbital letters and numbers, give the orbital hybridization of an octahedral molecule.	$ \frac{d^2}{s^1} \frac{p^3}{p^3} $ ["d two s (one) p three"] [all three parts must be given, but can be given in any order; note that the "1" after the <u>s</u> is optional]

Extra Question #7: Science – Chemistry

	e fractional type of this process was developed centuries and is still used.	
1	Name this process of separating parts of a solution by boiling and condensing them.	distillation [accept word forms]
2	This substance is distilled to get naphtha [NAF-thuh], kerosene, and gasoline.	petroleum [or crude oil; prompt on oil]
3	This type of distillation is often used for materials that have very high boiling points, making it more effective	<u>vacuum</u> distillation



Round # 2 Extra Section Teamwork Questions

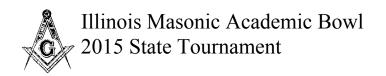
Extra Question #8: Social Studies – U.S. History

10 points per part

Wh	en the Soviet Union invaded Afghanistan, this president	
org	anized an international protest of the 1980 Summer	
Oly	mpics in Moscow.	
	Name this president who was also in charge during the	James Earl "Jimmy" Carter
1	Iran hostage crisis.	
	Carter negotiated the second round of this weapons	SALT II [or Strategic Arms
2	reduction agreement with the Soviet Union that was	<u>Limitation Talks</u>]
	never ratified by the Senate.	
	Carter negotiated with the Soviets with the help of this	Zbigniew Brzezinski [z'BEEN-
3	National Security Advisor whose daughter Mika	yev bruh-ZHIN-skee]
	[MEE-kah] is now a television personality.	

Extra Question #9: Social Studies – U.S. History

Giv	e the following about Woodrow Wilson:	
1	He was first elected president in 1912 thanks to this party, started by Teddy Roosevelt, taking some of the Republican vote. It was nicknamed the Bull Moose party.	Progressive Party [or Progressives]
2	In 1916, Wilson defeated this man who stepped down from the Supreme Court. He would later be Secretary of State and then Chief Justice.	Charles Evans <u>Hughes</u>
3	Before becoming president, Wilson was the governor of this state.	New Jersey



Round # 3 1st Section Toss-up Questions

Question #1: Science – Astronomy

10 points

One example of this type of star is orbited by Zarmina, which was the first extrasolar planet located in a star's habitable zone. That star is Gliese [GLEE-zuh] 581. Many stars of this type are believed to have lifespans of trillions of years, which means that examples created soon after the Big Bang are still around, and it is believed that they will become white dwarfs. These stars are also believed to be the most common in the Milky Way, and one example is Proxima Centauri [PRAK-sih-muh sen-TOR-ee]. Name these stars that are smaller and cooler than our Sun.

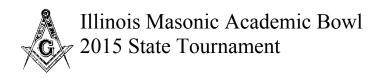
red dwarfs [prompt partial answer]

Question #2: Social Studies - U.S. Government

10 points

The English case *Empson v Smith* set the precedent that persons can be tried *ex post facto* with regards to this legal status. Its functional form only covers actions taken within its holder's work responsibilities. The Vienna Convention identifies whom this status applies to; such people may be recalled upon being considered *persona non grata*. Name this policy under which ambassadors do not have to abide by the local criminal code.

diplomatic immunity [accept
personal inviolability; prompt on
immunity or variations thereon]



Round # 3 1st Section Toss-up Questions

Question #3: Literature – U.S. Literature

10 points

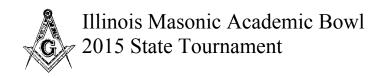
One character in this story only used the middle name	"The Gift of the Magi"
"Dillingham" in times of prosperity. This tale of "two	
foolish children" sees one compare herself to a Coney Island	
schoolgirl before asking herself what she could have	
purchased for \$1.87. The husband in this story sold his	
watch to buy combs, while his wife sold her hair to buy a	
fob. Name this Christmastime short story featuring James	
and Della Young, by O. Henry.	

Question #4: Miscellaneous – Agriculture

10 points

This scale is based on a test in which the subject is diluted				
in sugar water and sampled at increasing concentrations				
until it is detectable by at least three of the five testers.				
Recent world record holders on this scale include the Red				
Savina, at around five hundred seventy seven thousand				
units, and the Bhut Jolokia [BOOT joh-LOH-kee-uh], at				
over one million units. It measures the concentration of				
capsaicin [kap-SAY-sin] in a pepper. Name this scale that				
quantifies the spiciness of hot sauces.				

Scoville Scale [accept Scoville Organoleptic Test]



Round # 3 1st Section Toss-up Questions

Question #5: Science – Chemistry

10 points

This compound is combined with iron sulfate and benzene to make phenol [FEE-nawl], which is an example of its use as Fenton's reagent. This compound is manufactured in the anthraquinone [aan-thruh-KWY-nohn] process, and it is often made safe in the lab by combining it with urea [yur-EE-uh]. Though this compound does not contain chlorine, it is often combined with sodium carbonate to make a bleach. This compound's use as a disinfectant is being decreased. Name this compound whose formula is H₂O₂ ["H two O two"].

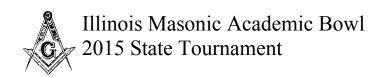
<u>hydrogen peroxide</u> [prompt on **<u>peroxide</u>**; accept $\underline{\mathbf{H}_2\mathbf{O}_2}$ before the end]

Question #6: Social Studies – World History

10 points

This event started with the assassination of Agathe Uwilingiymana [ah-GAH-thay oo-wih-leeng-ee-MAH-nah] on the orders of Theoneste [THAY-oe-nest] Bagosora. The youth group Interahamwe [in-ter-ah-HAHM-way] was mobilized and teamed up with the Impuzamugambi [im-POO-zah-moo-gahm-bee] to take part in it. Sparked by the assassination of Presidents Cyprien Ntaryamira [sih-pree-en en-tar-yah-mee-rah] and Juvenal Habyarimana [hahb-yah-ree-mah-nah], Paul Kagame [kah-GAH-may] led the RPF forces that helped bring it to an end. Name this massacre of ethnic Tutsis by Hutus in an African country.

Rwandan genocide of 1994 [accept equivalents]



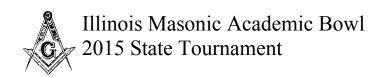
Question #7: Math – Geometry

10 points per part

	theorem and the formula named for this mathematician address quadrilaterals that can be inscribed in a circle.	
1	Identify this 7 th century Indian mathematician.	Brahmagupta [brah-mah-GOOP-tah]
2	Other than "inscribed", what adjective is used to describe quadrilaterals that can be inscribed in a circle?	<u>cyclic</u> quadrilateral [accept<u>concyclic</u> or <u>chordal</u>quadrilateral]
3	Cyclic quadrilateral ABCD has perpendicular diagonals. Side AB is length ten, and side CD is length twelve. If a segment that is perpendicular to side AB intersects that side 7 units from A and goes through the diagonal intersection point and hits side CD at point E, find the length of segment CE.	<u>6</u>

Question #8: Math - Geometry

ang	les of a triangle is less than this number. In elliptic metry, the sum is greater than this number.	, , ,
1	Give the number of degrees in a triangle in Euclidean geometry.	180 degrees
2	This Russian mathematician, who wrote <i>Geometrical Investigations on the Theory of Parallel Lines</i> , is considered the founder of hyperbolic geometry. This person worked at about the same time as János Bolyai [YAH-nosh BOL-yai].	Nikolai Ivanovich <u>Lobachevsky</u>
3	This French scientist designed a disc model and a half- plane model that help envision hyperbolic geometry.	Jules Henri <u>Poincaré</u> [awn-ree pwan-kar-ay]



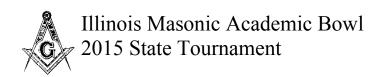
Question #9: Fine Arts – Musical Theater

10 points per part

Rer	nee Zellweger, Richard Gere, and Catherine Zeta-Jones	
star	red in the film adaptation of this musical, which	
incl	udes the song "All That Jazz."	
	Name this musical, set in the title Midwestern city,	<u>Chicago</u>
	centering on the trial of Roxy Hart after she murders her	
1	lover. Velma Kelly meets her in the women's prison of	
	Cook County Jail and they perform the "Cell Block	
	Tango."	
	This other musical is set in Berlin during the Weimar	<u>Cabaret</u>
	[VY-mar] republic. Its film version starred Liza Minelli	
2	as Sally Bowles, who works at the Kit Kat Club with	
	the Master of Ceremonies. At the end, Sally sings that	
	"Life is" one of these, "old chum."	
	Chicago's Broadway premiere was directed by this	Robert Louis "Bob" Fosse [FAH-
3	choreographer, who also directed the film version of	see]
3	Cabaret as part of his collaborations with Kander and	
	Ebb.	

Question #10: Fine Arts – Musical Theater

In t	his musical, a cockney flower-girl sings "Wouldn't it	
be]	Loverly" when imagining what life is like in the upper	
clas	SS.	
	Name this musical about Henry Higgins teaching Eliza	My Fair Lady
1	Doolittle to speak with high-class English before	
1	realizing that he is becoming attached to her in his song	
	"I've Grown Accustomed to Her Face."	
	My Fair Lady is a musical created by this lyricist and	Alan Jay Lerner and Frederick
2	songwriter duo, who also penned Gigi, Camelot, and	Loewe [either order]
	Brigadoon.	
	In Brigadoon, American tourists discover a remote	100 years [or a century]
3	Scottish village that only appears for a single day,	
	once every how many years?	



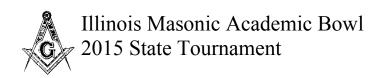
Question #11: Science – Biology

10 points per part

Art	eries carry blood away from the heart.	
1	Name the largest artery in the human body, which at first leads up from the heart.	<u>aorta</u>
2	These smaller blood vessels carry blood from arteries to capillaries.	arterioles [ar-TEER-ee-ohlz]
3	The "a" type of this substance is linked to arterial disease. Cholesterol is sometimes classified as good or bad depending on whether it contains the high or low density types of this substance.	lipoprotein [LY-poh-"protein"] [prompt on L]

Question #12: Science – Biology

	ese are classified as fibrous, cartilaginous r-tih-LAA-jih-nuss], or synovial [sih-NOH-vee-ul].	
1	Name these areas in the body where bones come together.	joint s
2	This is the name of the fibrous joints that connect the bones in the skull. These come together at the fontanelles [FAHN-tuh-nellz] in infants.	<u>suture</u> s
3	These sacs of fluid are located near joints. They release synovial fluid and reduce friction.	bursae [BUR-say]



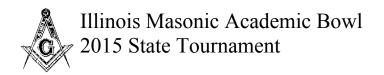
Question #13: Literature – Mythology

10 points per part

	ne sources claim that she birthed the Nemean EE-mee-un] Lion following an affair with Zeus.	
1	Name this Greek moon goddess and sister of Helios who learned from her sister's mistake when she fell for a mortal shepherd.	Selene
2	Selene fell for this shepherd, who was granted eternal sleep. Unlike Tithonus [tih-THOH-nuss], he remained human.	Endymion [en-DIH-mee-un]
3	Despite his eternal sleep, Endymion fathered this many daughters with Selene. Danaus [DAA-nay-uss] and Aegyptus [ih-JIP-tuss] each had this many children, and all but one of Danaus' were sentenced to eternally use leaky buckets to fill a bathtub.	<u>fifty</u> daughters

Question #14: Literature – Mythology

Th	s son of Oeneus [EE-nee-uss] accidentally killed	
Iph	icles [IF-ih-kleez] during the Calydonian [kaal-ih-	
DC	H-nee-un] boar hunt.	
	Name this hero who, after landing the killer blow on the	Meleager [meh-lee-AY-gur]
1	Calydonian boar, awarded the pelt to Atalanta.	
	Among the many warriors who participated in the	Peleus [PEE-lee-us]
2	Calydonian boar hunt was this husband of Thetis	
	[THEE-tiss] and father of Achilles [uh-KILL-eez].	
	After Meleager awarded the pelt to Atalanta, two	Althaea [aal-THEE-uh]
2	maternal uncles protested. Meleager killed both, after	
3	which this woman, his mother, killed him by burning	
	the sacred log.	



Round # 3 3rd Section Toss-up Questions

Question #15: Science – Physics

10 points

The type of this phenomenon caused by relativistic effects is	precession [accept precessing]
named for Lense-Thirring and de Sitter, while the type of	
this phenomenon affecting magnetic moments due to	
quantum effects is named for Larmor. The apsidal	
[AP-she-dul] type of this phenomenon involves the motion	
of the perihelion [peer-uh-HEE-lee-on] and was explained	
by general relativity theory. In classical mechanics, this	
phenomenon is classified based on whether or not it is	
induced by torque [tork], and it is explained by the	
conservation of angular momentum. Name this motion of	
the axis of rotation of a rotating body exemplified by a	
gyroscope.	

Question #16: Social Studies – U.S. History

	- 1
Prior to this battle, a fake escape was staged for the prisoner	Battle of Trenton
John Honeyman. Many enemy fighters were able to escape	
across Assunpink Creek because American troops under	
James Ewing and John Cadwalader did not show. The head	
of those enemy fighters, who was killed by a musket ball	
while retreating, was Johann Rall. This battle took place just	
after Christmas 1776 and was targeted at Hessians. Name	
this victory led by Nathanael Greene and George	
Washington just after they crossed the Delaware River.	

Round # 3 3rd Section Toss-up Questions

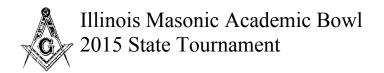
Question #17: Literature – British Literature

10 points

This author wrote the line "If we've promised them aught,	R obert Browning [prompt on
let us keep our promise" in "The Pied Piper of Hamelin."	Browning]
He wrote of a man who noted how "God has not said a	
word" after using his victim's blonde hair to strangle her in	
"Porphyria's [por-FEER-ee-uh'z] Lover." He wrote of a	
woman with a "half-flush that dies along her throat" that	
was the subject of a painting by Fra Pandolf. Name this	
author of "My Last Duchess."	

Question #18: Math – Math Concepts

A compression system based on these constructs was	<u>fractal</u> s	
developed by Michael Barnsley, who wrote a book about		
these constructs, including his namesake fern. The plane can		
be tessellated by Gosper Island, which is an example of this		
concept. The Feigenbaum [FY-gun-baom] constant gives		
the ratio of circle sizes on these constructs, which were		
developed while studying the lengths of coastlines. The		
dimension measure of these objects may not be an integer,		
and these objects exhibit self similarity. Name these		
concepts exemplified by Julia sets and Mandelbrot sets.		



Round # 3 3rd Section Toss-up Questions

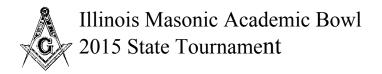
Question #19: Fine Arts – Art History

10 points

This artist brought his dachshund Archie to interviews to	Andy Warhol	
answer questions this man didn't like. Half of the canvas is		
blank, while the other half is taken up with 15 panels		
showing the interior of a car, in his Silver Car Crash Double		
Disaster. This artist created four images of Marilyn Monroe		
shot in the head in <i>Shot Marilyns</i> , and he created silkscreen		
portraits of Mao. His studio was called The Factory, which		
hosted his "Superstars." Name this artist who created		
images showing Campbell's Soup Cans.		

Question #20: Literature – World Literature

This person was nearly killed after offering to pull Mordaunt	Athos [accept Oliver, Comte de la
[mor-dawn] into a lifeboat; after surviving he revealed	<u>Fere</u>]
himself as the father of Raoul [rah-ool], who rose to nobility	
as the Vicomte [VY-kawmt] of Bragelonne	
[bra-ghel-"own"]. The first husband of Charlotte, Milady de	
Winter, he hanged her upon discovering a branded fleur-de-	
lis [floor-d'-lee]. Name this nobleman who teamed with	
Porthos and Aramis to form the Three Musketeers.	



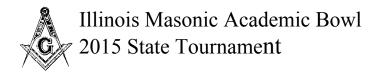
Question #21: Science – Chemistry

10 points per part

Thi	s type of decay can be classified as plus or minus.	
1	Name the type of decay, the most common type of which consists of the emission of an electron. Your answer should be a Greek letter.	beta minus decay
2	As opposed to beta-minus decay, which gives off an electron, this is the particle given off by beta-plus decay.	positron [PAH-zih-trahn] [do not accept "proton"]
3	In beta-minus decay, a neutron produces a proton, an electron, and this third particle.	electron <u>antineutrino</u> [do not prompt on "neutrino"]

Question #22: Science – Chemistry

	s concept is used to describe molecules when some of electrons are delocalized.	
1	Name this concept used for aromatic molecules such as benzene.	resonance
2	There are two resonance structures for this triatomic [TRY-uh-TAH-mik] allotrope [AL-oh-trohp] of oxygen.	<u>ozone</u>
3	This type of isomerism ["eye"-SAH-mur-izm] that can be confused with resonance exists when two molecules differ by the placement of a hydrogen atom and the positions of single and double bonds. A common type of this phenomenon is keto-enol.	tautomerism [TAW-toh-mur-ism] [or tautomers or tautomerization]



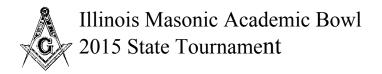
Question #23: Literature – British Literature

10 points per part

	he creation of this fictional region, Oxford was amed Christminster.	
1	Name this fictional region, the upper portion of which contains Southampton and Portsmouth. Some maps of it show the Isle of Slingers at the southern tip in lieu of Portand.	Wessex
2	This author elaborated on his creation of Wessex in the preface to Far From the Madding Crowd.	Thomas <u>Hardy</u>
3	Hardy's hometown of Dorchester was given this moniker in Wessex. After selling his wife and child, Michael Henchard reformed and became the mayor of this city.	Casterbridge

Question #24: Literature – British Literature

	e curfew tolls mentioned in its opening line were a erence to Dante's "Purgatorio."	, , ,
1	Name this poem that describes possible burying plots for "some inglorious Milton" or "some Cromwell guiltless of his country's blood."	"Elegy Written in a Country Churchyard"
2	This poet wrote that "paths of glory lead but to the grave" in "Elegy Written in a Country Churchyard."	Thomas <u>Gray</u>
3	Thomas Gray penned an ode in which the one of these animals favored by the narrator drowns in a tub of goldfish. The actual animal, Selima, was owned by Horace Walpole.	tabby <u>cat</u>



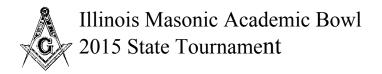
Question #25: Social Studies – U.S. History

10 points per part

	s convention was named for its upstate New York ation.	
100		
1	Name this 1848 women's rights convention.	Seneca Falls Convention
2	One hundred attendees at the Seneca Falls Convention signed this document whose lead author was Elizabeth Cady Stanton.	Declaration of Sentiments [or Declaration of Rights and Sentiments]
3	The convention was supported by many followers of this religion, including the sisters Martha Coffin Wright and Lucretia Coffin Mott.	Quakers [or Religious Society of Friends]

Question #26: Social Studies - U.S. History

		To pointe por part
The	ese dislocations started in eastern Tennessee and	
Ala	bama and ended in Arkansas and eastern Oklahoma.	
	Give the nickname commonly applied to forced Native	Trail of Tears
1	American displacements during the 1830s, starting with	
	the Choctaws ["CHOCK"-tawz].	
	This tribe, whose syllabary was written by Sequoyah,	<u>Cherokee</u> s
	moved after one of its factions signed the Treaty of	
2	New Echota [eh-KOH-tuh]. The sovereignty of this	
	tribe had been supported by the Supreme Court in	
	Worcester v. Georgia.	
	This 1830 law supported negotiations that would lead to	Indian Removal Act
3	the Trail of Tears.	



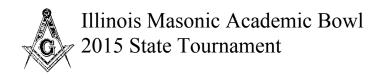
Question #27: Math - Pre-Calculus

10 points per part

	s shape can be formed by taking a sphere and stretching ifferent amounts in different directions.	
1	Name this type of closed quadric [KWAD-rik] surface.	ellipsoid [ee-LIP-soyd] [do not accept "ellipse"]
2	If an ellipsoid has an <i>x</i> -radius of one, a <i>y</i> -radius of two, and a <i>z</i> -radius of three, what is its volume? Ignore units.	8 pi cubic units
3	If that same ellipsoid is inscribed in a rectangular prism, what is the volume of the rectangular prism? Ignore units.	48 cubic units

Question #28: Math - Pre-Calculus

The	ese entities consist of vertices that can be connected by es.	
1	Name this kind of mathematical object that can be described using adjacency matrices.	graphs [prompt on trees]
2	This is the number of edges in a complete graph with six vertices. In a complete graph, each vertex is connected to every other vertex by an edge.	<u>15</u>
3	If a Hamiltonian path exists in a graph with six vertices, how many edges are traversed by that path? Keep in mind that this question is asking about Hamiltonian paths, not Hamiltonian cycles.	5



Round # 3 5th Section Toss-up Questions

Question #29: Social Studies – World History

10 points

This leader surrendered Armenia and Mesopotamia, re-establishing the Euphrates [yoo-FRAY-tes] as the limit of the Roman Empire. Nicknamed "Graeculus" as a youth, this person dedicated a number of Greek sites to Antinous, one of his lovers. He ordered public burnings of the Torah and outlawed Judaism following the Bar Kokba revolt. The successor to Trajan, name this Roman emperor who ordered the northern border of Roman Britain demarcated with a wall.

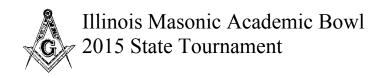
Hadrian [accept Caesar Trajanus Hadrianus Augustus or Publius Aelius Hadrianus]

Question #30: Science - Biology

10 points

The membrane of this organelle [or-guh-NEL] contains squalene synthase [SKWAH-leen SIN-thayss], which is used in the creation of cholesterol. This organelle is affected by mutations in the XBP1 gene, which cause it to be stressed, possibly leading to beta cell death and diabetes. In this organelle, IP3 receptors cause calcium to be released to the cytosol ["SIGH"-toh-sawl]. Vesicles [VEH-sik-ulz] take proteins to the Golgi ["GOAL"-jee] apparatus after those proteins are folded in this organelle. Name these organelles that, depending on whether there are ribosomes [RY-boh-sohmz] on its surface, can be classified as smooth or rough.

endoplasmic reticulum



Round # 3 5th Section Toss-up Questions

Question #31: Literature – U.S. Literature

10 points

This author wrote of a man who had "little formless fears" before firing his last bullet at an apparition of a crocodile. He also wrote a play featuring "The Captain" and "The General," who had fought each other in the Boer War. This author of *The Emperor Jones* used Harry Hope's saloon as a backdrop for *The Iceman Cometh*. Name this four-time Pulitzer winner and author of *Anna Christie* and *Long Day's Journey into Night*.

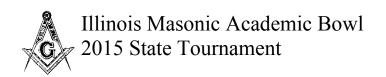
Eugene Gladstone O'Neill

Question #32: Math – Math Concepts

10 points

A test named for Abel [AH-bul] determines whether the uniform type of this property is met, while the Weierstrass [VY-ur-shtrass] M-Test can be used to determine whether the uniform and absolute types of this property are met. This property is met if the *n*th root of the *n*th number is less than one, according to the root test. The alternating test for this property only needs to show that terms have a limit of zero. Though this property is not demonstrated by the harmonic series, it is demonstrated when *r* is between negative one and one in geometric series. Name these series that have a finite limit.

convergent [accept word forms
such as converging; prompt on
limit]



Round # 3 Extra Section Toss-up Questions

Extra Question #1: Social Studies – U.S. History

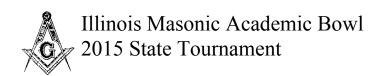
10 points

This leader's decision to start the Siege of Port Hudson early did not work well for his ships or supporting troops led by Nathaniel Banks. This person and his brother by adoption David Porter were the first two four-star admirals in the U.S. Navy. During one attack, this leader captured the CSS *Tennessee*. This leader defeated Mansfield Lovell so that Benjamin Butler could take command of New Orleans. Name this person who, according to legend, said, "Damn the torpedoes, full speed ahead!" during the Battle of Mobile Bay in the Civil War.

Extra Question #2: Math – Math Concepts

10 points

The spiral named for this mathematician is generated by setting r equal to the square root of theta. The points named for this person or Torricelli [tor-uh-CHEL-lee] are a minimum total distance from the vertices [VER-tuh-sees] of a triangle. This person's son produced a version of Diophantus' Arithmetica with this person's comments included. In those comments, this mathematician claimed to have proven a theorem that was actually proved hundreds of years later by Andrew Wiles. Name this person who stated that, if n is greater than two, there are no integer solutions to the equation a to the n plus b to the n equals c to the n.



Round # 3 Extra Section Toss-up Questions

Extra Question #3: Literature – World Literature

10 points

This "five-thousand character text" opens with a line describing something not being constant if it can be spoken of. This text describes the process of *ziran*, or how the world unfolds itself on its own. Also expounding on action through inaction, called *wu wei*, it outlined how one could live virtuously by following the "way." Name this central text of Daoism.

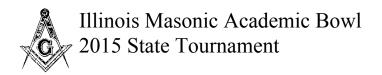
<u>Dao de Ching</u> [accept <u>Book of</u> <u>Changes</u>, Taishang xuanyuan <u>Daodejing</u>, or <u>Tao te Ching</u>]

Extra Question #4: Fine Arts – Composers of Modern Era

10 points

Erich Korngold's violin concerto includes themes taken from these kinds of works that he was employed to create. Sergei Prokofiev [proe-KOH-fee-yef] provided one of these works to accompany Sergei Eisenstein's *Alexander Nevsky*. One of these works by Maurice Jarre included "Lara's Theme," which became the song "Somewhere My Love." "The Imperial March" taken from one of these works first is heard when the Executor, commanded by Darth Vader, is shown, and was composed by John Williams. Name these works written to accompany visual spectacles including *Doctor Zhivago* and *Star Wars*.

<u>film scores</u> [accept anything indicating <u>music</u> for a <u>film</u> or <u>movie</u>]



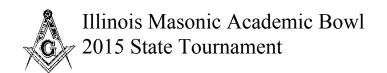
Round # 3 Extra Section Toss-up Questions

Extra Question #5: Science - Health

10 points

This disorder can be picked up by finding high levels of Inhibin [in-HIB-in] A during a quadruple test, and this is the most common disorder picked up by a nuchal [NOO-kul] translucency screening test. About half of the people with this disorder have septal defects in their hearts, and about half have only one crease across each palm of their hand. This disorder occurs over one percent of the time when the mother is over the age of forty, and it usually results in slower growth and lower intellectual ability. Name this disorder caused by a trisomy [TRY-soh-mee] of chromosome 21.

<u>Down</u>'s syndrome [accept <u>trisomy</u> <u>**21** or equivalents before "trisomy"]</u>



Round # 3 Extra Section Teamwork Questions

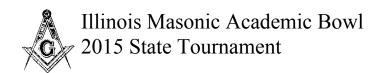
Extra Question #6: Social Studies – World History

10 points per part

		To pointe per part
Ado	dressed to Granadans [gruh-NAY-duns], this document	
out	lined why the First Republic fell, and was penned	
sho	rtly before the Admirable Campaign.	
	Name this text, which cited an 1812 earthquake and the	Cartagena [kar-tah-HAY-nah]
1	machinations of the anti-republican Catholic Church as	<u>Manifesto</u>
	reasons for the temporary return of Spanish rule.	
	The Cartagena Manifesto was penned by this military	Simon <u>Bolívar</u> [prompt on
2	leader who fought for the independence of a number of	"Liberator"]
	South American countries, including Venezuela.	
	Following the fall of the Second Republic, Bolivar	<u>Jamaica</u>
2	penned a letter from this Caribbean nation addressed to	
3	Henry Cullen. Alexander Bustamante led this former	
	British colony after independence.	

Extra Question #7: Social Studies – World History

Esta	ablished by the "Father of the Poor," this period was	
inst	igated following the "Cohen Plan," a fabricated plot	
use	d as a pretext to shut down the legislature.	
	The Queremistas [kair-ay-MEES-tahz] campaigned to	Estado Novo [es-TAH-doh NOH-
1	prolong this period, which saw its head double-cross the	voh] [accept New State, do not
	fascist Integralists.	accept "Vargas Era"]
	The Estado Novo was established by Getulio	Federative Republic of Brazil
	[zhay-TOO-lee-oh] Vargas in this South American	
2	nation. Vargas' rise to power ended the "coffee and	
	milk" period, where power was concentrated in Minas	
	Gerias [MEE-nahss ZHAIR-ee-ahss] and Sao Paolo.	
	This founder of Brazil's Worker's Party established the	Luis Inacio Lula <u>da Silva</u> [prompt
	Bolsa Familia [BOL-sah fah-MEE-lee-ah] and Fome	on <u>Lula</u> or <u>Silva</u>]
3	Zero [FOH-may ZAIR-oh] programs to fight hunger	
	and poverty in the country. Current leader Dilma	
	Rousseff took over the presidency from this man.	



Round # 3 Extra Section Teamwork Questions

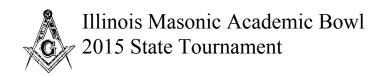
Extra Question #8: Math – Trigonometry

10 points per part

	se two trigonometric functions never have outputs ween negative one and one.	
1	Name <i>both</i> of the basic six trigonometric functions whose graphs have no <i>x</i> -intercepts.	sec ant and cosecant [both answers in either order; cosecant can be
	whose graphs have no x-intercepts.	called <u>csc</u>]
2	Find the <i>y</i> -coordinates of all local maxima for the graph of <i>y</i> equals three plus five times the secant of four <i>x</i> .	<u>-2</u>
3	Find the horizontal distance between successive local maxima on the same graph.	pi over two [or one-half pi]

Extra Question #9: Math – Trigonometry

Trış	gonometry can be used to find areas.	
1	One formula for the area of a triangle multiplies one-half times the product of two side lengths times this function acting on the angle between the two sides. Name the trigonometric function.	<u>sin</u> e
2	Find the area of a parallelogram if its two sides are of length five and six, and its internal angles each have a sine of one-third.	10
3	Find the area of a kite if its side lengths are three and four, and the sine of the angle between those two sides is one-fourth.	3



Round # 4 1st Section Toss-up Questions

Question #1: Literature – British Literature

10 points

This novel states that its characters grew accustomed to mysteries and ignored them, "just as they ignored the miraculous throbbing stars." After refusing to swim, one character in this novel is made fun of for his asthma. One group in this novel makes Castle Rock its headquarters. The title figure in this novel is allegedly heard during a vision triggered by the head of a sow. In this tale, a boulder rolled by Roger destroyed a conch shell and killed Piggy. Name this novel featuring schoolboys stranded on an island, by William Golding.

Question #2: Science – Earth Science

10 points

One location of this type is named for Victor Conrad, but attempts to locate it by drilling have been unsuccessful. Keith Bullen, who referred to one of these locations as "D double prime", is sometimes the namesake for another one of these locations. D double prime is now named for Beno Gutenberg, and two of these locations are named for Inge [EEN-guh] Lehmann. These locations are found using the patterns of seismic waves, which can change speeds or reflect at these locations. These locations form the boundaries between different layers of the Earth. Name these locations that include the Moho [MOH-hoh].

discontinuity [or discontinuities;
prompt on boundary or
boundaries]

Round # 4 1st Section Toss-up Questions

Question #3: Miscellaneous - Industrial Arts

10 points

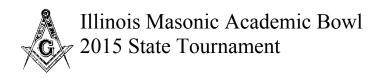
This product's smoothness can be improved via extra nips in the calendar section of a Fourdrinier [FOR-drih-nir] machine. Certain forms of this substance are created through raw materials that undergo the Kraft process. Clay and titanium dioxide, which improve opacity, are added to the pulp when manufacturing this product. Standard forms of this substance used in offices are A4 and letter size, which typically come in reams of 500 sheets. Name this material that one writes on.

paper [accept paperboard or cardboard]

Question #4: Math – Math Concepts

10 points

Lobachevsky's formula gives the angle named for this concept; that angle only makes sense in hyperbolic geometry, and is equal to twice the arctangent of e raised to the opposite of e power. Figures with this property are generated by the degenerate case of the equation e squared plus e times e squared equals one. Playfair's axiom and the equidistance postulate are equivalent to the axiom named for this property from Euclidean geometry, which asserts that given a line and a point not on it, there is exactly one line through the point that has this property with respect to the original line. In elliptic geometry, no lines have this property, but in Euclidean geometry, any two lines must be skew, intersect, or have this property. Name this property possessed by two lines with the same slope.



Round # 4 1st Section Toss-up Questions

Question #5: Social Studies – World History

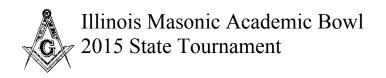
10 points

During this event, a firing squad killed Thomas Dickson,			
Patrick MacIntyre, and Francis Sheehy-Skeffington.			
Charges of treason stemming from a shipment of German			
arms for use in this event led to the execution of Roger			
Casement. Before fire destroyed it, the Post Office was a			
rebel stronghold. During a court martial, Patrick Pearse			
played up his role in it before being executed, and Eamon			
de Valera was sentenced to death, but would survive to			
become Prime Minister. Name this Irish rebellion against			
British rule begun on a religious holiday.			

Easter Uprising [accept equivalents for "Uprising," accept Eiri Amach na Casca]

Question #6: Science – Biology

Angiotensin [an-jee-oe-TEN-sin] Two increases the amount	<u>sodium</u>
of this element retained in the body. The blood	
concentration of this chemical element increases when the	
body has too little vasopressin [VAY-soh-"PRESS-in"].	
Three ions of this atom often enter a cell in exchange for	
three calcium ions, and an enzyme in animal cell	
membranes removes its ions from cells while bringing in	
potassium ions. Too much of this element leads to increased	
water retention and high blood pressure. Name this element	
whose cation ["cat-ion"] is in table salt, along with chloride	
[KLOR-"eyed"].	



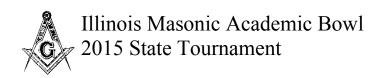
Question #7: Math – Trigonometry

10 points per part

	e derivative of this function of x equals one over the intity one plus x squared.	
1	Name this function whose domain is all real numbers and whose range goes from negative one-half pi to positive one-half pi, exclusive.	<pre>arctangent [accept inverse tangent; do not prompt on "tangent"]</pre>
2	Giving a single answer, solve the equation the arctangent of x equals the arccotangent of x .	1
3	Sticking to the principal values and using radians, for what value of y does the arctangent of x equal the arccotangent of x? The graphs of the two functions are mirror images over the horizontal line at this value of y.	pi over 4 [or one-fourth pi]

Question #8: Math – Trigonometry

Giv	re the following about using trigonometric identities:	
1	According to one identity, what quantity equals the cosine of angle <i>A</i> , times the cosine of angle <i>B</i> , minus the sine of angle <i>A</i> , times the sine of angle <i>B</i> ?	cos ine (A+B) [accept equivalents; do not accept or prompt on "sine (A+B)"]
2	If the sine of angle <i>x</i> is one-fourth, what is the cosine of the quantity angle <i>x</i> plus ninety degrees?	<u>-1/4</u> [or <u>-0.25</u> , do not accept "1/4" or 0.25]
3	If the tangent of angle <i>P</i> equals one, and the tangent of angle <i>Q</i> equals two, what is the value of the tangent of the quantity <i>P</i> plus <i>Q</i> ?	<u>-3</u>



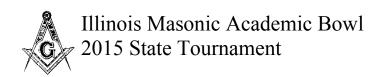
Question #9: Social Studies – Current Events

10 points per part

Ide	ntify the following concerning governors' races from the	
201	4 November elections.	
	Scott Walker won his third consecutive election for	Wisconsin
1	governor of this Midwestern state, after being the target	
	of a recall in 2012.	
	Busting onto the national stage following an eleven-	<u>Texas</u>
	hour filibuster against a bill that would restrict	
2	abortions was not enough to help Wendy Davis defeat	
	Greg Abbott in this state.	
	This state saw former Republican governor Charlie	<u>Florida</u>
2	Crist run as a Democrat for a second term against	
3	incumbent Rick Scott, with Scott winning by just over	
	one percent.	

Question #10: Social Studies – Current Events

	ntify the following concerning federal Senate races from 2014 November elections.	
1	Joni Ernst's "Squeal" ad, in which she touted her experience castrating hogs, helped her win this state's Senate election. Doug Butzier also appeared on the ballot, despite being killed in a plane crash in October 2014.	<u>Iowa</u>
2	The Republican Senate nominee in New Hampshire, Scott Brown, had already served two years in Congress after winning a special election in this other state to replace the deceased Ted Kennedy.	<u>Massachusetts</u>
3	Due to the 2013 resignation of Jim DeMint, and Tom Coburn announcing his resignation following the 113th Congress, two states held elections for both Senators. Name either.	South Carolina (DeMint) or Oklahoma (Coburn)



Question #11: Science – Physics

10 points per part

Ans	swer these questions about sound.	
1	This logarithmic scale is used to measure the loudness, or power, of sound. You may give either the name of the scale's base unit or the name of the more commonly used subdivision of it.	deci <u>bel</u> scale
2	Sound is made up of this type of pressure wave that contains compressions and rarefactions.	longitudinal [lawn-jih-TOO-dih-nul] waves [accept word forms]
3	This quantity for materials that sounds travel through equals the ratio of acoustic pressure to volume velocity. This quantity represents resistance to vibration.	acoustic impedance

Question #12: Science – Physics

	experiment named for this scientist provided evidence the wave theory of light.	
1	Identify this namesake of the double slit experiment.	Thomas Young
2	Young is also the namesake of Young's modulus, which appears in this law that says that the force needed to stretch a spring is directly proportional to the length by which the spring is stretched.	Hooke's law
3	While Young's modulus describes the reaction of an object to linear stress, this constant describes the reaction of an object to uniform stress from all directions.	bulk modulus

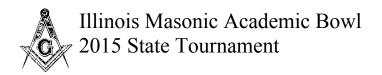
Question #13: Literature – World Literature

10 points per part

	e protagonist of this novel recites the koan "if you meet Buddha, kill him."	
1	Name this novel in which Mizoguchi [mee-zoh-goo-chee] burns down the title structure after becoming obsessed with its beauty.	Temple of the Golden Pavilion [accept Kinkakuji]
2	This author of <i>Temple of the Golden Pavilion</i> founded the Tatenokai [tah-the-noh-ky], and committed seppuku on live TV after an attempted coup.	Mishima Yukio [accept Hiraoka Kimitake]
3	In exchange for stepping on the stomach of a pregnant woman, an American soldier gave Mizoguchi these. In a different novel, Tsezar gave the leftovers of one to Ivan Denisovich [deh-NEE-soh-vich] instead of to Fetyukov [FET-yoo-kawff].	<u>cigarette</u> s

Question #14: Literature – World Literature

Lat	er editions of this essay sometimes include the section	
"Po	st data," which looked at the Tlatelolco	
[t'I	AHT-lay-LOHL-koh] massacre, after which the writer	
resi	gned as ambassador to India.	
	Name this analysis of Mexican identity which	"The Labyrinth of Solitude"
1	describes the title state as "the profoundest fact of the	
	human condition."	
	Within "The Labyrinth of Solitude," this Mexican	Octavio Paz Lozano
2	author analyzed foul language in Spanish in "La	
2	Chingada [cheen-GAH-dah]," part of "The Sons of La	
	Malinche [mah-LEEN-chay]."	
	Octavio Paz's poem "The Sun Stone" has 584 lines,	<u>Aztec</u> s
3	one for each day on the calendar of these native	
	peoples.	



Round # 4 3rd Section Toss-up Questions

Question #15: Science – Chemistry

10 points

This quantity can be made negative by the yo-yo method on	first electron affinity [prompt on
compounds such as gallium arsenide [GAL-ee-um	<u>affinity</u>]
AR-seh-nyde]. Photo-cathodes with negative values of this	
quantity can be used in night vision devices. This value	
tends to be high in elements with an incomplete two-p	
orbital, and the highest value of this quantity is for chlorine.	
This number measures the stability of an anion	
[AAN-"ion"], and this is the conceptual opposite of	
ionization ["ion"-iz-AY-shun] energy. Name this quantity	
that measures the change in energy when a neutral atom	
changes to a negatively charged ion.	

Question #16: Social Studies – Geography

This waterway is spanned by El Ferdan, the world's longest	Suez Canal [accept Qanāt al-
swing bridge, near Ismailia [eez-my-EE-lee-uh]. It crosses	Suways]
through the Bitter Lakes as well as lakes Manzala and	
Timsah. The October War was fought over control of this	
waterway, whose northern end is found in Port Said	
[sy-EED]. Name this waterway that connects the	
Mediterranean Sea to the Red Sea across a namesake	
isthmus in Egypt.	

Round # 4 3rd Section Toss-up Questions

Question #17: Literature – World Literature

10 points

In one work, he advised Hirpinus [hur-PIN-us] against taking stock in the opinion of the masses, and described how truly virtuous men cannot be guilty of an unworthy act. In a text written "to the Pisos," he outlined how on occasion Homer nods off, and that stories should start in the middle, or "in medias res [een MAY-dee-ahss 'RACE']." Name this Roman poet and author of *Ars Poetica* as well as a number of odes.

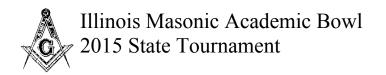
<u>Horace</u> [or Quintus <u>Horatius</u> Flaccus]

Question #18: Fine Arts – Classical/Opera

10 points

This composer's <i>La Valse</i> [vals] is a tone poem attempting	
to evoke Vienna. This composer used the saxophone to	
represent a troubadour in "The Old Castle," part of his	
orchestration of Mussorgsky's [muh-SORG-skee's] Pictures	
at an Exhibition. While studying with Gabriel Fauré	
[faw-ray], this man wrote <i>Pavane</i> [pah-vahn] for a Dead	
<i>Princess</i> , and he also wrote the ballet <i>Daphnis et Chloe</i>	
[dahf-nees ay kloh-ay] and Le Tombeau de Couperin	
[lay tohm-boh day koo-pair-an]. One of his works features a	
snare drum repeating the same rhythm in an ostinato	
[ahss-tih-NAH-toh] while the orchestra trades off two	
melodies. Name this composer of <i>Boléro</i> [boh-LAY-roh].	

Maurice Ravel



Round # 4 3rd Section Toss-up Questions

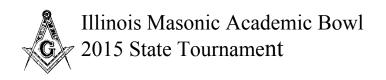
Question #19: Social Studies – U.S. History

10 points

This Supreme Court Justice established the discovery	John <u>Marshall</u>
doctrine when he wrote the majority decision in <i>Johnson v</i> .	
M'Intosh [mih-IN-tosh]. That case clarified ownership of	
Native American land that this justice wrote about earlier in	
Fletcher v. Peck. This person also clarified the regulation of	
navigation in Gibbons v. Ogden, and he established judicial	
review in his decision on <i>Marbury v. Madison</i> . Name this	
longest-serving Supreme Court Chief Justice in American	
history, who died in 1835.	

Question #20: Literature – Mythology

Damned souls in this myth system go eternally hungry at the	<u>Inca</u> ns	
center of the earth. In this mythos, a bridge of hair must be		
traversed to reach the sky. According to their creation myth,		
the elder son of the first woman was slain to grow fruits and		
vegetables, while the second, Vichama [vee-CHAH-mah],		
threw Pachacamac [PAH-chah-KAH-mahk] into the sea.		
Their pantheon was headed by the sun and storm god		
Viracocha [vee-rah-KOH-chah]. Name these natives of		
modern-day Peru.		
-		



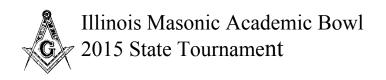
Question #21: Math - Algebra

10 points per part

Thi	s mathematician wrote An Investigation of the Laws of	
The	ought on Which are Founded the Mathematical Theories	
of I	Logic and Probabilities.	
	Name this mathematician who is the namesake of a	George Boole [BOO-ul] [prompt
1	system of mathematics in which variables can only	on <u>Boolean</u>]
	equal zero or one, which can represent true and false.	
	Two laws of Boolean algebra are named for this	Augustus De Morgan [accept De
2	mathematician. One of those laws states that "not" the	Morgan's laws; prompt on
	quantity A and B is equivalent to "not A" or "not B".	Morgan]
	If an expression in Boolean algebra has five	32
	independent input values and is evaluated by a truth	
3	table, how many rows does the truth table need if each	
	row represents a possible overall input into the	
	expression? You do not need to count the header row.	

Question #22: Math – Algebra

Sor	me of these numbers are classified as transcendental.	
1	Identify these numbers whose decimal representations do not repeat or terminate.	irrational numbers [or irrationals; do not prompt on "rational"]
2	Irrational numbers can be classified as either transcendental or of this type. These numbers are the solutions to polynomials whose coefficients are integers.	algebraic numbers
3	Give an expression of the form the quantity A plus the square root of B , end quantity, all divided by C , to express the golden mean. Make sure that your answer is of the form A plus the square root of B , end quantity, all divided by C .	$\frac{1+\sqrt{5}}{2}$ [do not worry about the wording being exact, but the answer does have to be in this form algebraically]



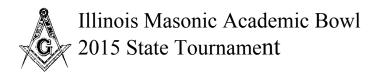
Question #23: Social Studies – U.S. History

10 points per part

	s Supreme Court justice was replaced by Samuel Alito LEE-toe] when she retired.	
1	Name this justice who became the first woman on the Supreme Court when she was appointed by President Reagan.	Sandra Day <u>O'Connor</u>
2	In the <i>Lockyer v. Andrade</i> [ahn-DRAH-day] decision, O'Connor wrote that California's "three strikes" law did not violate this constitutional amendment's ban on cruel and unusual punishments.	8 th Amendment
3	O'Connor wrote the majority decision in <i>Grutter v</i> . <i>Bollinger</i> , one of two simultaneous decisions addressing affirmative action at this university.	University of <u>Michigan</u> [prompt on <u>UM</u> ; do not accept "Michigan State"]

Question #24: Social Studies – U.S. History

Thi	s person was supported by the Mugwumps.	
1	Name this president who lost his re-election campaign in 1888 to Benjamin Harrison, but was elected to a second term in 1892.	Grover <u>Cleveland</u>
2	During Cleveland's second term, this man led a march to Washington, DC to protest unemployment. He would lead a similar march twenty years later.	Jacob <u>Coxey</u>
3	This tariff, also known as the Revenue Act of 1894, passed during Cleveland's second term. It lowered the McKinley Tariff, but not as much as Cleveland wanted it to.	Wilson-Gorman Tariff Act



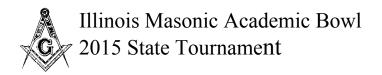
Question #25: Fine Arts – Art History

10 points per part

Thi	s man painted a Montagnard [mohn-tawn-yard] who had	
a sk	tin disease, wearing a headwrap while lying dead in his	
batl	ntub, after he was murdered by Charlotte Corday.	
	Name this artist of <i>The Death of Marat</i> [mah-rah].	Jacques-Louis David [zhahk loo-
1		ee dah-veed]
	Jacques-Louis David painted this French emperor	Napoleon Bonaparte [accept
2	crowning himself in one scene set in Notre Dame	either or Napoleon I]
4	Cathedral. David also portrayed this man "Crossing	
	the Alps."	
	This other artist painted Napoleon I on his Imperial	Jean-Auguste-Dominique Ingres
3	Throne, which shows Napoleon in robes wielding the	[zhahn oh-goost doh-mee-neek
	scepter of Charlemagne and the hand of Justice.	ahn(-gruh)]

Question #26: Fine Arts – Art History

fac	es like African masks, standing around a table with	
gra	pes and other fruit.	1 D 1 H D14 1 E1
1	Name this painting that presaged its artist's creation of Cubism.	Les <u>Demoiselles D'Avignon</u> [lay dem-wah-zel daw-veen-yohn]
2	This man painted <i>Les Demoiselles D'Avignon</i> , and he pioneered cubism along with colleague Georges Braque [zhorzh brahk].	Pablo Ruiz y <u>Picasso</u>
3	This Picasso painting was put on display at the Spanish Pavilion in the Paris World's Fair of 1937. It shows a screaming horse underneath a lightbulb, and it protests a bombing campaign.	<u>Guernica</u> [gair-NEE-kah]



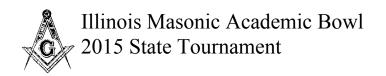
Question #27: Literature – British Literature

10 points per part

	s procedure was undertaken at Staja [STAH-yah] 84F Dr. Brodsky.	
1	Name this technique of forcing a subject to view violent imagery while under the influence of a nausea-inducing	Ludovico [loo-doh-VEE-koh] technique
2	drug. This Nadsat-speaking "humble narrator" undergoes the Ludovico Technique after killing a cat lady at age 15, and leading a rape of two girls set to Beethoven's "Ode to Joy."	Alex DeLarge [accept either]
3	Alex DeLarge is the protagonist of this novel by Anthony Burgess.	A Clockwork Orange

Question #28: Literature – British Literature

	s character has "the power of having rather too much	
her	own way, and a disposition to think a little too well of	
her	self."	
	Name this character who tries to sophisticate Harriet	Emma Woodhouse [accept either]
1	Smith and make her a protege, but Harriet ends up	
	marrying Robert Martin.	
	This author claimed that Emma Woodhouse was "a	Jane <u>Austen</u>
2	character whom no one but me will much like."	
	Name Emma's father, who laments his daughter	Henry Woodhouse [prompt on
3	Isabella's marriage to John Knightley, and in general is	Woodhouse]
	concerned about his health and that of others.	



Round # 4 5th Section Toss-up Questions

Question #29: Social Studies – World History

10 points

An attempted assassination of Khaled Meshal [KAH-leed meh-SHAL] in this country threatened to annul the Wadi Araba treaty. During Black September in 1970, the PLO was expelled from this nation. The United Kingdom was given control of what is now this country and part of Iraq in the Sykes-Picot [sikes pee-koe] Agreement. Following the Arab-Israeli War, this nation occupied the West Bank until Israel recaptured it in the Six-Day War. Ruled for almost fifty years by King Hussein, the father of Abdullah the Second, name this Middle Eastern kingdom with capital Amman.

Hashemite Kingdom of <u>Jordan</u> [accept Al Mamlakah al Urduniyah al Hashimiyah]

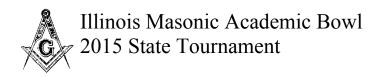
Question #30: Math - Math Concepts

A square matrix has this property if and only if it can be

10 points

expressed as a product of elementary matrices [MAY-trih-sees]. This property means that a square matrix has a rank equal to the number of columns it has, which means that its columns are independent vectors. If Gauss-Jordan reduction is applied to matrices with this property, then they are changed into an identity matrix. These matrices have nonzero determinants, meaning that these matrices can be multiplied by another matrix to give an identity matrix. Name these nonsingular matrices.

<u>invertible</u> matrices [accept<u>nonzero determinant</u> or<u>nonsingular</u> before those clues are mentioned]



Round # 4 5th Section Toss-up Questions

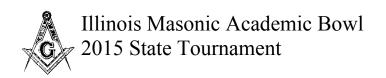
Question #31: Literature – U.S. Literature

10 points

One character in this story uttered a "Parthian volley of	"The Outcasts of Poker Flat"
expletives" following the disappearance of an armed escort,	
which was meant to intimidate a man John Wheeler wanted	
to see hanged. That man had earlier given \$40 back to a man	
who "can't gamble worth a cent," Tom Stimson. A	
snowstorm eventually claims the lives of most of the title	
group, including Mother Shipton and Piney. Name this story	
concerning the ill fate of a group expelled from a town,	
penned by Bret Harte.	

Question #32: Science – Physics

The equation associated with these devices has an exponent in which voltage is divided by thermal voltage. That equation is named for transistor founder William Shockley. Like transistors, these devices have depletion regions that can stop current. These devices can be used as rectifiers to convert AC current to DC current. These devices often are constructed by creating a p-n [pee en] junction from two types of semiconductors. In a DC circuit, these devices are forward-biased or reverse-biased. Name these devices that	diodes [DY-ohdz]
forward-biased or reverse-biased. Name these devices that conduct current better in one direction than the other.	



Round # 4 Extra Section Toss-up Questions

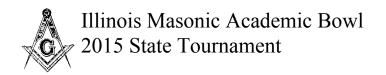
Extra Question #1: Fine Arts – Art History

10 points

In this country, a hypostyle hall is found in the world's	Egypt
largest religious ruin. A funerary complex at Deir el-Bahri	
["DARE" el-BAH-ree] commemorates one female ruler of	
this nation. The statues of Abu Simbel [AH-boo "symbol"]	
were relocated due to the construction of the Aswan High	
Dam. This nation includes a temple at Karnak, and one eye	
is unpainted in a bust made during the Amarna period	
showing Queen Nefertiti [neh-fer-TEE-tee]. One sculpture	
here is missing its nose. Name this nation where the city of	
Giza contains a Great Sphinx.	

Extra Question #2: Literature – U.S. Literature

	. 5 /5 5
This character was originally named "Pansy". Alexandra	Katie Scarlett
Ripley wrote a novel based on her. She bought a sawmill	O'Hara/Hamilton/Kennedy/Butler
right before becoming pregnant with Ella Lorena. She	[prompt on any of those last names]
named her first child Wade Hampton, in honor of the	
general of her first husband, Charles Hamilton, and never	
married Ashley Wilkes. Name this protagonist of <i>Gone with</i>	
the Wind.	



Round # 4 Extra Section Toss-up Questions

Extra Question #3: Science – Physics

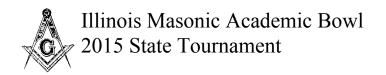
10 points

This phenomenon names a type of fluorescence [flor-ESS-
inss] that occurs quickly and has an emission frequency
equal to absorption frequency. This phenomenon also is
used in several types of spectroscopy [spek-TRAH-skuh-
pee], including one type in which protons are absorbed and
re-emitted in a magnetic field. An AC circuit with a
frequency of one over the square root of the quantity
inductance [in-DUK-tunss] times capacitance [kuh-PASS-
ih-tunss] achieves this phenomenon. This condition exists
when the driving frequency matches an object's natural
vibrating frequency. Name this phenomenon that causes
very large amplitudes.

<u>resonance</u> [accept word forms of <u>resonate</u>]

Extra Question #4: Social Studies – U.S. History

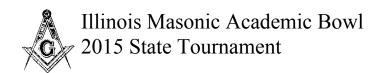
This person's second term as governor of Virginia lasted	James Monroe	•
less than three months because he resigned to become		
Secretary of State, and for a time he served as both		
Secretary of State and Secretary of War. During this		
person's entire presidency, his cabinet included William		
Crawford, John Calhoun, and John Quincy Adams. His term		
included passage of the Missouri Compromise. Despite the		
Panic of 1819, his presidency was known as the Era of		
Good Feelings. Name this president who succeeded James		
Madison.		



Round # 4 Extra Section Toss-up Questions

Extra Question #5: Math – Math Concepts

The theorem named for this number of circles guarantees	<u>seven</u>
three concurrent lines. This is the least number of sides for a	
regular polygon that <i>cannot</i> be constructed with compass	
and straightedge. Three dimensions and this number of	
dimensions are the spaces in which the cross product can be	
well-defined. This number is the most common sum when	
two standard dice are rolled. The reciprocal [reh-SIP-roh-	
kul] of this integer is approximately 0.143. Identify this	
greatest one-digit prime number.	



Round # 4 Extra Section Teamwork Questions

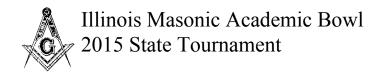
Extra Question #6: Science – Biology

10 points per part

	s process begins with diploid [DIP-loyd] cells and ates haploid [HAP-loyd] cells.	
1	Name this type of cell division that produces spores or gametes.	meiosis [my-OH-siss] [do not accept "mitosis"]
2	This failure of a chromosome pair to go to separate daughter cells during meiosis is responsible for several	nondisjunction
	birth defects.	

Extra Question #7: Science – Biology

The	e down types of these are short and help animals stay rm.	
1	Name these objects that grow on the outsides of birds.	<u>feather</u> s
2	Feathers contain the beta type of this protein, whose alpha type is found in the hair and nails of mammals.	keratin [KAIR-uh-tin]
3	This is the central shaft of the feather that the barbs grow out from. The same name is used for the central vein of a leaf or frond.	rachis [RAA-kuss]



Round # 4 Extra Section Teamwork Questions

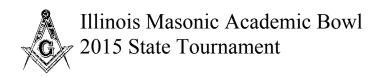
Extra Question #8: Literature - U.S. Literature

10 points per part

	s poem describes the "Mother of Exiles" that lifts a lamp side the golden door."	
1	The title figure of this poem is "not like the brazen giant of Greek fame," but nonetheless stands at "seawashed, sunset gates."	"The New Colossus"
2	This author of "The New Colossus" described the year 1492 as a "two-faced year" in another poem.	Emma <u>Lazarus</u>
3	"The New Colossus" is inscribed on the pedestal supporting this statue designed by Frederic Bartholdi [bar-tol-dee].	Statue of Liberty [or Liberty Enlightening the World]

Extra Question #9: Literature - U.S. Literature

Thi	s poem ends with the lines "Datta. Dayadhvam	
[dy-	-YAD-vahm]. Damyata [dahm-YAH-tah]. Shantih	
Sha	ntih Shantih"	
	Name this poem in which April is described as the	"The Waste Land"
1	"cruellest month".	
	"The Waste Land" was written by this author, who	Thomas Stearns Eliot
2	compared an evening sky to "a patient etherized upon a	
	table" in "The Love Song of J. Alfred Prufrock."	
	In "The Waste Land," the line "Hieronimo	The Spanish Tragedy
3	[heer-AH-nih-moh] is mad again" is a reference to this	
	play by Thomas Kyd.	



Round # 5 1st Section Toss-up Questions

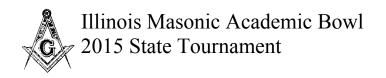
Question #1: Fine Arts – Composers of Modern Era

10 points

In one of this composer's operas, the chorus chants the	Philip <u>Glass</u>
numbers "1-2-3-4, 1-2-3-4-5-6, 1-2-3-4-5-6-7-8" in its	
"Knee Play #5." This composer worked with Godfrey	
Reggio on a film that shows moving images of the world	
changing with no dialogue, Koyaanisqatsi	
[koy-AH-niss-KAHT-see]. He composed a symphony based	
on the David Bowie album <i>Low</i> . This composer's Portrait	
trilogy includes an opera about the Egyptian pharaoh who	
worshipped the sun, and that trilogy's operas <i>Akhenaten</i>	
[ak-ih-NAH-tun] and Satyagraha [saht-yah-GRAH-hah]	
precede another one about a scientist. Name this minimalist	
composer of the opera Einstein on the Beach.	

Question #2: Literature – World Literature

The protagonist of this novel has a dream in which the	Death in Venice [accept Der Tod
"stranger-god" is worshipped in a primitive ritual by torch-	<u>in Venedig</u>]
bearers. The protagonist of this tale uses his misplaced	
luggage as an excuse to return to the Hotel des Bains	
[oh-tel dez-ben]. The central character of this novel sees a	
wrestling match between Jasiu [YAHSS-yoo] and another	
Polish boy shortly before the title event. Cholera	
[KAH-leh-rah] strikes down German author Gustav von	
Aschenbach [AH-shun-bahk] in what novel by Thomas	
Mann set in an Italian city?	



Round # 5 1st Section Toss-up Questions

Question #3: Science – Health

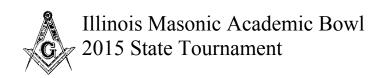
10 points

A high amount of this chemical in the body is associated with a high amount of cortisol [KOR-tih-sawl], the primary symptom of Cushing syndrome. A test to measure tolerance to this chemical involves drinking a fluid and having repeated blood draws; that test is given to pregnant women. This chemical can be created in the liver and kidneys, and molecules of this substance combine to make a substance that is stored in muscles. This chemical activates beta cells in the pancreas and becomes useful when combined with insulin. Name this sugar that is found in high amounts in diabetic patients.

<u>glucose</u> [prompt on <u>sugar</u> or <u>glycogen</u>]

Question #4: Social Studies – U.S. History

This person was the subject of the documentary An	Ralph <u>Nader</u>	
Unreasonable Man, and he justified his political actions in		
the book <i>Crashing the Party</i> . He is the founder of the Public		
Citizen organization, and his book Action for a Change led		
to the creation of the Public Interest Research Group. His		
running mate was Winona LaDuke when he ran for		
president as the Green Party candidate; that campaign by		
this man was blamed by some Democrats for influencing the		
2000 Election. Name this activist who promoted safety		
features in cars in his book <i>Unsafe at Any Speed</i> .		



Round # 5 1st Section Toss-up Questions

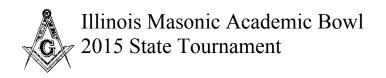
Question #5: Literature – Mythology

10 points

This creature was placated with honey cake by the Sibyl of	Cerberus [accept Kerberos]
Cumae in order to help Aeneas. In the <i>Theogony</i>	
[thee-AH-guh-nee], this figure was said to have fifty	
heads, while Horace claimed it had one hundred. This	
serpent-tailed creature was the target of Hercules' twelfth	
labor. Orpheus [OR-fee-uss] lulled it to sleep in his bid to	
rescue Eurydice [yur-IH-dih-see]. Name this three-headed	
dog that guarded the entrance to Hades [HAY-deez].	

Question #6: Science – Physics

Because of its description of what happens to peak	displacement [accept
wavelengths, Wien's [VEEN'z] Law is given this word in	displacement current after
its name. A field named for this concept is calculated by	"permittivity"]
multiplying permittivity [per-mih-TIV-ih-tee] times electric	
field plus polarization density. The rate of change of that	
field was accounted for by Maxwell's adjustment to	
Ampère's law, which is named for this type of current.	
Force is multiplied by this quantity to find work. This	
vector quantity is divided by time to find average velocity.	
Name this quantity equal to an object's change in position.	



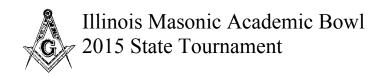
Question #7: Social Studies – World History

10 points per part

	s event was perpetrated in response to the rise in power Admiral Gaspard de Coligny [gas-par day koh-leen-yee].	
1	Name this 1572 event in which a number of Huguenots [HYOO-guh-nawts] were slaughtered on the orders of the French queen.	St. Bartholomew's Day Massacre
2	Name that queen who ordered the St. Bartholomew's Day Massacre. She was the wife of Henry II of France.	<u>Catherine</u> de <u>Medici</u> [prompt on <u>Catherine</u> , <u>Medici</u> , or <u>de Medici</u>]
3	The massacre was part of the French Wars of Religion, which came to an end when this king converted to Catholicism.	Henry IV of Navarre

Question #8: Social Studies – World History

	e closure of Bohemian chapels, a violation of the Letter	
of	Majesty of Rudolf II, culminated in this event.	
	Name this incident in which William Slavata, Jaroslav	Second Defenestration of Prague
1	Martinic [YAR-oh-slahv mar-TEE-nich], and Philip	[prompt on <u>Defenestration</u>]
1	Fabricius [fuhb-REE-see-uss] landed in a soft pile of	!
	manure.	
	The Second Defenestration of Prague, and the	Thirty Years' War
2	subsequent Bohemian revolt, helped kickstart this	
4	conflict, that ended with the 1648 Peace of Westphalia	
	["west"-FAY-lee-uh].	
	This Catholic who wanted to wipe out Protestantism	Ferdinand II [or Ferdinand of
3	was the King of Bohemia during the Defenestration of	Styria, prompt on Ferdinand
	Prague. He would soon become Holy Roman Emperor.	



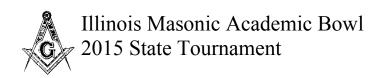
Question #9: Science – Biology

10 points per part

Thi	s collection of bones includes the hip bones.	
1	Name this structure between the spine and the legs.	pelvis [or pelvic girdle]
2	This triangular bone at the base of the spine is part of the pelvis. This bone is not the tailbone.	sacrum
3	This part of the hip bone is under the ilium [ILL-ee-um] and behind the pubis [PYOO-biss].	ischium [ISS-kee-um]

Question #10: Science – Biology

The	ese cells make antibodies.	
1	Name these lymphocytes [LIM-foh-"sites"] that are not T cells or natural killer cells.	B cells [or B lymphocyte s]
2	B cells receive signals from these T cells that have the glycoprotein [GLY-koh-"protein"] CD4.	helper cells [accept <u>T helper</u> cells or helper <u>T</u> cells]
3	B cells can be infected by this virus responsible for mononucleosis [MAH-noh-NOO-klee-OH-siss].	Epstein-Barr virus [or EBV, prompt on herpesvirus]



Question #11: Fine Arts – Art History

10 points per part

	ere are four versions of this painting that shows two men the background on a bridge.	
1	Name this Expressionist painting depicting a man gripping his face in agony, underneath a bright orange sky.	The <u>Scream</u> [or <u>Skrik</u> , or Der <u>Schrei der Natur</u>]
2	This Norwegian painted <i>The Scream</i> , as well as <i>Vampire</i> and <i>The Frieze of Life</i> .	Edvard <u>Munch</u>
3	Munch painted a nude woman in a work given this title. More traditional works bearing this title show the Virgin Mary, one of which by Raphael is titled "of the fields."	Madonna

Question #12: Fine Arts – Art History

	s man painted Cecilia Gallerani holding a weasel in his rk <i>Lady with an Ermine</i> .	
1	Name this artist who painted Mary, Jesus, John the Baptist, and an angel in <i>Madonna of the Rocks</i> .	Leonardo di ser Piero da Vinci [accept either underlined portion]
2	Leonardo created this sketch showing a nude man with his arms and legs held at different positions, inscribed within a circle and a square.	<u>Vitruvian Man</u>
3	This Leonardo painting shows Mrs. Gherardini, a cloth merchant's wife. She is barely smiling, and sits in front of a blurred rocky landscape.	<u>Mona Lisa</u> [or La <u>Gioconda</u> ; or La <u>Joconde</u>]

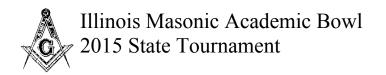
Question #13: Literature - U.S. Literature

10 points per part

	fell in love with the niece of Medora Manson while ng to dissuade her from divorcing a Polish count.	
1	Name this lawyer from New York who, after his wife's death, sent his son up to meet his old flame during a trip	Newland Archer [accept either]
2	to Paris. Newland Archer falls in love with Ellen Olenska in this novel.	The Age of Innocence
3	This author of <i>The Age of Innocence</i> wrote about a bobsledding suicide attempt in <i>Ethan Frome</i> .	Edith Newbold Wharton Jones [accept either underlined name]

Question #14: Literature – U.S. Literature

	e protagonist of this novel thought the word "mañana" ahn-YAH-nah] "probably meant heaven."	
1	Name this "roman à clef [klay]" in which Carlo Marx and the morphine addict Old Bull Lee represent contemporaries of the author, while Sal Paradise represents the author himself.	On the Road
2	This Beat author wrote <i>On the Road</i> .	"Jack" Jean-Louis Lebris de Kerouac
3	At the conclusion of <i>On the Road</i> , Sal reflects on the life of this character, who had abandoned him during a	Dean Moriarty [accept either]



Round # 5 3rd Section Toss-up Questions

Question #15: Miscellaneous – Journalism

10 points

Former reporter Bernard Goldberg argued in *Bias* that this network had a liberal bias. This network drew controversy regarding its handling of an interview with Jeffrey Wigand regarding the major tobacco companies. Walter Cronkite once anchored its evening news program, with Dan Rather later assuming that role. Since 1968, this network has broadcast the newsmagazine *60 Minutes*. Name this major television network whose logo is an eye.

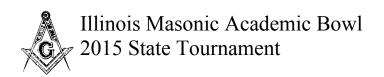
<u>CBS</u> Broadcasting, Inc. [accept <u>Columbia Broadcasting System</u>]

Question #16: Social Studies – Religion

10 points

One school of thought believes that only people with this status can see Kwan-Yin and Amito-fo. Another school holds that only those who achieve the ideal of "arhat" are able to reach this status. The end of the cycle of samsara, reincarnation, ceases once this status is attained. Following the Eightfold Path leads to this status. Give this Buddhist term for the end of suffering.

nirvana [accept nibbana, prompt
on enlightenment]



Round # 5 3rd Section Toss-up Questions

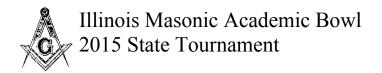
Question #17: Math – Math Concepts

10 points

This shape is its own evolute without changing size. An	<u>cycloid</u>
object sliding along this shape will take the same amount of	
time to reach the bottom of the curve no matter how high it	
begins, which makes this shape the solution to the	
tautochrone [TAW-toh-"crone"] problem. This curve is also	
the path that an object should follow to get as quickly as	
possible from one point to a lower point, so it solves the	
brachistochrone [bruh-KISS-toh-"crone"] problem. The area	
under one arch of this shape is three times the area of its	
generating circle. Name this shape generated by tracing a	
point on the rim of a rolling circle.	

Question #18: Language Arts – Grammar/Usage

In Romance languages, this grammatical tense is divided,	past tense
according to the degree of completion, into imperfect and	
preterite forms. In French, the compound form of it utilizes	
an auxiliary verb. Its hesternal form is used for specific	
reference to yesterday. Name this tense which is commonly	
formed in English by adding -d or -ed to the end of a verb.	



Round # 5 3rd Section Toss-up Questions

Question #19: Social Studies – U.S. History

10 points

A threat made by this person was heard by Alexander Dallas, who told Pennsylvania Governor Thomas Mifflin. The result was a brief letter written by Senator Rufus King and Supreme Court Chief Justice John Jay that lowered public opinion of this person. This person spent much of his time in Charleston, South Carolina, and his actions were viewed as a threat to American neutrality because he raised money to capture British ships. Name this person who was eventually given asylum by the United State after President Washington made a request to France to recall him as ambassador.

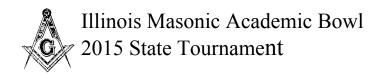
Citizen Edmond-Charles Genet [zhuh-nay]

Question #20: Science – Chemistry

10 points

This compound reacts with proteins to form xanthoproteic [zaan-thoh-PROH-tee-ik] acid, and this compound combines with water and phosphorite in the Odda process. Alchemists referred to this compound as aqua fortis, and this compound makes up twenty-five percent of aqua regia [REE-jee-uh]. The white fuming version of this compound is combined with sulfuric acid to make a heart medicine that can also be used to make dynamite. The output of the Haber [HAH-bur] process is used to make this compound in the Ostwald process. Name this strong acid with chemical formula HNO₃ [H N O "three"].

<u>nitric</u> [NY-trik] acid [accept <u>HNO</u>₃ before the end]



Question #21: Math - Algebra

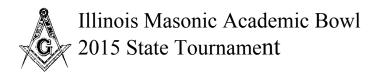
10 points per part

	us four, end quantity, divided by the quantity x squared	
min	us sixteen.	
1	There are two lines that this function approaches close to at infinity. What is the name given to such lines?	asymptotes ["ASS-imp-totes"]
2	Give an equation for the horizontal asymptote.	$\underline{\mathbf{Y}} = \underline{0}$ [prompt on $\underline{\mathbf{x}}$ -axis]
3	Find the <i>y</i> -coordinate of the hole of this graph.	1/8 [or 0.125, accept additional information saying that x=4 or $(4,1/8)$ or $(4,0.125)$]

Question #22: Math – Algebra

The theorem used for these expressions uses combinations

	alculate the coefficients when one of these expressions is ed to a positive integer power.	
	Give this term for a polynomial with two terms.	binomial [by-NOH-mee-ul]
1		expression
	Find the coefficient of the term with x cubed times y	8
2	for the expansion of the quantity x plus two y, end quantity, raised to the fourth power.	
	Find the sum of all the coefficients for the expansion of	<u>81</u>
3	quantity, x plus two y, end quantity, rasied to the fourth	
	power.	



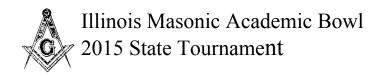
Question #23: Literature – Mythology

10 points per part

	son Okuni-Nushi [oh-koo-nee noo-shee] disarmed him he "grass-cutting sword," Kusanagi [koo-sah-nah-gee].	
	Name this Shinto god of storms and snakes, who once	Susanoo [soo-sah-noh-oh]-no-
1	was stripped of his beard and fingernails.	Mikoto [accept <u>Susanowa</u>]
	Susanoo drove his sister Amaterasu	<u>horse</u>
2	[ah-mah-tair-ah-soo] into a cave by flaying one of these animals and throwing it into one of her houses.	
	Susanowa procured Kusanagi following his battle	eight heads
3	against Koshi, a dragon with this many heads.	<u>organ</u> neuds

Question #24: Literature – Mythology

	was conceived from a piece of cake given to Dasaratha h-sah-rah-thah].	
	Name this god who, after being captured, had his tail set	Hanuman [HAH-noo-mahn]
1	on fire. This god then shapeshifted, and used that tail to	
	alight Lankapuri [lahn-kah-poo-ree].	
	Despite his ability to shapeshift at will, Hanuman is	Monkey
2	depicted by worshippers in the form of this animal. Sun	
	Wu-kong was given the title of "King of" these animals.	
	Hanuman's trip to Lankapuri was a reconnaissance	Rama
3	mission on behalf of this husband of Sita, who later	
	fought the demon king Ravana.	



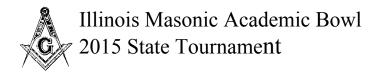
Question #25: Science – Physics

10 points per part

	ne vibrations have points called nodes and points of ximum vibration called anti-nodes.	
1	String vibrations are sometimes these types of waves, in which the antinode does not travel along the length of the string.	standing wave [or stationary wave]
2	The speed of the wave in the string varies directly with the square root of this force, which is a measure of how much the ends of the string are being pulled.	tension
3	This scientist is the namesake of plates that have node patterns that can be located by sprinkling sand over their surface.	Ernst Chladni [KLAHD-nee]

Question #26: Science – Physics

	is phenomenon is caused by relative motion, and culated with a Lorentz transformation in special	
rela	ativity, and it is caused by gravitational fields in general	
rela	ativity.	
1	Name this effect that is often paired with length contraction.	time dilation [accept word forms]
2	One of the consequences of time dilation is that two observers may not agree on this concept, the observation that two events occurred at the same time.	simultaneity [accept word forms]
3	The Rossi-Hall experiment provided supporting evidence for time dilation by measuring the amounts of these particles approaching Earth at different altitudes.	muons [MYOO-ahnz] [accept mu leptons; prompt on leptons]



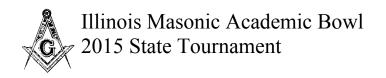
Question #27: Social Studies - U.S. Government

10 points per part

Thi	s publication was a study done by the Department of	
Def	Pense into how the United States was involved in	
Vie	tnam politically and militarily.	
	Give the two-word term for the collection of	Pentagon Papers
1	documents that Daniel Ellsberg leaked to the New York	
1	Times. Alaska Senator Mike Gravel [grah-VEL] read a	
	large section of it into the Congressional Record.	
	In New York Times v. United States, the Supreme Court	<u>prior restraint</u>
2	ruled that the government did not make a compelling	
	case for this form of censorship, in which speech is	
	forbidden before it is actually expressed.	
	Senator Gravel read the Papers into the record after this	George Stanley McGovern
3	Senator reneged on his promise to do so because he	
	was planning to run for President of the United States.	

Question #28: Social Studies - U.S. Government

	s agency relies on "safe harbor" provisions regarding th exposure to certain content.	
1	This bureau within the federal government mandates the widespread installation of V-chips in certain products, which can block certain programs from being shown.	Federal Communications Commission [accept FCC]
2	In <i>Red Lion v. FCC</i> , the Supreme Court upheld this FCC policy that required broadcasters to provide balanced coverage of issues of public importance. The "Equal Time" doctrine applied this policy to political candidates.	Fairness Doctrine
3	The FCC also came out on top in a lawsuit filed by the Pacifica foundation after the broadcaster was fined for airing a bit about foul language by this late comedian.	George <u>Carlin</u>



Round # 5 5th Section Toss-up Questions

Question #29: Science – Biology

10 points

Adding one oxygen atom to this molecule in the right place creates norepinephrine [NOR-ep-in-EF-rin], and both this molecule and norepinephrine are created from tyrosine [TEER-oh-seen]. Its effects were studied by Nobel Prize winner Arvid Carlsson. Cells that produce this chemical are high in neuromelanin [nur-oh-MEL-uh-nin], and many are located in the substantia nigra [sub-STAN-shee-uh NY-gruh]. Drugs that are antagonists of this chemical include Risperdal, which is an anti-psychotic, while its level is increased by Ritalin. A decrease in the levels of this chemical causes Parkinson's disease. Name this chemical that, like serotonin [sair-oh-TOH-nin], is a neurotransmitter.

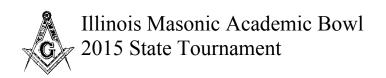
dopamine ["DOPE"-uh-meen]

Question #30: Social Studies – World History

10 points

This founder of the *Defenseur de la Constitution* was attacked by opposing press as a "monkey of Mirabeau [meer-ah-boe]." The group he led sat in the high back benches at the Tuileries [TIL-uh-rees] Palace during the National Convention. This head of the Cult of the Supreme Being earned the nickname "the incorruptible" as a member of the Committee of Public Safety. He shattered his jaw in a suicide attempt the day before he was guillotined. Name this leader during the Reign of Terror in France.

Maximilien François Marie Isidore de **Robespierre**



Round # 5 5th Section Toss-up Questions

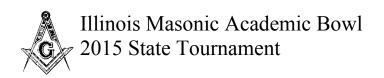
Question #31: Literature – U.S. Literature

10 points

Alice B. Toklas offered to dramatize this author's story of	Henry <u>James</u>
Nanda Brookenham, <i>The Awkward Age</i> . He inverted the	
plot of "The Necklace" for his story "Paste." One of his	
characters came down with malaria after a late-night	
rendezvous at the Colosseum with Giovanelli. Gilbert	
Osmond is reunited with Isabel Archer at the end of his	
novel <i>The Portrait of a Lady</i> . Name this author of <i>The</i>	
Ambassadors and Daisy Miller.	

Question #32: Math – Math Concepts

	- -
One system in this field is called Rijndael [REEN-del]	cryptography [or encryption or
because it was developed by Joan Daemen and Vincent	<u>cryptanalysis</u> or <u>codebreak</u> ing]
Rijmen [RAY-min]. That system combines linear mix	
transforms, non-linear transforms, and key addition	
Transforms. A link between this field and number theory	
was demonstrated by the RSA factoring challenge, which	
involved factoring large numbers with two prime factors to	
demonstrate the strength of public-key systems. Name this	
field which uses ciphers to encode messages so that they	
Transforms. A link between this field and number theory was demonstrated by the RSA factoring challenge, which involved factoring large numbers with two prime factors to demonstrate the strength of public-key systems. Name this	



Round # 5 Extra Section Toss-up Questions

Extra Question #1: Science - Chemistry

10 points

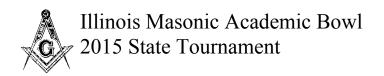
This scientist's simplistic theory of metal-electrolyte	Hermann von Helmholtz	
interfaces explains his namesake double layer. His study of		
fluid dynamics produced his namesake three theorems, and		
an explanation of the instability between two fluids is		
named for Kelvin and this person. One quantity named for		
this person is also called the Massieu [mass-yoo] potential.		
A quantity named for this person that is useful at constant		
temperature equals internal energy minus the product of		
temperature and entropy. Name this person who, like		
Gibbs, names a type of free energy.		

Extra Question #2: Literature - British Literature

10 points

This veteran of the Battle of Maiwand had a wife who
received the contents of a chaplet from the Agra treasure
following the capture of Jonathan Small. Tricked into seeing
a nonexistent patient at the Englischer Hof ["English"-ur
hawff], he later found a letter at Reichenbach [RY-kin-bak]
Falls penned by his companion, who had fought with
Professor James Moriarty. Name this prominent narrator
and companion to Sherlock Holmes.

Dr. <u>John</u> H. <u>Watson</u> [accept either underlined name]



Round # 5 Extra Section Toss-up Questions

Extra Question #3: Social Studies – World History

10 points

The site of this battle was chosen by a retreating army looking to link up with Mithridates [mith-rih-DA-tees] of Pergamum. The losing army at this battle had enlisted officers under the command of Aulus Gabinius, and had abandoned the Macedonian phalanx formation. After losing here, Ptolemy XIII fled, but drowned when his boat capsized. Name this 47 BCE battle that saw Cleopatra secure the Egyptian throne, named for a prominent river.

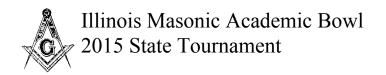
Battle of the Nile

Extra Question #4: Math – Math Concepts

10 points

This value equals the ratio of the lengths of the side of an equilateral triangle to the diameter of an inscribed circle. This value gives the ratio of the distance between parallel sides of a regular hexagon to the length of a side. A line with a slope equal to this positive value makes a sixty degree angle with the *x*-axis. This value also gives the ratio between the length of a space diagonal across a cube and the length of a side. This value also equals the tangent of pi over three radians, or the tangent of sixty degrees. Name this irrational value equal to about 1.73.

power or 3 to the .5 power or radical 3, do not accept "3"]

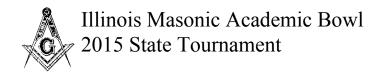


Round # 5 Extra Section Toss-up Questions

Extra Question #5: Fine Arts – Classical/Opera

10 points

This composer was inspired by the poet Lamartine to compose his *Les Preludes* [lay pray-lood]. This composer of *Mazeppa* invented the symphonic poem. His *Totentanz* [TOH-tin-tahnts] is based on the "Dies Irae" chant. This composer's teacher Carl Czerny [CHAIR-nee] is the dedicatee of the *Transcendental Études* [AY-toodz], and he also composed the *Mephisto Waltzes*. This composer names a "mania" that swept concert halls during the height of his popularity as a pianist. The "Rakoczi [rah-KOH-chee] March" is a subtitle for one of his 19 works for piano based on gypsy and folk music. Name this composer of the *Hungarian Rhapsodies*.



Round # 5 Extra Section Teamwork Questions

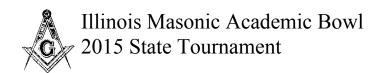
Extra Question #6: Literature – World Literature

10 points per part

	his tale, Urshanabi [oor-shah-NAH-bee] lost his role as a yman after assisting the title character.	
1	Name this epic, in which the son of Lugulbanda [LOO-gul-BAN-dah] and Ninsun sought out a plant that will make him youthful, but it was stolen by a serpent.	The Epic of Gilgamesh
2	In <i>The Epic of Gilgamesh</i> , this character was raised by animals. Lured to civilization by Shamhat, he became the longtime companion of Gilgamesh.	<u>Enkidu</u>
3	In seeking out the plant, Gilgamesh sought the advice of this man and his wife, who had survived the Deluge with the help of Ea [AY-uh].	<u>Utnapishtim</u> [OOT-nah-PISH-teem]

Extra Question #7: Literature – World Literature

	e title group in this story is also referred to as the "Stars Destiny."	
1	Upon their release from beneath a tortoise, the group is divided into "Heavenly Spirits" and "Earthly Fiends" and eventually accepts amnesty from the emperor.	Outlaws of the Marsh [accept Water Margin, All Men Are Brothers, Shui Hu Zhuan or Suikoden]
2	Outlaws of the Marsh is primarily set in this modern- day country, where it is considered one of the Four Great Classical Novels, alongside Romance of the Three Kingdoms, Journey to the West, and Dream of the Red Chamber.	People's Republic of <u>China</u>
3	Gao Qiu [choo], the main antagonist of <i>Outlaws of the Marsh</i> , was renowned for his skill at this sport. In <i>The Dumb Waiter</i> , Ben and Gus argue over whether a certain match in this sport took place in either Birmingham or Tottenham.	soccer [accept association football]



Round # 5 Extra Section Teamwork Questions

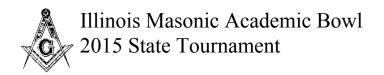
Extra Question #8: Science - Chemistry

10 points per part

	bital subshells are determined by the azimuthal z-ih-MOO-thul] quantum number.	
	The simplest orbital is this one, with spherical	<u>s</u> orbital
1	symmetry, corresponding to an azimuthal quantum number of zero.	
	The last two quantum numbers are represented by this	<u>m</u>
2	letter. One of them is represented by this letter sub l,	
	while the other one is represented by this letter sub s.	
	This rule named for a German scientist is used to	Madelung energy ordering rule
3	determine which orbitals are filled first. It often	
	involves adding the first two quantum numbers and	
	drawing diagonal lines.	

Extra Question #9: Science - Chemistry

	s quantity equals internal energy plus the quantity ssure times volume.	
1	Name this thermodynamic quantity often represented by an <i>H</i> .	<u>enthalpy</u>
2	This law states that the enthalpy change of a reaction does not depend on which steps are taken.	Hess' law of constant heat summation
3	These two scientists name a cycle that applies Hess' law to calculate the lattice enthalpy of ionic solids.	Max Born and Fritz Haber [either order]



Round # 6 1st Section Toss-up Questions

Question #1: Literature – U.S. Literature

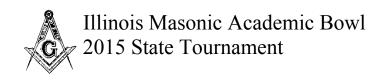
10 points

This character was owed twelve dollars by the narrator of the story in which he appears, but he did not touch the thirty-two dollars left for him. After being found dead, he was described as sleeping "with kings and councillors." A change in administration forced him out of the Dead Letter Office, after which he matriculated to a copying establishment where he worked with Turkey and Nippers.

Name this scrivener and title character of a Herman Melville short story who "would prefer not to."

Question #2: Science – Biology

The lack of this substance in one setting is known as the	peptidoglycan	
chlamydial [kluh-MID-ee-ul] anomaly. This substance		
contains beta one four glycosidic [gly-koh-SID-ik] bonds		
that connect two types of sugars. The synthesis of this		
polymer is disrupted by cephalosporins		
[SEF-uh-loh-SPOR-inz] or by penicillins. This substance is		
found in firmicutes [FIR-mih-"cute"s] and actinobacteria		
[ak-TIN-oh-"bacteria"]. Name this polymer found in some		
cell walls that is detected using crystal violet dye, a		
procedure called the Gram stain.		



Round # 6 1st Section Toss-up Questions

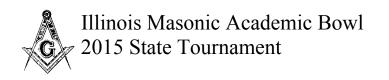
Question #3: Social Studies – World History

10 points

This battle, where fog delayed the start of Operation	Battle of Verdun
Judgment, saw the capture and re-capture of forts at Fleury	
and Douaument [doo-au-mon]. Planning to bleed his	
opponent white, instead Erich von Falkenhayn	
[FAHL-ken-hine] was replaced by Paul von Hindenburg	
during this encounter. Occurring simultaneously with the	
Battle of the Somme, during this battle Robert Nivelle	
inspired his troops with the daily order "they shall not pass."	
Name this single longest battle of World War One.	

Question #4: Miscellaneous – Sports

During the season in which Stan Van Gundy was relieved of	Miami Heat [accept either]
coaching this team, they beat Dallas 4-2 to win the 2006	
NBA Finals. The 2013 season saw this team win a record 27	
consecutive games. It has recently been coached by Pat	
Riley and Erik Spoelstra [SPOHL-struh]. Name this NBA	
team that won two recent titles in four consecutive Finals	
appearances with stars Chris Bosh, Dwyane [duh-WAYN]	
Wade, and the now departed LeBron James.	



Round # 6 1st Section Toss-up Questions

Question #5: Literature – British Literature

10 points

One victim in this play is gagged with gingerbread and	The Alchemist
thrown into a water closet during a ceremony preparing him	
to meet the "Queen of Fairy." In this play, one character	
disguises himself as a Spanish nobleman, but reveals his	
true identity to Dame Pliant. Upon Lovewit's return, the	
scheming of Doll, Subtle, and Captain Face is exposed.	
Name this play by Ben Jonson in which Subtle pretends to	
be able to turn objects to gold.	

Question #6: Math – Math Concepts

10 points

I	One of these constructs is based on the formula <i>A</i> squared	
I	equals the opposite of <i>N</i> minus <i>S</i> and is named for Anderson	
I	and Darling. That example is based on the Kolmogorov-	
I	Smirnov [kole-moh-GOE-rof SMEER-nof] example, which	
I	in turn is the rank type of this construct and measures	
I	goodness-of-fit. Another example of this construct compares	
I	measurements to a chi [KY]-squared distribution, while	
I	another compares to a Student's <i>t</i> -distribution. Name this	
I	measurement of the accuracy of a null hypothesis, used to	
I	determine whether or not a result is statistically significant.	
ı		

statistical null hypothesis rank **test**ing [prompt on **null hypothesis** or **statistic**]

Question #7: Social Studies – Geography

10 points per part

Lik	oma Island is found within this Rift Valley lake.	
	Major ports on this lake include Monkey Bay and	Lake Nyasa [nee-YAH-say] [accept
1	Mangochi [man-GOH-chee]. Its western border is	Lake Malawi [mah-LAU-wee]]
1	defined by the Nyika [ny-EE-kah] Plateau and the	
	Viphya [VEEP-yah] Mountains.	
	The Shire [shi-ray] River, which flows out of Lake	Zambezi River
2	Nyasa, which is also known as Lake Malawi, is a	
4	tributary of this "great river." It flows from the Central	
	African Plateau to the Indian Ocean.	
	The northern end of Lake Nyasa defines part of the	Tanzania
3	southwest border of this country, which is bordered on	
	the south by Mozambique.	

Question #8: Social Studies – Geography

It is	s surrounded by its namesake canton, as well as	
Ob	walden [ohb-VAL-den], Niderwalden	
[NI	EE-dair-val-den], Uri, and Schwyz [shveez].	
	Name this body of water in Switzerland. The Rutli	Lake Lucerne [accept, but do not
1	Meadow lies along its shore.	otherwise reveal, Lake of the Four
		Forested Cantons]
	The cantons surrounding Lake Lucerne are collectively	<u>forest</u> cantons
2	known as these cantons, also called the Waldstaaten	
	[VALD-shtah-tin].	
	Popular sights around Lake Lucerne include Mounts	Swiss Alps
3	Pilatus and Rigi, part of this mountain chain.	

Illinois Masonic Academic Bowl 2015 State Tournament

Round # 6 2nd Section Teamwork Questions

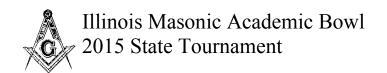
Question #9: Science – Physics

10 points per part

Ler	ses are used to create images by bending light.	
	One type of lens is classified as convex based on its	converging lens [accept word
1	shape. What alternative name is used for a convex lens	forms; prompt on positive]
	based on the impact it has on light rays?	
	This common type of problem with lenses is caused by	spherical aberration [prompt on
2	light rays near the center of the lens converging to a	aberration]
	different point than light rays away from the center.	
	This unit equal to an inverse meter is used to measure	<u>diopter</u> s [DY-ahp-tur(s)]
3	the strength of a lens.	

Question #10: Science – Physics

		re penne per part
	culations are sometimes simplified by assuming that an ect exists entirely at this point.	
1	Name this point which, for objects of uniform density, is the same as the centroid.	center of mass [accept center of gravity; prompt on CM or CG]
2	This value is divided by mass to find the center of mass. This value equals mass times position added up for every point of an object.	first moment
3	If the moment of inertia about an axis through the center of mass of an object is known, this formula can be used to find the moment of inertia around a different rotation axis with a namesake property relative to the original axis.	parallel axis theorem [or Huygens-Steiner theorem]



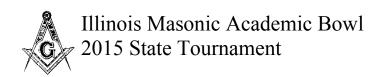
Question #11: Literature – World Literature

10 points per part

	s playwright won a contest in Aristophanes' -iss-TAH-fuh-neez'] The Frogs.	
1	Name this Greek tragedian credited with introducing a second actor to the stage to better depict conflict.	Aeschylus [ESS-kuh-luss]
2	Aeschylus authored this trilogy, in which the children of Agamemnon [aa-guh-MEM-nahn] avenge his death at the hands of Clytemnestra [kly-tim-NESS-truh] and Aegisthus [uh-JISS-thus], and are then pursued by the Furies.	Oresteia [as a combined answer, accept Agamemnon, The Libation Bearers (or Choephoroi), and The Eumenides]
3	In Seven Against Thebes, this character was struck by Zeus with a bolt of lightning for comparing it to the midday sun.	Capaneus [kuh-PAA-nee-uss]

Question #12: Literature – World Literature

	Fore departing Ossenburger Hall, Holden Caulfield read novel.	
1	Name this autobiographical novel set on a coffee plantation that took its title from a Latin quote	Out of Africa
1	describing "always something new."	
	This author of "Seven Gothic Tales" resumed her	Isak Dinesen [or Karen von
2	writing career after returning to Denmark following the	Blixen-Finecke]
	experiences she wrote about in <i>Out of Africa</i> .	
	Most of the plot of <i>Out of Africa</i> is set in this former	Republic of Kenya
3	British colony. In the novel, Dinesen described her	
3	interactions with the Kikuyu [kih-KOO-yoo] and Masai	
	[MAH-sy] locals.	



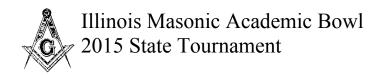
Question #13: Math – Probability

10 points per part

	ne classic probability problems are based on a scenario which balls are pulled out of this type of container.	
1	Name this type of container sometimes used for holding ashes.	<u>urn</u> s
2	If there are five white balls and five black balls in an urn, and two of them are selected randomly without replacement, what is the probability of selecting a white ball and then a black ball?	5/18 [or 0.27 repeating]
3	If there are five white balls and five black balls in an urn, and two of them are selected randomly with replacement, what is the probability of selecting a white ball and then a black ball?	<u>1/4</u> [or 0 <u>.25</u>]

Question #14: Math – Probability

is ty	s concept is very similar to arithmetic mean, though it vpically based on theoretical probabilities rather than erimental results.	
1	Name this concept calculated by adding the product of each result with its predicted probability.	expected value [or expectation or first moment; accept EV]
2	A person places a bet that costs one dollar. There is a ten percent chance that the person will get the dollar back and an additional fifty dollars, and there is a ninety percent chance that the person will lose the dollar. What is the expected value of one such bet?	
3	If you roll several dice, what is the expected value of the arithmetic mean of the dice?	3.5 [or 3½ or 7/2]



Round # 6 3rd Section Toss-up Questions

Question #15: Social Studies – U.S. History

10 points

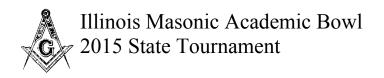
This person was the mother of the girl who became Susanna	Anne Hutchinson [or Anne
Cole after this woman and many of her children were killed	Marbury]
during Kieft's War by Siwanoy Native Americans. This	
person supported her brother-in-law John Wheelwright in a	
controversy over whether God's covenant was due to works	
or grace. Though she was supported by Governor Henry	
Vane, this woman was banned from Massachusetts during	
the Antinomian ["anti"-NOH-mee-un] Controversy. Name	
this woman who, following the encouragement of Roger	
Williams, moved to Rhode Island.	

Question #16: Science – Astronomy

10 points

The sphere named for this person, also known as the Hill sphere, is the volume in which a given object has the most gravitational pull. In the case of a binary system, the shape over which a given object has the most pull is not spherical, so the region is known as this person's lobe. A value named for this person is calculated by multiplying the cube root of two times the radius of a moon times the mass ratio of a planet to its moon. That value is used to determine whether the moon will remain solid or break up into rings. Identify this scientist who is the namesake of a limit.

Édouard **Roche** [ayd-war rohsh]



Round # 6 3rd Section Toss-up Questions

Question #17: Fine Arts - Classical/Opera

10 points

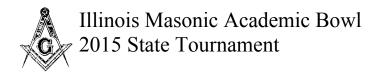
This composer's first opera included material that was reused in his *Vespers of the Sacred Virgin*. His second opera is lost other than the lament of the title character, *L'Arianna* [lar-ee-AH-nah]. One of his operas features a plea to Caronte [kar-OHN-tay] to let the title character enter Hades [HAY-deez], the aria "Possente spirito" [poh-SEN-tay SPEE-ree-toh]. Another of his operas focuses on Penelope's husband returning to fight off her suitors. This composer of *The Return of Ulysses* wrote a historical drama in which Nerone [nair-OH-nay] is convinced to make his lover Empress. Name this composer of the operas *The Coronation of Poppaea* [poh-PAY-uh] and *Orfeo* [or-FAY-oh].

Question #18: Literature – World Literature

10 points

This work's opening section described the fruitless worship of Apollin [ah-poh-lan] and Mahnoud by King Marsil. During a trial in this story, Pinabel's demand of trial by combat led to the accused being torn limb from limb, and a number of his relatives hung. That trial in this "chanson de geste" [shahn-saw day zhest] stemmed from the betrayal by Ganelon which led to the battle of Roncevaux [rohn-seh-voh] pass, where the title character blew his horn until his head exploded. Name this epic poem about a soldier of Charlemagne.

"The <u>Song of Roland</u>" [or "La <u>Chanson de Roland</u>"]



Round # 6 3rd Section Toss-up Questions

Question #19: Social Studies – Economics

10 points

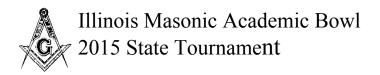
This document's anti-dumping provision calls for a ten-
citizen panel to hear appeals of decisions reached by the
Court of International Trade. Ethyl Corporation cited
Chapter 11 of this agreement in a lawsuit regarding a ban on
MMT. Ross Perot derided the "giant sucking sound" he
alleged that it would create. Name this treaty that eliminated
trade restrictions between Canada, the United States, and
Mexico.

NAFTA [accept North American Free Trade Agreement]

Question #20: Science – Chemistry

10 points

This class of compounds includes common solvents in	ethers [or diethyl ether]	
Grignard [GREEN-yard] reactions. The best known		
example of a compound in this class is made by distilling		
sulfuric [sul-FYOOR-ik] acid and ethyl alcohol. Cyclic		
examples of these compounds are epoxides		
[ep-AHK-"sides"]. These compounds generally have two		
functional groups attached to an oxygen atom, and the best		
known example has two ethyl groups. Name this chemical		
used in 1846 in Boston before a tumor was removed from a		
patient's neck, which led to it temporarily becoming a		
common anesthetic.		



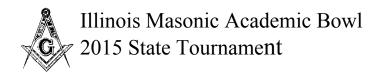
Question #21: Fine Arts – Art History

10 points per part

	s structure is located in the Jefferson National Expansion morial, and is the tallest building in Missouri.	
	Name this large steel-encased catenary	The Gateway Arch [prompt on
1	["CAT"-ih-nair-ee] shaped building overlooking the Mississippi River in St. Louis.	Arch]
		T C. C. LAID 1 CAIL 1
	This architect designed the Gateway Arch, as well as	Eero <u>Saarinen</u> [AIR-oh SAH-rih-
2	the Tulip Chair for the Knoll furniture company.	nen]
	Saarinen designed the flight center at John F. Kennedy	TWA [or Trans-World Airlines]
3	International Airport for this airline, which was owned	
	by Howard Hughes.	

Question #22: Fine Arts – Art History

	s movement's manifesto was written by Tristan Tzara, o frequented the Cabaret Voltaire in Zurich.	
1	Name this art movement that often exhibited common objects given artistic names as "readymades." This movement may take its name from a word for "Hobbyhorse."	<u>Dada</u> ism [or <u>Dadaist</u>]
2	This dada artist created the readymade <i>Fountain</i> , which is simply a urinal turned on its side. He also painted two works called <i>Nude Descending a Staircase</i> .	Marcel <u>Duchamp</u> [doo-sham]
3	This photographer and painter was in the same social circle as many Dadaists. He photographed a woman's back and placed f-holes on it to resemble a violin in <i>Le violon d'Ingres</i> [lay vee-oh-lohn dahng-ruh].	Man Ray [or Emmanuel Radnitzky]



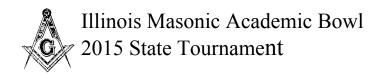
Question #23: Social Studies – U.S. History

10 points per part

	gend has it that President James Polk set four goals for presidency and achieved them all in a single term.	
1	Name the cabinet-level department that had an independent system re-established under Polk so that government funds would not have to go through private or state banks.	<u>treasury</u>
2	This Polk Treasury Secretary became the namesake of a new lower tariff in 1846.	Robert <u>Walker</u>
3	Despite the call by some Americans to settle the Oregon boundary dispute at 54 degrees 40 minutes latitude, Polk settled the boundary at this line of latitude. This line is now the southern boundary of four Canadian provinces.	49 th degrees north latitude [or 49 th parallel]

Question #24: Social Studies – U.S. History

		to points per part
	e first African-American to hold this cabinet position, in Brown, died in a plane crash in Croatia.	
1	Name this position concerned with American business, currently held by Penny Pritzker.	Secretary of Commerce
2	This person served as Secretary of Commerce under Harding and Coolidge shortly before becoming president.	Herbert <u>Hoover</u>
3	This close aide to Franklin Roosevelt who headed the Works Progress Administration served as Secretary of Commerce from 1938 to 1940.	Harry <u>Hopkins</u>



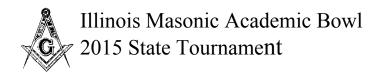
Question #25: Science – Chemistry

10 points per part

	ginning in the first decade of the 20 th century, it became by common to use this element in light bulb filaments.	
1	Name this element extracted from wolframite [WUL-frum-ite].	tungsten
		G IWIII I G I I FOYIAY I I I
2	Tungsten is also extracted from a mineral named for this Swedish scientist who discovered oxygen before	Carl Wilhelm Scheele [SHAY-luh]
	Joseph Priestley, though Priestley is often given credit.	
	Tungsten is often combined with this element to make	<u>carbon</u>
3	drills and other pieces that require stiffness and	
	hardness.	

Question #26: Science – Chemistry

	salind Franklin's work in this field led to the discovery of structure of DNA.	
1	Name this field that often employs X-rays to find the structures of solids that are not amorphous.	X-ray <u>crystallography</u> ["crystal"-AH-gruh-fee] [accept <u>crystallographer</u>]
2	Crystals can be classified as having the primitive, body-centered, or face-centered structures named for this shape.	cube [accept cubic]
3	This law used to find the distance between crystal lattices states that an integer times wavelength equals twice the space between crystal planes times the sine of the incident angle.	Bragg's law



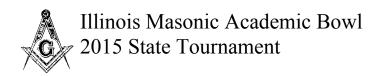
Question #27: Literature - U.S. Literature

10 points per part

	eye operation serves as a turning point in this story, in ch the patient ends up dying.	
1	This tale sees Laurel Hand read Dickens to her father, Judge McKelva, when not feuding with her stepmother, Fay.	The Optimist's Daughter
2	This Mississippian and author of <i>The Optimist's Daughter</i> wrote of a narrator who refused to listen to the stories Stella-Rondo told of Mr. Whitaker in "Why I Live at the P.O."	Eudora Alice Welty
3	This Eudora Welty short story sees Phoenix Jackson travel during the winter to procure medicine for her grandson, who had swallowed lye.	"A Worn Path"

Question #28: Literature – U.S. Literature

	e protagonist of this novel steals the electricity he uses imultaneously burn 1,369 light bulbs.	
1	Name this novel in which the protagonist is forced to fight blindfolded to win a scholarship. After being expelled, he joins the Brotherhood and meets Ras the Exhorter.	Invisible Man [do not accept "The Invisible Man"]
2	This author of <i>Invisible Man</i> described African- American life as "a discipline teaching its own insights into the human condition" in "The World and the Jug."	Ralph Waldo <u>Ellison</u>
3	This Ellison novel concerns the life a man, raised by a black Baptist minister, who grew up to become a racebaiting politician. It was posthumously published, and later re-edited and re-published as <i>Three Days Before the Shooting</i> .	<u>Juneteenth</u>



Round # 6 5th Section Toss-up Questions

Question #29: Math – Math Concepts

10 points

The field of statistics named for this person can be justified by Cox's postulates, which begin by defining certain truth and certain falsehood. That area of statistics uses prior probability distributions and is contrasted with frequentism ["frequent"-izm]. In his system, posterior probabilities are found by using this person's namesake formula, which is based on his attempt to solve an inverse probability problem. Name this mathematician who used the ratio of two probabilities to find the probability of one event given that another occurs, called the conditional probability.

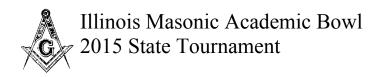
Thomas <u>Bayes</u> [prompt on <u>Bayesian</u>]

Question #30: Social Studies – World History

10 points

Wounded during his father's capture of Ceuta [SOO-tah], this leader had the ultimate goal of finding the kingdom of Prester John. Slavery was introduced to this man's country by one of his captains, Antam Goncalves [gon-KAHL-vays]. Gil Eanes [ay-AH-nays] was the first of his captains to sail past Cape Bojador [boe-HAH-dor]. This founder of the School of Sagres [SAH-grays] sponsored ships that explored much of the West African coast, reaching what is now Liberia before his death in 1460. Name this Portuguese prince and explorer.

Prince <u>Henry the Navigator</u> [accept Infante Dom <u>Henrique de</u> <u>Avis</u>, Duke of Viseu]



Round # 6 5th Section Toss-up Questions

Question #31: Science – Physics

10 points

An effect named for this type of material involves the creation of electric current during phase transitions. The relative permittivity [per-mih-TIV-ih-tee] of a material is sometimes named for this type of substance, the strength of which is measured in units of potential difference per length. The type of breakdown named for these materials can be viewed as an electric arc and leads to a sudden decrease in resistance. Name these insulating materials that weaken electric fields in order to increase capacitance [kuh-PASS-ih-tinss].

dielectrics ["die"-"electric(s)"]

Question #32: Literature – British Literature

10 points

The villain in this drama outlines how he would rather be a
canker in a hedge than a rose in the grace of his brother. In
this play, Borachio [bor-AH-kee-oh] offers to woo Mary on
behalf of Don John, who sought to undermine the efforts of
Don Pedro. Much of this work takes place in and around the
house of the Governor of Messina, Leonato. Name this
Shakespeare play that concludes with the marriages of
Claudio and Hero, and Beatrice and Benedick.

Much Ado About Nothing

Round # 6 Extra Section Toss-up Questions

Extra Question #1: Social Studies – U.S. History

10 points

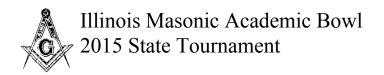
This person was the last Confederate Secretary of War, escaping to Cuba after Jefferson Davis was captured. He was expelled by the U.S. Senate and labelled a traitor by unanimous vote after he joined the Confederate Army. He served as vice president under James Buchanan. Joe Lane ran on a ticket with this politician after the Fire-Eaters staged a walkout of the Democratic Convention. Name this candidate who carried eleven states in the Election of 1860 for the Southern Democrats.

Extra Question #2: Math – Math Concepts

10 points

A concept named for this person integrates the product of a function with e raised to the power of the quantity i times two pi multiplied by frequency multiplied by time. That operation transforms a function from the time domain to the frequency domain, and is used to find a type of function based on the orthonormal relationships between sine and cosine functions with integer horizontal compressions.

Name this French scientist whose namesake series of sine and cosine functions are used to approximate periodic functions.



Round # 6 Extra Section Toss-up Questions

Extra Question #3: Fine Arts – Art History

10 points

This man took as an assistant a freed, partially black slave named Juan de Pareja [day par-AY-hah], whom he painted a portrait of. This artist showed the head of the Catholic Church in a red hat and vest, wearing a white gown, in his *Portrait of Pope Innocent X*. This man showed a dog lying down next to a dwarf in one work, where he includes himself behind the canvas, painting the Infanta Margarita. Name this Spanish court artist to Philip IV, who painted *Las Meninas*.

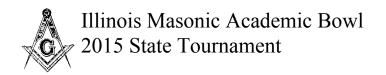
Diego Rodriguez de Silva y <u>Velásquez</u> [dee-AY-goh veh-LAHSS-kez]

Extra Question #4: Science – Physics

10 points

This scientist is the namesake of two-body problems involving only gravity. The six orbital elements, or parameters, are also named for this person. This person's namesake equation finds the mean anomaly, which is proportional to the area swept out by a line connecting a source of gravity to the object it is impacting. This person's law of periods states that the square of orbital period varies directly with the cube of the orbit's semi-major axis length. Name this scientist who also stated that planets move in elliptical orbits as part of his three laws of planetary motion.

Johannes Kepler

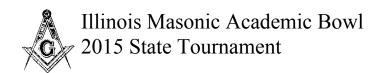


Round #6 **Extra Section Toss-up Questions**

Extra Question #5: Literature – U.S. Literature

10 points

In this novel, love is said to connect "the land of the living The Bridge of San Luis Rey and the land of the dead" and is described as "the only survival, the only meaning." That observation is made by the Abbess of the Convent of Santa Maria Rosa de las Rosas. The protagonist of this book sought to prove God's plan for a group of victims, which included the Marquesa de Montemayor [mar-KAY-sah day mohn-tay-my-OR]. Name this novel about Brother Juniper's quest following the collapse of the title structure, by Thornton Wilder.



Round # 6 Extra Section Teamwork Questions

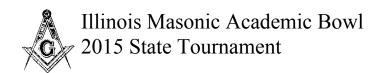
Extra Question #6: Math – Geometry

10 points per part

Ac	cording to Napoleon's theorem, building these types of	
tri	angles on top of an original triangle creates another one	
of	these triangles when you connect the centers.	
	Name this type of triangle that has three congruent sides	equilateral triangle [accept
1	and three congruent angles.	equiangular triangle or regular
		triangle]
	This is the ratio of the length of a median of an	Root 3 over 2 [or one-half root 3
2	equilateral triangle divided by the length of a side of an	or equivalents]
	equilateral triangle.	
	This is the ratio of the distance from a vertex of an	2/3 [or 0.6 repeating]
3	equiateral triangle to the centroid of an equilateral	
	triangle divided by the length of the median.	

Extra Question #7: Math – Geometry

ln t	wo dimensions, a circle has a radius of length six units,	
and	another point, Point P, is located ten units from the	
cen	ter of the circle.	
	Find the distance from the nearest point on the circle to	4 units
1	Point P. Ignore units.	_
	Give the name of a line that intersects a circle at two	secant [SEE-kant] line
2	points. This type of line can be contrasted with a	
4	tangent line, since this line intersects a circle twice	
	while a tangent line intersects it only once.	
	If a tangent line is drawn from Point P, find the length	2 root 10 [or 2 times the square
	of the segment from Point P to the point where the	root of 10 or 2 radical 10 or
1	tangent line touches the circle. Remember that the circle	equivalents]
3	has a radius of four, and Point P is ten units from the	-
	center of the circle. Give your answer in simple radical	
	form.	



Round # 6 Extra Section Teamwork Questions

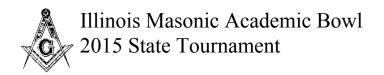
Extra Question #8: Literature – U.S. Literature

10 points per part

Thi	s former resident of the House of Hwang refused	
me	dical care at her death, citing the land that could be	
bou	ght with the money.	
	Name this woman who was eventually supplanted by	O-Lan
1	Lotus, but continued to provide for her children and	
	household.	
	O-Lan and her husband Wang Lung are the central	The Good Earth
2	couple of this novel set in China.	
	The Good Earth was penned by this author, who wrote	Pearl Sydenstricker Buck Sedges
3	about her missionary parents in <i>The Exile and Fighting</i>	[or <u>Sai</u> Zhenzhu]
	Angel.	

Extra Question #9: Literature – U.S. Literature

Ide	ntify these John Steinbeck novels.	
1	In this novel that takes its title from a Robert Burns poem, George Milton is the primary guardian of Lennie Small.	Of Mice and Men
2	In this novel, Samuel Hamilton and Adam Trask discuss the story of Cain and Abel.	East of Eden
3	This novel is named for a gift from Carl Tiflin to his son Jody.	The Red Pony



Round # 7 1st Section Toss-up Questions

Question #1: Social Studies – Religion

10 points

In Temple times, twelve of these items were displayed on a special table. On Shabbat, a cloth cover is laid over these items to avoid "embarrassing" them because the candles and wine are blessed before the *motsi* [MOHT-see] is recited over two of these objects. On Passover, the normal form of this kind of food is replaced by matzah. Name this kind of food exemplified by challah [HAH-lah].

loaves of <u>bread</u> [accept <u>loaf</u>/ves; accept <u>showbread</u> before "embarrassing"; accept <u>challah</u> before the end]

Question #2: Science – Chemistry

10 points

The natural log of the ratio of two values of this quantity is found using the Kelvin equation, which is used to determine the fates of water droplets. This quantity varies exponentially with temperature for all substances. The equation that finds the total amount of this quantity has the same form as Dalton's partial pressure law, but it is used on an ideal mixture of liquids. This subject of Raoult's [rah-ool'z] law is one of the four colligative [kuh-LIG-uh-tiv] properties. Name this quantity related to the rate at which liquids turn into gases, equal to the atmospheric pressure at the boiling point.

vapor pressure

Round # 7 1st Section Toss-up Questions

Question #3: Language Arts – Grammar/Usage

10 points

In Italian, this mood is often preceded by the word che [kay] and expressed with the suffix –ino [ee-noe]. The jussive [JUSS-iv] form of this mood in English uses the word "let." In Spanish, third-person verb conjugations in this mood are the same as in the imperative. It is used to indicate the speaker's emotion or opinion regarding the topic. In English, it mainly occurs in dependent clauses. Name this mood used for hypotheticals, contrasted with the indicative mood.

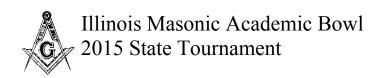
subjunctive mood [accept
conjunctive]

Question #4: Social Studies – U.S. History

10 points

When Wallace White was Senate Majority Leader, he often told reporters to ask this other senator for information, and this man briefly became Majority Leader before he died in 1953. This senator was praised in John Kennedy's *Profiles in Courage* for criticizing the Nuremberg Trials. As chair of the Senate Labor Committee, he was able to override a presidential veto to weaken the Wagner Act and the labor movement in a bill named for him and Fred Hartley. Name this politician nicknamed "Mr. Republican", who opposed U.S. entry into World War II, and who was the son of a president and Supreme Court Chief Justice.

Robert Taft [prompt on Taft]



Round # 7 1st Section Toss-up Questions

Question #5: Miscellaneous – Technology

10 points

WaveLAN was an immediate precursor to this technology. The WEP protocol was developed to encrypt it, but was superseded by WPA. Utilizing the IEEE 802.11 standards, many devices connect to it through network access points, or hotspots. Name this technology utilized in connecting to the internet without physical cables.

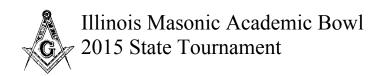
<u>Wi-Fi</u> [prompt on <u>wireless</u>
networking or <u>WLAN</u> or similar
answers containing <u>wireless</u>; do
not prompt on answers that contain
"networking" without an
indication of wirelessness]

Question #6: Science – Health

10 points

This disease can be prevented by the 17-D vaccine, which was developed by Max Theiler ["Taylor"]. The virus that causes this disease was the first arbovirus [AR-boh-"virus"] discovered, and this disease is spread by the same mosquito that spreads both chikungunya ["chicken"-GUN-yuh] and dengue [DAYN-ghee] fever. While 85% of patients recover after its acute phase, the others enter a toxic phase that can cause severe liver damage. Travelers to Asia are vaccinated against this disease though it does not occur there, and there are many cases in Africa and Latin America. Name this disease whose name comes from the jaundice [JAWN-diss] it causes.

<u>yellow fever</u> [or <u>yellow jack</u> or <u>yellow plague</u>]



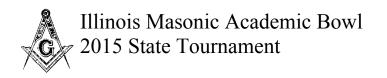
Question #7: Math - Algebra

10 points per part

Exa	amples of these systems include binary, in which this	
nur	mber is two, and hexadecimal, in which this number is	
six	teen.	
	Identify these systems which are named for how many	<u>bases</u> [or <u>radix</u> /ces]
1	digits are used. Powers of that number are used to	
	determine place values.	
	In the decimal system, the third number from the right	<u>256</u>
2	has a place value of one hundred. What is the place	
Z	value of the third number from the right in	
	hexadecimal?	
	Convert the number one two three in hexadecimal to an	<u>291</u>
3	equivalent decimal number.	

Question #8: Math – Algebra

Cor	sider the graph of y equals x raised to the third power.	
1	Which function is the inverse of that function?	y equals \underline{x} to the one-third power [or y equals the <u>cube root of x</u> ;]
2	How many points of intersection are there between the two graphs <i>y</i> equals <i>x</i> cubed and <i>y</i> equals the cube root of <i>x</i> ?	<u>3</u> points
3	Find the area between the graph of y equals x cubed and the x-axis between x equals zero and x equals one.	½ [or 0 <u>.25</u>]



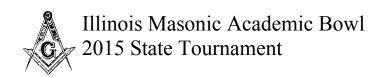
Question #9: Fine Arts – Jazz

10 points per part

Thi	s man's ensemble gained prominence due to their	
boo	kings at the Cotton Club, and his songs include "Mood	
Ind	igo" and "Sophisticated Lady."	
	Name this bandleader who wrote the song "It Don't	Edward Kennedy "Duke"
1	Mean a Thing (If It Ain't Got That Swing)".	Ellington
	Duke Ellington's orchestra signature song was this	"Take the 'A' Train"
2	piece by Billy Strayhorn, which is titled after the	
	directions to get to Harlem.	
	One version of "Take the 'A' Train" was recorded by	Ella Jane Fitzgerald
2	Ellington with this singer, a frequent collaborator who	
3	had earlier success with her song "A-Tisket,	
	A-Tasket."	

Question #10: Fine Arts – Jazz

	s man made a shift from "cool jazz" to "jazz fusion" that be seen on his album <i>In A Silent Way</i> .	
1	Name this jazz trumpeter who had two "Great Quintets" that included John Coltrane in the first and Chick Corea in the second. He released <i>The Birth of the</i>	Miles <u>Davis</u>
	Cool and the song "So What?"	** 1: **
	Chick Corea replaced this pianist in Davis's second Great Quintet. This man's later efforts included the	Herbie <u>Hancock</u>
2	album <i>Head Hunters</i> , which includes the track "Chameleon," and he also performed "Cantaloupe	
	Island."	
1	Jimmy Cobb played this instrument in Davis's first	drums [or drum set or drum kit or
3	quintet. His "kit" often had other kinds of instruments like woodblocks and cowbells attached.	traps or trap set or trap kit; accept percussion



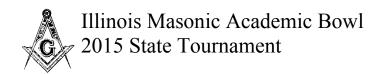
Question #11: Science – Chemistry

10 points per part

	ter is sometimes called a "universal" example of this stance.	
1	Name this substance that dissolves a solute [SAHL-yoot].	solvent
2	This chemical, the simplest ketone ["key-tone"], is often used as a solvent, such as when it is used as a paint thinner or nail polish remover.	acetone ["ASS"-ih-"tone"] [or propanone [PROH-puh-nohn]]
3	This chemical is able to dissolve paint thinners. One name for this compound is methylbenzene [METH-ill-BEN-zeen], since it consists of a benzene molecule with one hydrogen atom replaced by a methyl group.	toluene [TAHL-yoo-een] [or toluol]

Question #12: Science – Chemistry

	e Geiger ["GUY"-gur]-Marsden experiment is also own as this person's gold foil experiment.	
1	Name this scientist who studied the scattering of alpha particles to determine that atoms have a nucleus.	Ernest Rutherford , 1 st Baron Rutherford of Nelson
2	Rutherford's atomic model replaced the plum pudding model put forward by this person who discovered the electron.	Sir Joseph John "JJ" Thomson
3	These two German scientists later studied collisions between electrons and mercury vapor, finding that electrons that lost energy always lost a multiple of 4.9 electron volts.	James Franck and Gustav Hertz [either order]



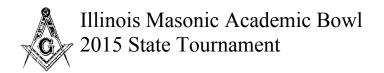
Question #13: Social Studies – World History

10 points per part

	e colloquial name for this rebellion came from the kname for the state corps.	
1	Name this uprising in which George Johnston and John MacArthur overthrew the governor of a colony, only for Lachlan Macquarie [LAAK-lun muh-KWAR-ee] to have the two men arrested.	Rum Rebellion
2	The Rum Rebellion led to turmoil in this country's state of New South Wales.	Commonwealth of Australia
3	This deposed governor hid under his bed before being arrested. Earlier, he had been the target of a mutiny led by Fletcher Christian as captain of the <i>HMS Bounty</i> .	William <u>Bligh</u> [bly]

Question #14: Social Studies – World History

Thi	s incident was a response to protests against laws	
ma	ndating that minorities carry around documentation, and	
its	victims had been shouting the slogans "Our Land," and	
"Fo	orward to Independence."	
	Name this slaughter of unarmed civilians by police. It	Sharpeville Massacre
1	resulted in two opposition political parties forming	
1	military arms, Poqo [POH-koh] and Umkhonto we	
	Sizwe [oom-KOHN-toh way SEEZ-way].	
	The Sharpeville Massacre took place in the Transvaal	Republic of South Africa
2	province of this country.	
	These laws, a key component of apartheid	pass laws
2	["apart-hate"], mandated that minorities carry	
3	documentation when not in their homeland or	
	designated area.	



Round # 7 3rd Section Toss-up Questions

Question #15: Math – Math Concepts

10 points

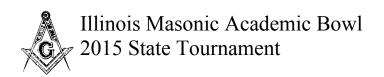
Games notable for not following the game theory version of this property include Efron's dice, Penney's game, and rock-paper-scissors. This property is also lacking from cyclic voting situations, and Arrow's impossibility theorem states that systems cannot have both completeness and this property. The reflexive property, symmetric property, and this property define equivalence relations, and this property also applies to inequalities. Name this property stating that if x is less than y, and y is less than z, then x is less than z.

<u>transitive</u> property [or **<u>transitivity</u>**]

Question #16: Literature – U.S. Literature

10 points

A turning point in this novel is a performance of "Under the	Sister Carrie
Gaslight" at a local Elks club. Subsequent events in this	
work lead to a patron embezzling money from Fitzgerald	
and Moy's before fleeing to Montreal. The protagonist of	
this novel is convinced to move in with a traveling salesman	
after being slipped two ten-dollar bills, but Charles Drouet	
[droo-ay] ends up cuckolded. Gas in a hotel room ended up	
taking the life of the fallen George Hurstwood in this novel.	
Name this novel by Theodore Dreiser [DRY-zur] about	
Caroline Meeber.	



Round # 7 3rd Section Toss-up Questions

Question #17: Fine Arts – Art History

10 points

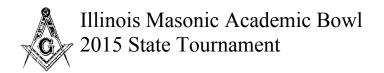
He painted Athena [uh-THEE-nuh] standing next to an axe, seizing the hair of a half-horse, half-man in his *Pallas and the Centaur*. This painter showed three angels on the roof of the stable where Jesus is born in *The Mystical Nativity*, painted after he became a follower of Savonarola [suh-vah-nuh-ROH-luh]. This artist showed Venus standing underneath a putto [POOT-toh], standing next to a woman crowned in flowers, wearing a flower-patterned dress. One of his paintings shows Zephyr blowing to shore a goddess standing on a shell. Name this painter of *Primavera* and *The Birth of Venus*.

Sandro **Botticelli** [or Allesandro di Mariano di Vanni **Filipepi**]

Question #18: Science – Physics

10 points

Inside this type of material, Coulomb [koo-lohm] collisions	<u>plasma</u>
resulting in temporarily hyperbolic paths are common. As	
with electrolytes, the Debye [duh-BYE] length is used to	
determine the volumes affected by charges in this substance.	
Two methods used to control the temperature of this	
substance are inertial confinement and magnetic	
confinement. This substance makes up the solar wind, and a	
channel of this substance is created by lightning. This	
substance is created by the electrical breakdown of liquids	
and gases, separating the electrons from the molecules.	
Name this "fourth state of matter".	



Round # 7 3rd Section Toss-up Questions

Question #19: Literature – Mythology

10 points

Once this event's outcome was sealed, its perpetrator fled to Franag's Falls, but was caught in the form of a salmon by Thor. Following this event, Hermod rode for eight days and nights to reach Helheim [HELL-hyme] in order to reverse it. Immediately prior to it, an oath was sworn by all living things save mistletoe. It was unwittingly perpetrated by Hodur [HOH-dur]. Name this tragedy of Norse myth, the fall of the god of light.

<u>death</u> of <u>Baldur</u> ["balder"] [accept logical equivalents]

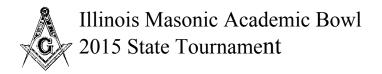
Question #20: Social Studies – U.S. Government

10 points

Joseph Stack flew a plane into one of this organization's field offices in Austin, Texas in 2010. A reform of this organization in 1998 shifted the burden of proof onto it. John Koskinen became the head of this organization in 2013, and recent leaders have been criticized for the inability to find emails sent by its recent Director of Exempt Organizations Lois Lerner. Name this arm of the Treasury Department responsible for collecting taxes.

Internal Revenue Service [accept IRS; prompt on Treasury

Department before it is mentioned]



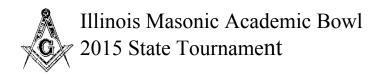
Question #21: Science – Biology

10 points per part

Rib	osomes are created inside this structure.	
1	Name this prominent feature inside a cell nucleus.	nucleolus [nook-lee-OH-luss]
2	A karyosome ["carry"-oh-sohm], which is made of this substance, is sometimes called a false nucleolus. This substance includes nucleic [noo-KLAY-ik] acids and the proteins called histones [HISS-tohnz] that package them.	chromatin [KROH-muh-tin]
3	These sub-organelles named for a Spanish scientist are attached to the nucleolus by coilin.	Cajal [kah-HAHL] bodies

Question #22: Science – Biology

Thi	s technique was developed by Kary Mullis.	
1	Name this process that makes many copies of a piece of DNA.	PCR [or polymerase chain reaction]
2	This DNA polymerase [puh-LIM-ur-"ace"] taken from a bacteria that lives at warm temperatures is commonly used in PCR.	Taq polymerase
3	This step, also called DNA melting, takes place when the DNA is heated. It separates the DNA into single strands.	denaturation [dee-"nature"-AY-shun] [accept word forms]



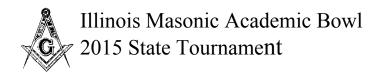
Question #23: Literature – U.S. Literature

10 points per part

	ng breastfed during childhood led to the nickname	
"M	ilkman" for Macon Dead III in this novel.	
	N 4: 1.1 Dili 1.0 : 1.14	G CG I
	Name this novel whose Biblical references include the	Song of Solomon
1	names of Macon's sisters, First Corinthians and	
	"Magdalena called Lena."	
	Song of Solomon was written by this author, who wrote	Toni Morrison [accept Chloe
2	about Sethe [SETH-uh] saving one of her children from	Ardelia Wofford]
	slavery in Beloved.	
	This other Toni Morrison novel sees Violet Trace knife	<u>Jazz</u>
3	the corpse of Dorcas, who was killed by Joe, her lover	
	and Violet's husband.	

Question #24: Literature – U.S. Literature

	e "Restored" version of this novel features Willie Talos he Boss.	
1	Name this novel in which political reporter Jack Burden becomes the right-hand man of a politician nicknamed "the Boss."	All the King's Men
2	All the King's Men is by this founder of the Southern Review.	Robert Penn <u>Warren</u>
3	In <i>All the King's Men</i> , this two-word phrase, inspired by an old man Jack picked up, is used to refer to his impromptu journey to California following his discovery that Willie had been sleeping with Anne Stanton.	the great twitch



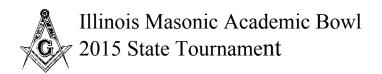
Question #25: Social Studies – Economics

10 points per part

A s	tudy by Edward Prescott provided support to the idea	
that	pursuing this economic policy would impact long-term	
lab	or supply.	
	Name this economic theory that posits that lowering	supply-side economics [prompt on
	the marginal tax rate increases economic activity, as	<u>Reaganomics</u>]
1	eventually the extra income spreads throughout the	
	economy. During the 1980 Presidential campaign,	
	George H.W. Bush called it "voodoo economics."	
	A key component of supply-side economics is this	<u>Laffer</u> curve
2	curve, which plots the overall tax rate against tax	
	revenue.	
	In 1996, Steve Forbes' presidential platform included	<u>flat</u> tax
2	this kind of tax on income. Herman Cain's presidential	
3	platform during the 2012 campaign also featured one,	
	but at 9% instead of 17%.	

Question #26: Social Studies – Economics

		andable deposits and emissions standards are common s to correct for these actions.	
		Name these actions that are not directly accounted for	externality/ies
-	1	in market prices, but nonetheless impact consumers and	
		producers.	
		This British economist developed the concept of taxes	Arthur Cecil Pigou [pih-GOH]
4	2	and subsidies on market players in order to induce	[accept Pigouvian taxes/subsidies]
		positive externalities and correct for negative ones.	
		Pigouvian taxes are commonly used to regulate the	public goods
	3	consumption of these non-rival, non-exclusive goods,	
		such as water and paved roads.	



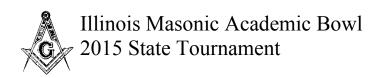
Question #27: Math – Analytical Geometry

10 points per part

	s coordinate system uses the two coordinates from the ar system and also a <i>z</i> -coordinate.	
1	Name this three-dimensional system.	<u>cylindrical</u> coordinate system
2	In cylindrical coordinates, the graph of <i>z</i> equals <i>r</i> squared has this shape.	circular <u>paraboloid</u> [do not accept "parabola"]
3	Find the area of the two-dimensional shape inside the intersection of the equations z equals r squared and z equals nine.	9 pi [do not accept partial answer]

Question #28: Math – Analytical Geometry

The	ese quantities for vectors can also be called coordinates.	
1	Name these quantities used to specify vectors that are equal to the vector's projections onto the axes.	<u>component</u> s
2	This two-word trigonometric phrase is used to represent the orientation of a vector and is calculated by dividing a vector component by the vector magnitude.	direction cosines
3	For any vector, what is the sum of the squares of the direction cosines?	1



Round # 7 5th Section Toss-up Questions

Question #29: Literature – British Literature

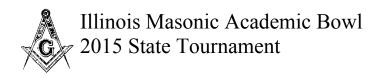
10 points

A landlord in this novel dies of spontaneous human	Bleak House
combustion. A former Army officer, who died of an opium	
overdose, assumed the pseudonym "Nemo" while working	
as a copier. Nemo's illegitimate daughter with Lady	
Dedlock later married Dr. Allan Woodcourt in this novel. It	
lampoons the legal system via the court case <i>Jarndyce v</i>	
Jarndyce. Name this Charles Dickens novel in which Esther	
Summerwood comes to live in the title residence.	

Question #30: Math – Math Concepts

10 points

The Banach-Schauder [BAH-nahk-"shouter"] theorem	openness [or open sets]
guarantees that certain maps have this property. Sets with	
this property form the basis of a topological space, in which	
any union of sets with this property also has this property,	
but only intersections of finitely many of these sets are	
required to have this property. These sets include a	
neighborhood around every point in them. This adjective	
can also be applied to intervals that are symbolized with	
parentheses. Name this adjective used for intervals that do	
not include their endpoints.	



Round # 7 5th Section Toss-up Questions

Question #31: Social Studies – World History

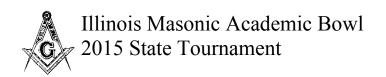
10 points

This person thwarted his rival François Dupleix [doo-play]	Robert Clive
and was a major reason that the English defeated the	
French in the Carnatic Wars. This person also got revenge	
against Siraj ud-Daulah [dah-oo-lah] after British prisoners	
were kept in deadly conditions. That victory at the Battle of	
Plassey added to the power of the British East India	
Company. Name this Englishman who gained control over	
Bengal after the Black Hole of Calcutta incident.	

Question #32: Science – Biology

10 points

The enzyme that plays a major role in the creation of this	cyclic AMP [or cAMP or cyclic
molecule increases activity when exposed to cholera	adenosine monophosphate]
[KAH-lur-uh] toxin. This molecule and a similar one	
containing guanosine [GWAH-noh-seen] are degraded by	
the enzyme PDE, which is inhibited by caffeine. This	
molecule binds to protein kinase [KY-nayss] A, and it is	
formed when G-proteins act on adenylate cyclase	
[uh-DEE-nul-ayt SYKE-"lace"]. Because this molecule	
acts after a neurotransmitter or hormone binds to a	
receptor, this is classified as a second messenger. Name	
this molecule containing ribose [RY-bohss] and adenine	
[AAD-uh-neen] that often is formed from ATP.	



Round # 7 Extra Section Toss-up Questions

Extra Question #1: Literature - British Literature

10 points

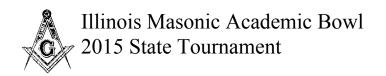
This novel features a peasant who leads her village in an	The Satanic Verses
attempt to cross the Arabian Sea. In this novel, Mahound	
[mah-hoond] is opposed by the priestess Hind and the poet	
Baal, who later flees to a brothel. This novel's opening	
features an exploding plane, which Gibreel Farishta [fah-	
REESH-tah] and Saladin Chamcha survive. Name this novel	
that led to Ayatollah Khomeini calling for the death of its	
author, Salman Rushdie.	

Extra Question #2: Math – Math Concepts

10 points

This distribution forbids simultaneous events and uses time	Poi
intervals that are independent and non-overlapping. As a	
result, there is an exponential distribution for waiting times	
between events modeled by this distribution. Its mass	
function is the parameter raised to the k power divided by k	
factorial times e to the power of the opposite of the	
parameter; that parameter, equal to both the expected value	
and the variance, is traditionally symbolized lambda.	
Identify this distribution named for a French mathematician.	
	l

Poisson [pwah-saw(n)] distribution



Round # 7 Extra Section Toss-up Questions

Extra Question #3: Social Studies – World History

10 points

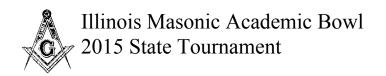
One left-wing party in this nation was named for the religious leader murdered following La Matanza [mah-TAHN-zah], Farabundo Marti [fah-rah-BOON-doe mahr-TEE]. The Chapultepec Peace Accords ended the civil war in this country, during which Major Roberto D'Aubuisson [daw-bwees-sone] allegedly ordered the assassination of Oscar Romero. Following a qualifying match for the 1970 World Cup, this nation invaded its eastern neighbor, kicking off the Soccer War. Name this Central American country with capital San Salvador.

Extra Question #4: Science - Earth Science

<u>10 points</u>

The Kessler syndrome that could be caused by a large number of collisions in space is sometimes named for a cascade of this process. This process is sometimes used to name the heat shield around a spacecraft if it loses mass. A place named for this process is on the east coast of Alexander Island. This process names a till formed on top of a glacier. For glaciers, this process outpaces its opposite below the equilibrium line altitude, and a sudden form of this process is calving. Name this process that for a glacier is the opposite of accumulation.

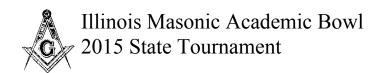
ablation [ab-LAY-shun] [accept
word forms]



Round # 7 Extra Section Toss-up Questions

Extra Question #5: Fine Arts – Classical/Opera

In one aria, the title character of this opera begs for death	Aïda ["eye"-EE-dah]
because she is in love with a man who is fighting her father.	
A military commander in this opera meets with Ramfis to	
find out that their enemy has reached Thebes. This opera's	
arias include "Ritorna vincitor" [ree-TOR-nah	
VEEN-chee-tor] and "O Patria Mia" [oh PAH-tree-ah	
MEE-ah], sung by the heroine as she plots to escape slavery.	
Her master, Amneris [ahm-NAIR-ees], is betrothed to the	
commander, who captures Amonasro	
[ah-moh-NAHSS-roh]. At the end of this opera, Radamès	
[rah-dah-MAYSS] is sentenced to death and imprisoned	
with his lover in a tomb. Name this opera by Giuseppe	
Verdi [joo-SEP-pay VAIR-dee] about an Ethiopian princess.	



Round # 7 Extra Section Teamwork Questions

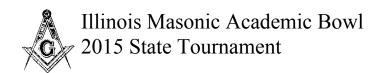
Extra Question #6: Math – Probability

10 points per part

	first axiom states that any probability must be negative, and he is also the namesake of the zero one	
law	•	
	Name this 20 th -century Russian mathematician who	Andrey Kolmogorov [kohl-MAW-
1	wrote Foundations of Probability Theory.	gaw-rawff]
	Kolmogorov and Borel name a problem with two reasonable answers about probability on a sphere. The	<u>paradox</u> es
2	problem is called one of these types of statements that seems to lead to a contradiction.	
3	According to Kolmogorov's axioms, if there are three possible, mutually exclusive events, and two of them have probabilities of one-half and one-third, then what is the probability of the other event?	<u>1/6</u> [or 0 <u>.16 repeating</u>]

Extra Question #7: Math – Probability

Tak	te an initial triangle, and form a new triangle by	
con	necting the midpoints of the sides of the original	
tria	ngle.	
	If a point inside the original triangle is selected at	<u>½</u> [or 0 <u>.25</u>]
1	random, what is the probability that the point is also in	
	the smaller triangle?	
	This figure is created by starting with a triangle and	Sierpinski [seer-PIN-skee] triangle
2	repeatedly removing middle triangles from whatever	[or <u>Sierpinski gasket</u> or
	triangles remain.	<u>Sierpinski sieve</u>]
	One way to generate a Sierpinski triangle is to	<u>chaos</u> game [or <u>chaos theory</u>]
	randomly choose a point in the original triangle and	
	then repeatedly move halfway towards a randomly	
3	chosen triangle vertex. That game is named for this	
	study of phenomena in which minor changes in initial	
	conditions have a major impact, as exemplified by the	
	butterfly effect.	



Round # 7 Extra Section Teamwork Questions

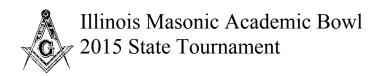
Extra Question #8: Social Studies - U.S. History

10 points per part

Ide	ntify these prominent families from the early United	
Sta	tes.	
	This family included Declaration of Independence	<u>Lee</u> family [or <u>Lee</u> s]
1	signers Francis Lightfoot and Richard Henry. It also	
1	included Light-Horse Harry, whose son headed	
	Confederate forces in the Civil War.	
	This family included South Carolina Governor Charles	Pinckney family [or Pinckney s]
2	and Federalist President Candidate Charles Cotesworth.	
	Thomas negotiated a treaty with Spain in 1795.	
	Two cousins with this name signed the Continental	Livingston family [or
1	Association. Philip from New York signed the	<u>Livingston</u> s]
3	Declaration of Independence, and William from New	
	Jersey signed the Constitution.	

Extra Question #9: Social Studies – U.S. History

Giv	re the following about gun control:	
1	This amendment mentions a "well-regulated militia" before stating, "The right of the people to keep and bear arms shall not be infringed."	2 nd Amendment to the United States Constitution
2	This bureau enforces gun laws and other regulations. After 9/11, it was moved from the Treasury Department to the Justice Department and gained the power to regulate explosives.	ATFE [or Bureau of Alcohol, Tobacco, and Firearms or Bureau of Alcohol, Tobacco, Firearms, and Explosives]
3	This bill instituted background checks for gun purchases. Passed during the Clinton Administration, it was named for President Reagan's press secretary.	Brady Act [or Brady Law or Brady Bill or Brady Handgun Violence Prevention Act]



Round # 8 1st Section Toss-up Questions

Question #1: Science - Physics

10 points

The law named for this person states that magnetization
varies inversely with absolute temperature for paramagnetic
[PAIR-uh-"magnetic"] objects at high temperatures. A law
named for this person and Pierre Weiss ["vice"] finds the
susceptibility of a ferromagnet [FAIR-oh-"magnet"]. This
person is also the namesake of the boundary between
paramagnetism and ferromagnetism, which is his namesake
temperature. His name is also used for a unit equal to thirty-
seven billion decays per second. Name this scientist who
helped isolate radium [RAY-dee-um] and polonium [puh-
LOH-nee-um] while working with his wife Marie.

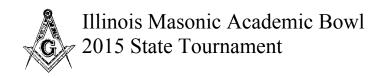
Pierre Curie [kyur-ee]

Question #2: Literature – World Literature

10 points

One character living in this city exiled his wife once her collarbone had healed following a car accident. That man's infidelity was revealed once his son saw him playing a tambourine. It is home to Midaq [mee-DAHK] Alley, as well as the al-Jawad family headed by al-Sayyed [sy-ED] Ahmad. Name this city in which Sugar Street and Palace Walk were set in a namesake trilogy by Naguib Mahfouz [nah-GHEEB mah-FOOZ], an Egyptian author.

Cairo [accept al-Qahira]



Round # 8 1st Section Toss-up Questions

Question #3: Fine Arts – Art History

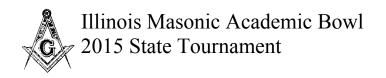
10 points

One artist from this country painted a "Trinity" icon	Russia
showing the three parts of God sitting at a table. One artist	
from this country painted <i>The Rich Jew</i> and <i>The Poor Jew</i> ,	
and he planned the design of a gate for Kiev. This home	
country of Victor Hartmann produced an artist who painted	
A Religious Procession in Kursk, as well as a picture of a	
monarch murdering his son. Name this home country of	
Andrei Rublev [AHN-dray ROOB-lev] and Ilya Repin	
[EEL-yah REP-in], who painted its tsar Ivan the Terrible.	

Question #4: Math – Math Concepts

10 points

inflection point [or point of inflection or flex]



Round # 8 1st Section Toss-up Questions

Question #5: Social Studies – U.S. History

10 points

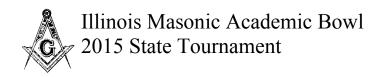
Early in this battle, Edwin Sumner ordered brigades under	Antietam [aan-TEE-tum] [or
John Sedgwick into the East Woods, where those brigades	Sharpsburg]
were quickly turned back. Fought shortly after the Battle	
of South Mountain, both sides in this battle fought for the	
high ground around Dunker Church. Much of the fighting	
took place in Miller's cornfield next to the Hagerstown	
Pike. Shortly after this battle, General McClellan was	
removed from his command, and Abraham Lincoln issued	
the Emancipation Proclamation. Name this Maryland	
battle that was the bloodiest day in American history.	

Question #6: Literature – British Literature

10 points

Unlike the central figures in this poem, both "Cossack and			
Russian reel'd from the saber stroke." None in the title			
group knew "someone had blundered," as "theirs not to			
make reply, theirs not to reason why, theirs but to do and			
die." It is set during the Battle of Balaclava. Name this			
poem about the title group riding "into the valley of death,"			
written by Alfred, Lord Tennyson.			

"The <u>Charge of the Light</u> <u>Brigade</u>"



Question #7: Science – Biology

10 points per part

Thi	s sense is also known as gustation [gus-TAY-shun].	
1	Name this sense that involves interactions with buds on the tongue.	taste [accept word forms]
2	This Japanese word meaning "delicious" or "savory" is referred to as the "fifth taste" after sweet, sour, bitter, and salty.	umami [ooh-mah-mee]
3	Taste buds are located on these bumps on the tongue.	papilla [puh-PEE-lee]

Question #8: Science – Biology

	ne of the terms used for plant seeds have more than one uning.	
1	This is the name for the developing plant inside a seed. The same term is used for a human from fertilization	embryo [EM-bree-oh] [accept word forms]
	until it is developed enough to be a fetus.	
2	This is the name of a tuft of hairs on a seed that aid in wind dispersal. The same term is used for the	<u>coma</u>
1	atmosphere around the main part of a comet.	
	This is the flap of the seed that opens during	operculum [oh-PUR-kyoo-lum]
3	germination. The same term describes the flaps that	
	cover fish gills.	

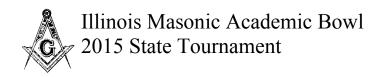
Question #9: Fine Arts - Classical/Opera

10 points per part

Naı	ne these groundbreaking 20 th -century composers.	
	This composer of <i>The Rite of Spring</i> moved into a neo-	Igor Stravinsky [EE-gor strah-
1	classical phase that led to his <i>Dumbarton Oaks</i>	VIN-skee]
	concerto.	
	Stravinsky's late works, such as <i>Agon</i> , were influenced	Arnold Schoenberg [SHURN-
2	by this creator of serialism, who taught Anton von	bairg]
2	Weber [VAY-bur] and Alban Berg [AL-bahn BAIRG].	
	His <i>Moses und Aron</i> is an unfinished serialist opera.	
	This late student of Arnold Schoenberg broke from	John Milton <u>Cage</u> , Jr.
	most schools of musical thought by introducing chance	
3	into his music. Examples of that style include	
	Imaginary Landscape #4, which has 12 radios tuned to	
	different frequencies playing at once.	

Question #10: Fine Arts – Classical/Opera

Thi	s opera includes the aria "Der Hölle Rache" [dair HUR-	
luh	RAH-kuh], in which the Queen of the Night orders her	
dau	ghter Pamina to kill the priest Sarastro.	
1	Name this opera, where the birdcatcher Papageno [pah-pah-GAY-noh] helps Tamino to rescue princess Pamina.	The <u>Magic Flute</u> [or Die <u>Zauberflöte</u>]
2	Name the composer of <i>The Magic Flute</i> .	Wolfgang Amadeus <u>Mozart</u>
3	This section of <i>The Magic Flute</i> opens with loud E-flat major chords. This section in the opera <i>William Tell</i> includes an evocation of a storm, and precedes the introduction of the singers.	<u>overture</u>



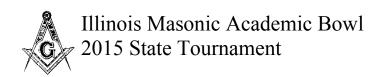
Question #11: Math – Geometry

10 points per part

Thi	s circle is tangent to each of the sides of a triangle.	
1	Name this circle, whose center is the intersection of the angle bisectors of a triangle.	incircle [prompt on inscribed circle]
2	Give the measure of the angle in degrees between a radius of the incircle that goes to its point of tangency, and the side of the triangle.	90 degrees
3	Name the theorem which states that the nine-point circle is tangent to both the incircle and the three excircles.	Feuerbach's [FOY-ur-bak's] theorem

Question #12: Math – Geometry

	s shape is the most efficient way to enclose a given area h a given length of wire.	
1	Name this figure that is the limiting shape of a regular polygon as its number of sides approaches infinity.	circle
2	This number is the ratio of the circumference squared of a circle divided by its area.	<u>four</u> times <u>pi</u> [or equivalents]
3	This inequality states that four pi times the enclosed area is less than or equal to the length squared of any closed curve.	isoperimetric ["EYE"-soh-pair-ih-MET-rik] inequality



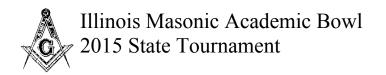
Question #13: Literature – British Literature

10 points per part

The	narrator of this poem meets a traveler who describes a	
"sh	attered visage [vih-SAZH]" with "a wrinkled lip, and	
sne	er of cold command."	
	Name this poem, in which the traveler recalls that the	"Ozymandias" [ah-zih-MAAN-
1	pedestal has engraved on it the line "look on my	dee-uss]
	Works, ye Mighty, and despair!"	
	This Romantic poet of "Ozymandias" also wrote the	Percy Bysshe Shelley
2	work Music, When Soft Voices Die.	
	According to the traveller, the writing on the pedestal	King of Kings [do not accept
2	also features this three-word phrase to describe	"Lord of Lords"]
3	Ozymandias. In the Bible, Revelation 17:14 and 19:16	
	use this phrase to describe Jesus Christ.	

Question #14: Literature – British Literature

St.	George is personified as the Red Crosse Knight in this m.	
1	This epic poem sees the title character, Tanaquill [TAN-uh-"quill"], take the title of Gloriana.	"The Faerie Queene"
2	"The Faerie Queene" was written by this author, who repeated the line "sweet Thames [temz], run softly, til I end my song" in "Prothalamion" [proh-thuh-LAM-ee-ahn].	Edmund Spenser
3	The Red Crosse Knight encounters Fradubio [fruh-DOO-bee-oh] and Fraelissa [fray-LISS-uh], who had been turned into these things. The opening line of Longfellow's "The Village Blacksmith" describes the title man standing under one of these.	trees [accept chestnut trees; prompt on plants]



Round # 8 3rd Section Toss-up Questions

Question #15: Miscellaneous – Pop Culture

10 points

In the end credits to one game, this character awakens to see the Wind Fish flying above the water. In another appearance, his mother left him with the Kokiri [koh-KEER-ee] as a child. This holder of the Triforce of Courage obtains assistance from the Zora and Gorons in saving the land of Hyrule ["high-rule"]. He is routinely called on to defeat Ganondorf [GAN-un-dorf]. Name this protagonist of the Legend of Zelda series.

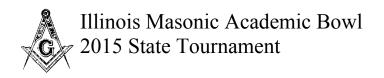
Link [do not accept "Zelda"]

Question #16: Social Studies - U.S. History

10 points

An attempt to allow this practice was struck down by the Supreme Court in *Wallace v. Jaffree*, and that case was strengthened by the decision in *Lee v. Weisman*. A constitutional amendment supporting this activity was sponsored by Ernest Istook and received a majority, but not a two-thirds, vote in the House in 1998. Hugo Black stated that these actions could violate the Establishment Clause in his 1962 decision, *Engel v. Vitale*. Name this activity that is banned in public education because it violates the separation of church and state.

school prayer [accept similar answers containing both underlined words or synonyms thereof; accept moment of silence or minute of silence; prompt on prayer or equivalents thereof]



Round # 8 3rd Section Toss-up Questions

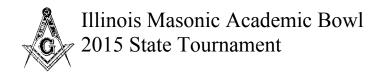
Question #17: Science – Biology

10 points

Spiderhunters and sunbirds belong to a family named after	<u>nectar</u>
this substance because it is a major part of their diet. For	
some organisms, this substance improves fitness by	
attracting ants, which deter herbivores [HUR-bih-vorz].	
Other organisms are not required to produce as much	
pollen as they would otherwise because this substance	
attracts insects. Name this sugary substance produced by	
plants that is used to make honey.	

Question #18: Literature – U.S. Literature

This author heaped praise on orange trees in a memoir	Harriet Beecher Stowe
recounting her time in Florida, <i>Palmetto Leaves</i> . She wrote	
of a man whose Quaker conversion came after being shoved	
off a cliff by a Kentucky farmer. Nina Gordon's plantation	
served as the setting for her novel <i>Dred</i> , and in another	
novel She created a protagonist who had visions of Jesus	
and Eva before his death is ordered by Simon Legree. Name	
this author of <i>Uncle Tom's Cabin</i> .	



Round # 8 3rd Section Toss-up Questions

Question #19: Social Studies – World History

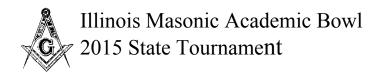
10 points

A massacre of nobles in this country's capital by Danish
king Christian II led to its' secession from the Kalmar
Union, and the rise of the Vasa dynasty. The Treaty of Kiel
granted this nation control of Norway. During the reign of
King Charles XII, this country won the Battle of Narva, but
lost the Great Northern War to Russia. Name this
Scandinavian country ruled by Gustavus Adolphus.

Kingdom of **Sweden** [accept **Konungariket Sverige**]

Question #20: Science – Astronomy

One design for a vehicle that would travel regularly between	Edwin Eugene "Buzz" Aldrin
Earth and Mars is named for this person, who wrote the	
book Mission to Mars: My Vision for Space Exploration.	
This person made headlines in 2002 when he punched	
conspiracy theorist Bart Sibrel. This person's	
autobiographies include Return to Earth and Magnificent	
Desolation, the latter of which is named for his statement	
when he did the activity he is most famous for. Name this	
person who was second to walk on the Moon, after Neil	
Armstrong.	



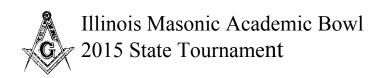
Question #21: Social Studies – World History

10 points per part

	rlborough House in London is the home of this	
org	anization's Secretariat.	
	Name this organization currently led by Secretary-	the Commonwealth of Nations
1	General Kamalesh Sharma, but whose ceremonial head	
	is Queen Elizabeth II.	
	When the Commonwealth of Nations recognized the	Islamic Republic of Pakistan
	nation of Bangladesh, this nation left in response. It	
2	returned, but its participation was subsequently	
	suspended following a 1999 coup led by Pervez	
	Musharraf [per-VEZ moo-SHAH-rahf].	
	Robert Mugabe [moo-GAH-bay] announced the	Republic of Zimbabwe
2	withdrawal of this nation from the Commonwealth	
3	following the re-election of Don McKinnon as	
	secretary-general and its suspension not being lifted.	

Question #22: Social Studies – World History

	s Special Administrative Region was the site of the 1-2-icident, which followed the Cultural Revolution.	
1	Name this former European colony that was transferred to China in December 1999.	Macau [muh-"COW"]
2	Macau was a former colony of this European power, which also controlled Mozambique.	<u>Portugal</u>
3	The "one country, two systems" policy utilized for Chinese Special Administrative Regions was developed by this premier, who bested the Gang of Four following	Deng Xiaoping



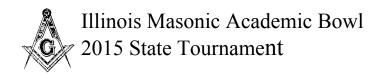
Question #23: Math – Trigonometry

10 points per part

	swer the following questions about small angle roximations. Assume all angles are in radians.	
1	Of the six basic trigonometry functions, for which two of them does the value of the function approximately equal the measure of the angle for very small angles?	sine and tangent [both answers in either order]
2	Which two of the six basic trigonometry functions have very high output values for very small positive input values? The graphs of these functions have asymptotes along the <i>y</i> -axis.	cot angent and cosecant [either order; cosecant can be called csc]
3	If you want to use a two-term small-angle approximation for the cosine function in radians on x , the best approximation is to start with one and subtract this number times x squared. Give the positive coefficient that gets multiplied by minus x squared.	½ [or 0 <u>.5</u>]

Question #24: Math – Trigonometry

	s function of x equals half of the sum of e to the x power s e to the minus x power.	
1	Name this function that increases towards positive infinity without bound as <i>x</i> approaches positive or negative infinity. Give the name of the function rather than the name of the shape of the curve.	hyperbolic cosine x [or cosh; do not prompt on partial answers]
2	What is the name of the shape of the hyperbolic cosine graph?	catenary ["CAT"-uh-nair-ee]
3	Find the hyperbolic cosine of the natural log of two.	<u>5/4</u> [or <u>1 ¹/4</u> or <u>1.25</u>]



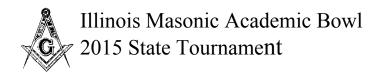
Question #25: Science – Physics

10 points per part

_	vsics can be used to explain why white light can be arated into different colors.	
	Name the bending of light due to a change of speed	refraction [accept word forms; do
1	when light moves from one medium to another. This phenomenon is described quantitatively by Snell's law.	not accept "diffraction"]
2	This term is used for the separation of colors into a spectrum due to different refractive indices for	dispersion [accept word forms]
2	different colors.	
	The sky is blue due to this type of elastic scattering	Rayleigh [RAY-lee] scattering
3	named for a Nobel laureate.	

Question #26: Science – Physics

	s principle states that buoyant [BOY-unt] force equals weight of displaced fluid.	
1	Identify this principle named for an ancient scientist.	Archimedes' [ar-kih-MEE-deez'] principle
2	Archimedes' principle can be explained by this principle, named for a different scientist, which states that a change of pressure in a fluid is transmitted evenly throughout the fluid.	Pascal's principle [or Pascal's law]
3	Archimedes is also the namesake of a type of this simple machine that is spun in order to lift objects.	Archimedes' screw pump [prompt on spiral or pump]



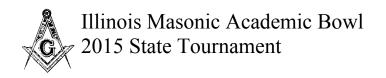
Question #27: Literature – U.S. Literature

10 points per part

	wrote of a man who imagined outswimming Union lets while awaiting being hanged.	
	This author wrote of the execution of Peyton Farquhar	Ambrose Gwinnett Bierce
1	[PAY-tun FAR-kwar] in "An Occurrence at Owl Creek Bridge."	
2	In this work, originally titled <i>The Cynic's Word Book</i> , Bierce called the title mythical figure "the author of all our woes."	The <u>Devil's Dictionary</u>
3	In <i>The Devil's Dictionary</i> , Bierce described this event as "a ceremony where…nothing undertakes to become supportable." The opening chapter of Upton Sinclair's <i>The Jungle</i> centers on one of these events in Lithuania.	wedding [accept equivalents]

Question #28: Literature – U.S. Literature

	later claimed that a dream was the inspiration for a rel concerning a talking mouse.	
1	Name this author of <i>Stuart Little</i> . He wrote about Fern Arable, her pig, and the spider who befriended that pig in <i>Charlotte's Web</i> .	Elwyn Brooks "E.B." White
2	E.B. White collaborated on a revision of <i>The Elements of Style</i> with this writer.	William <u>Strunk</u> , Jr.
3	White collaborated with this author on a satire of romance and marriage entitled <i>Is Sex Necessary?</i> This author also penned a story about a man who dreamt of being an expert with the Webley-Vickers 50.80.	James <u>Thurber</u>



Round # 8 5th Section Toss-up Questions

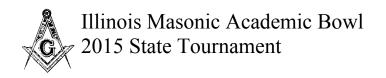
Question #29: Social Studies – U.S. History

10 points

This person was president when Amos Durfee was killed,	Martin Van Buren
and he tried to lessen tensions with Canada during William	
Mackenzie's Upper Canada Rebellion. This president tried	
to support Spain after a slave rebellion on a ship during the	
Amistad trial. This person's power increased after the	
Petticoat affair, because his positive treatment of Peggy	
Eaton pleased Andrew Jackson. This person's presidency	
was marred by the Panic of 1837. Name this president from	
New York whose re-election bid was defeated by William	
Henry Harrison.	

Question #30: Literature – World Literature

This text features a "Phoenician thing" that is explained	The Republic [accept Politeia]
using metals, with the prevailing goal being total	
segregation; that concept is the "noble lie." One tale in this	
work described a shepherd who could become invisible	
thanks to the ring of Gyges ["GUY"-jeez]. In it,	
philosophers are held up as those most fit to rule as kings	
and the least likely to be tempted by greed. Name this	
political tract by Plato that includes the allegory of the cave.	



Round # 8 5th Section Toss-up Questions

Question #31: Science – Chemistry

10 points

This scientist tried to apply his namesake equation to reactions between toxins and antitoxins, writing the book *Immunochemistry*. Multiplying the steric [STAIR-ik] factor by collision frequency gives the value of the pre-exponential factor, which is the *y*-intercept in a plot named for this person. In that plot, the reciprocal of temperature is on the *x*-axis, and the *x*-intercept equals the opposite of activation energy divided by the ideal gas constant. Name this scientist who defined acids and bases based on the ions they create in aqueous solution.

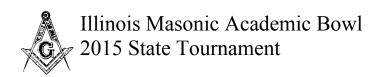
Svante **Arrhenius**

Question #32: Math – Math Concepts

10 points

In computer science, this concept is a more general form of aggregation, differentiated by the fact that it usually implies ownership. Combining two linear transformations by this operation is equivalent to matrix multiplication. This operation is generally identical to nesting functions. If this operation is used to create a function, then that function can be differentiated using the chain rule. If this operation combines two functions to give the identity function, then the two functions are inverses of each other. Name this operation that treats the output from one function as the input to another.

composition [accept word forms;
prompt on nesting before it is
mentioned]



Round # 8 Extra Section Toss-up Questions

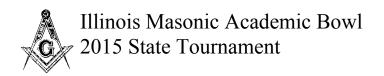
Extra Question #1: Social Studies – World History

10 points

Following the assassination of this country's leader	Republic of Haiti
Guillaume Sam, the US military intervened in its affairs	
until 1934. The Tontons Macoutes were a key tool of	
suppression during one dictator's rule of this nation. Its	
independence movement was led by Jean-Jacques	
Dessalines and Toussaint L'Overture. Formerly led by Papa	
and Baby Doc Duvalier, name this Francophone Caribbean	
country, ravaged by an earthquake in 2010.	

Extra Question #2: Math – Math Concepts

A variation on this situation developed by Robert Rosenthal	prisoner's dilemma	
is named for centipedes because of a diagram used to		
explain it. Maynard Smith added a level of complication to		
this situation by imagining mice in haystacks. In the long		
run, that version of this situation is equivalent to a stag hunt.		
Like the coordination problem, this situation has an optimal		
strategy called a Nash equilibrium. Name this game in		
which two people who cannot communicate with each other		
must choose to remain silent or betray the other person to		
their jailers.		



Round # 8 Extra Section Toss-up Questions

Extra Question #3: Science – Biology

10 points

This scientist is credited for coining the term "invertebrate" and for improving their classification. Some of his ideas have been revisited following studies by Lars Olov Bygren [OH-lawff "BUY"-gren] in Sweden that might be explained by DNA methylation [METH-ul-AY-shun] and histone [HISS-tohn] modification, and a different attempt to revive this man's ideas was made by Lysenko [ly-"SANK"-oh]. This scientist believed that increasing complexity and that movement towards perfection were natural, and he attempted to explain why giraffes have long necks. Name this French scientist who believed that environmental factors affect genetics.

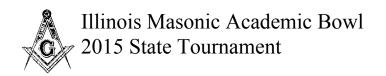
Jean-Baptiste Pierre Antoine de Monet, Chevalier de <u>Lamarck</u>

Extra Question #4: Literature - World Literature

10 points

He penned a poem comparing a locust shell to the outer robe of a woman he was pursuing. Following the discovery of his affair with Oborozukiyo [oh-bor-oh-zoo-kee-yoh], this half-brother of Emperor Sukazu was exiled to Suma. This owner of the Rokujo Mansion was the father of Emperor Reizei through Lady Fujitsubo [foo-jeet-soo-boh]. Name this husband of Princess Aoi ["ow"-ee] and title character of an 11th-century novel by Lady Murasaki.

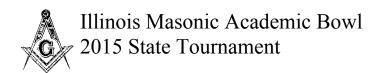
Hikaru <u>Genji</u> [accept <u>Shining</u> <u>Genji</u>; accept <u>Genji monogatari</u> or The <u>Tale of Genji</u>]



Round # 8 Extra Section Toss-up Questions

Extra Question #5: Fine Arts – Art History

This state's city of Mitchell is home to the world's only	South Dakota
Corn Palace. Henry Standing Bear commissioned what is	
planned to be the world's largest sculpture, currently being	
constructed on land in this state. Korczak Zielkowski [KOR-	
chahk zeel-KAWV-skee] designed this state's Crazy Horse	
Memorial. This state is also home to a granite carving near	
the city Keystone, designed by Gutzon Borglum, that shows	
four presidents. Name this state that contains Mount	
Rushmore.	



Round # 8 Extra Section Teamwork Questions

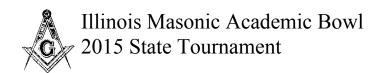
Extra Question #6: Science – Physics

10 points per part

The	first type of this device was the field effect type.	
1	Name these semiconductor devices that replaced vacuum tubes and are used in integrated circuits.	<u>transistor</u> s
2	Transistors are used as a switch and for this purpose. This name is given to any device that increases an electrical signal, especially if that signal is used to produce sounds.	amplifier [accept word forms]
3	Before silicon became popular, this other semiconducting element was used in most transistors.	germanium [jur-MAY-nee-um]

Extra Question #7: Science – Physics

Ide	ntify these units of energy.	
1	One of this unit of energy will raise the temperature of one gram of water by one degree Celsius.	small <u>calorie</u> [or <u>gram calorie</u>]
2	This CGS unit is equivalent to a force of one dyne acting over one centimeter.	erg
3	This unit of energy is approximately 1.6 times ten to the negative nineteenth joules.	electron volt [or EV; do not prompt on partial answers]



Round # 8 Extra Section Teamwork Questions

Extra Question #8: Social Studies – World History

10 points per part

One consequence of this policy was the recognition of the Oder-Neisse ["odor-niece"] line as a Polish border.		
1	Name this policy that sought to improve relations with countries east of the Iron Curtain.	Ostpolitik [ohst-poh-lee-teek] [prompt on "Eastern Policy"]
2	Willy [VIL-ee] Brandt promulgated Ostpolitik while leading this nation. He resigned following the revelation that Gunter Guillaume [GOON-tur ghee-YOHM] was a spy for a communist neighbor.	West Germany [do not accept or prompt on "Germany"]
	To this was a spy for a communist neighbor.	

Extra Question #9: Social Studies – World History

Ear	ly results from this policy included the establishment of	, , ,
a tourist region on Mt. Kumgang.		
	Name this policy that also resulted in collaboration on	Sunshine Policy
1	the Kaesong Industrial Park, and sought to bring about	
1	peaceful coexistence through cooperation and	
	exchange.	
	The Sunshine Policy's ultimate goal was to open up	North Korea [accept Democratic
2	this secretive nation, whose former leaders include Kim	People's Republic of Korea or
	Il Sung and Kim Jong II.	<u>DPRK</u>]
	The Sunshine Policy won this South Korean president	Kim dae-Jung [prompt partial
	the 2000 Nobel Peace Prize. Korean-Japanese relations	answer]
3	were strained following his kidnapping by Korean	
	spies in Tokyo; at the time he was an outspoken critic	
	of Park Chung-hee. Give his family and given names.	