Round 7
1st Section
Toss-up Questions

Question #1: Literature

10 points

One poem by this writer ends "O, rest ye, brother mariners, we will not wander more." This poet said of those mariners, "Branches they bore of that enchanted stem." This poet based that poem on both a trip to Spain and a group of people described in Homer's *Odyssey*. In another poem, this person said of a different group, "Theirs not to reason why, theirs but to do and die." This poet memorialized those people who rode "into the valley of Death". Name this English poet who wrote "The Lotos-Eaters" and was inspired by 600 soldiers during the Crimean War to write "The Charge of the Light Brigade".	(Alfred,) Lord **Tennyson**

Question #2: Science

10 points

A star named after this person is orbited by the extra-solar planets Galileo, Brahe [BRAH-hee], Lipperhey [LIP-ur-hay], Janssen and Harriot. The principle named after this person states that people on Earth do not occupy a special place in the universe. Just before this person's death, he published *On the Revolutions of the Celestial Spheres*, which included a note saying the work was not physical truth. Galileo was convicted for supporting this person's work. Name this Polish astronomer who wrote that planets travel in circular orbits around the Sun.	Nicolaus **Copernicus** [**kuh-PUR-nih-kuss**] [or Mikołaj **Kopernik** or Niclas **Koppernigk**]

Question #3: Fine Arts

10 points

Luigi Cherubini [kair-oo-BEE-nee] wrote two compositions of this type, the first of which Robert Schumann [SHOO-mon] called "without equal in the world". Gabriel Fauré [gah-bree-el foh-ray] wrote a work of this type that is unusual because it omits some traditional sections such as the *Tuba mirum*. This type of work usually contains a *Dies irae* [DEE-ess EE-ray] and *Kyrie eleison* [KEER-ee-ay eh-LAY-uh-sahn], and it typically ends with an *In paradisum* section. Wolfgang Mozart died while working on one of these compositions, so Franz Xaver Süssmayr [SOOSS-"my"-ur] finished it. Name these pieces often written to comfort mourners at a funeral.	**requiem** masses or **requiems** [prompt on **mass**es for the dead]

Question #4: Social Studies

10 points

About half of what is now this state was ceded to the United States in the *Treaty of Dancing Rabbit Creek* by Choctaw Native Americans. The first African-American person to enroll in this state's flagship university, who would later survive being shot during a march, was James Meredith. Reactions against integration in this state led to the murder of Medgar Evers, and reactions against voter registration led to the murders of James Chaney, Andrew Goodman, and Michael Schwerner near the small town of Philadelphia. Name this state where the Battle of Vicksburg was fought.	**Mississippi**

Question #5: Literature

10 points

This woman and her husband were turned into lions after profaning one of the gods. The sons of Thestios [THESS-tee-ohss], who were named Toxeus [TAHK-see-us] and Plexippus [PLEK-sih-puss], were killed after they took a prize from this woman, but Althaea [al-THEE-uh] then killed the man who killed them by burning a log. This woman killed Hylaeus ["hi"-LAY-us] and Rhoecus [ROY-kuss] when those two centaurs tried to attack her. Before Meleager [mel-ee-AY-gur] killed the Calydonian [kal-uh-DOH-nee-un] Boar, this woman injured it. As an infant, this woman was suckled by a bear. Name this woman who promised to marry any man who could beat her in a race, and who lost a race because she was distracted by three golden apples.	**Atalanta**

Question #6: Science

10 points

In most mammals, this gland has three lobes, but in humans the intermediate lobe is just a layer of cells. This gland's lactotropic [lak-toh-TROH-pik] cells release prolactin ["pro-LACK-tin"]. Some hormones are released by this gland but not created in it, such as the ones that encourage uterus contractions and increase blood pressure, which are oxytocin [ahk-see-TOH-sin] and vasopressin [vay-soh-PRESS-in]. This gland's somatotropic [soh-MAT-oh-TROH-pik] cells release growth hormone in response to signals from the hypothalamus ["hype"-oh-THAL-uh-muss]. Name this gland below the hypothalamus and in front of the pineal [py-NEE-ull] gland, near the brain.	**pituitary** [**pih-TOO-ih-tair-ee**] gland [or **hypophysis**]

Question #7: Social Studies

10 points per part

This church is sometimes called the Egyptian Orthodox Church.		
1	Name this Christian church headquartered in Alexandria, Egypt.	**Copt**ic Orthodox Church of Alexandria
2	The Coptic Church claims to have been founded by this apostle who wrote the second gospel in the New Testament.	**Mark**
3	The Coptic Church split from other Christian churches after this 451 CE council due to a dispute over whether Jesus has one nature or two natures.	Council of **Chalcedon** [**KAL-sih-dahn**]

Question #8: Social Studies

10 points per part

The Episcopal Churches in the United States and Scotland began as part of this church.		
1	Name this Protestant religion that started as the Church of England.	**Anglican** Church [accept **Anglican**ism or **Anglican Communion**]
2	This position, also referred to as Primate of All England, is generally considered the highest position in the Anglican Communion, though this position does not have legal authority over member churches.	(Lord) **Archbishop of Canterbury** [prompt on partial answer]
3	Anglican leaders gather at this conference approximately every 10 years. This conference is named for the London borough between Wandsworth and Southwark [SUTH-urk].	**Lambeth** Conference

Question #9: Science

10 points per part

In this type of circuit, the power source supplies electromotive force that forms a sine wave when graphed against time.		
1	Name this type of circuit contrasted with a direct current circuit.	**alternating**-current circuit or **AC** circuit
2	Alternating current allows voltage to be stepped up or down using one of these devices that contains primary and secondary windings.	**transformer**s
3	The voltage in an alternating current circuit is often calculated using this type of average. For a sine wave, its result is the amplitude over the square root of 2.	**root-mean-square** average or **RMS** average

Question #10: Science

10 points per part

The relativistic form of this effect uses the equation square root of the entire quantity, the quantity c plus v, end quantity, divided by the quantity c minus v.		
1	Name this effect in which frequencies and wavelengths change due to relative motion between the source of a wave and the observer.	**Doppler** effect
2	Doppler red-shifts were used to find this value. It represents the speed galaxies are moving outwards divided by their distance from the center of the universe.	**Hubble** constant
3	Objects moving away from us are red-shifted. What similar term refers to the Doppler effect on objects moving towards us?	**blueshift**ed

Question #11: Literature

10 points per part

This play includes both a logical argument as to whether Socrates is a cat [pause] and a housewife announcing that her cat has been trampled.		
1	Name this play about an unusual epidemic. It begins with an argument between Bérenger [bair-en-zhay] and Jean [zhahn], and it ends with an argument between Bérenger and Daisy.	***Rhinoceros*** [or ***Rhinocéros***]
2	This author wrote *Rhinoceros* as well as *The Bald Soprano*.	Eugène **Ionesco** [oo-zhen **yawn-ess-koh**] [or Eugen **Ionescu**]
3	*The Bald Soprano* is set in the suburbs of this city.	**London**, England, United Kingdom

Question #12: Literature

10 points per part

In this poem's section about Byblis [bub-LEESS] and Caunus [KAW-nuss], it states "The gods have their own laws."		
1	Name this Latin narrative poem, written in the first decade after the birth of Jesus, that covers from the time of Chaos before Earth's creation until the death of Julius Caesar.	***Metamorphoses***
2	This author wrote *Metamorphoses* as well as *Ars Amatoria*.	(Publius) **Ovid**(ius Naso) [**AH-vid**]
3	James George Frazer translated this Ovid work whose title is sometimes given as *The Book of Days* or *On the Roman Calendar*. The part describing the second half of the calendar was either lost or never written.	***Fasti*** or ***Fastorum*** *Libri Sex*

Question #13: Mathematics

10 points per part

When a fraction's denominator is a complex number, the fraction can be rationalized by multiplying both the numerator and denominator by a number that has this relationship to the denominator.		
1	Give this term for a number that has the same real component but opposite imaginary component as another number.	complex **conjugate** [accept complex **conjugation**]
2	A matrix is called Hermitian [air-MISH-un] if a combination of conjugation and this other operation does not change the matrix.	**transposition** or **transpose** [or **transposing**]
3	Find the simplified result when 5 plus $2i$ is multiplied by its conjugate.	**29**

Question #14: Mathematics

10 points per part

For an ellipsoid, this quantity equals 4/3 times pi times the product of the three radii [RAY-dee-"eye"].		
1	Name this quantity that for a rectangular prism equals length times width times height.	**volume**
2	Name the type of product used to find the volume of a parallelepiped [par-uh-lel-uh-PIE-pid]. This product combines a cross product and dot product.	(scalar) **triple** product
3	Find the volume of a sphere whose radius is 3 units, in terms of pi.	**36** (times) **pi** cubic units [do not accept or prompt on partial answers]

Question #15: Miscellaneous

10 points

Susan Goldberg became the editor-in-chief of this magazine in 2014, and in 2018 she stated that its coverage has been racist. Steve McCurry took this magazine's June 1985 cover photograph showing a Pakistani girl with wide eyes. Though the print edition of this magazine is monthly, Liz Langley writes a "Weird Animal Question of the Week" column for it. This magazine shares its name with the large non-profit scientific and educational organization that oversees it. This magazine's cover has an iconic thick yellow border. Name this magazine known for its photographs from throughout the world.	***National Geographic*** [prompt on ***Nat Geo***]

Question #16: Social Studies

10 points

A failed assassination attempt against this person is portrayed in the book *The Day of the Jackal*. This politician resigned after a referendum to set up regional councils and reform his country's senate was voted down in 1969. As this person rose to power earlier, he was very critical of his former boss Philippe Pétain [peh-tan]. After a referendum supported the Évian Accords, this person granted independence to Algeria. This person's Appeal of 18 June was given from London to inspire French resistance. Name this politician who led the Free French Forces against Nazi Germany and later became the president of France.	Charles **de Gaulle** [sharl duh **"goal"**] [prompt on **Gaulle**]

Question #17: Mathematics

10 points

For Taylor polynomials, this quantity is equivalent to error and can be estimated using expressions named for Lagrange [luh-grahnzh] or Cauchy [koh-shee]. Little Bézout's [beh-zoo'z] theorem, which is sometimes named for this quantity for polynomials, describes how to find this quantity by plugging a number into a polynomial. The modulo [MAH-yoo-loh] operation is equivalent to finding this quantity from division. When synthetic division is performed, this number is written in the lower right corner. Name this number that arises when the division of whole numbers does not give a whole-number answer.	**remainder**(s)

Question #18: Literature

10 points

One poem by this writer states "This is Number Three. What a trash, to annihilate each decade." This writer put those lines after stating: "I am only thirty. And like the cat, I have nine times to die." Another poem by this writer states "I have always been scared of you, with your Luftwaffe [LOOFT-vah-fuh], your gobbledygoo." A novel by this writer is about an intern at *Ladies' Day* magazine who goes through electroconvulsive therapy as treatment for depression. Name this poet of "Lady Lazarus" and "Daddy" who wrote about Esther Greenwood in *The Bell Jar*.	Sylvia **Plath**

Question #19: Science

10 points

One rule for this process states that the gradient of chemical potential equals temperature times the gradient of the natural log of activity. That rule is the Maxwell–Stefan [STEH-fahn] rule. Other laws for this process say that accumulation is proportional to the second derivative of concentration with respect to length, and flux is proportional to the product of concentration times mass fraction. Those two rules were discovered by Adolf Fick. When this process involves the movement of a solvent such as water, it is called osmosis. Name this process, caused by molecular motion, that is a net flow of molecules from higher concentrations to lower concentrations.	**diffusion** [accept **diffusing**; do not accept "effusion"]

Question #20: Social Studies

10 points

This lake is the largest remnant of the Pamlico Sea. This lake is just west of the historic site Big Mound City, which is in the J. W. Corbett Wildlife Management Area near the DuPuis [doo-pwee] Management Area. Some of the locations near this lake are named for the Mayaca and Belle Glade cultures that lived near it. This lake is fed by the Kissimmee River. One of the attempts to decrease flooding from this lake was the construction of the Saint Lucie Canal, which leads to the Gulf of Mexico. This lake is west of Palm Beach and at the north end of the Everglades. Name this large lake in Florida.	Lake **Okeechobee** [**oh-kee-CHOH-bee**]

Question #21: Science

10 points per part

These compounds contain carbon and a 2-to-1 ratio of hydrogen to oxygen.		
1	Name these compounds often found in foods, such as sugar, starch, and cellulose.	**carb**ohydrates or **carb**s [prompt on **saccharide**s]
2	Cellulose combines with pectin to form this structure that exists in most living things but not in animals.	**cell wall**s
3	Though cellulose is usually produced in plants, it is also produced by these invertebrate chordates [“CORE-dates”] that are sometimes called sea squirts.	**tunicate**s [accept **Tunicata**]

Question #22: Science

10 points per part

Identify these human hormones:		
1	This hormone is the primary male sex hormone. Men have about eight times as much of this androgen hormone as women.	**testosterone**
2	This steroid hormone is released by the adrenal [uh-DREE-null] gland during stress, and it makes glucagon [GLOO-kuh-gahn] and adrenaline more effective.	**cortisol**
3	This hormone, produced in the kidney chromaffin [“CHROME-uh-fin”] cells, binds to morphine receptors and is similar to endorphins.	**enkephalin**(s) [**en-KEFF-uh-lin**]

Question #23: Fine Arts

10 points per part

Answer the following about sculptures with mythological themes:		
1	This prominent sculpture in the Louvre [loov] depicts Nike but is missing the head.	*Winged* ***Victory of Samothrace*** [prompt on *Winged* ***Nike of Samothrace*** or *Winged* ***Victory*** or *Winged* ***Nike***]
2	In the 1620s, this artist depicted a nymph turning into a tree in the sculpture *Apollo and Daphne*.	Gianlorenzo **Bernini** ["John"-loh-REN-zoh **bair-NEE-nee**] [or Giovanni Lorenzo **Bernini**]
3	This ancient artist sculpted *Hermes Bearing the Infant Dionysus ["die"-oh-NY-suss]*, which is missing an arm.	**Praxiteles** [**prak-SIT-uh-leez**] of Athens

Question #24: Fine Arts

10 points per part

Answer the following about paintings that show apples:		
1	This surrealist painter placed a green apple in front of a person's face in *The Son of Man*.	René (Fran cois Ghislain) **Magritte** [ren-ay **mah-greet**]
2	This French Post-Impressionist artist painted *The Basket of Apples*, *Still Life with Apples*, and *The Plate of Apples*.	Paul **Cézanne**
3	In *The Three Graces*, this artist had each grace hold an apple with one hand and put the other hand on the shoulder of another grace. Over 100 years later, Peter Paul Rubens painted the same subject without apples.	**Raphael** [or **Raphaello Sanzio** da Urbino or Raphael **Santi**; accept any underlined name]

Question #25: Literature

10 points per part

This play ends with the lines "Give me your hands, if we be friends, and Robin shall restore amends."		
1	Name this play by William Shakespeare in which Puck speaks after a group wedding that includes Theseus and Hippolyta [hih-PAH-lih-tuh].	*A* ***Midsummer Night's Dream***
2	This character is the king of the fairies in *A Midsummer Night's Dream*.	**Oberon** [**OH-bur-ahn**]
3	Finish the line spoken by Puck that begins "Lord, what fools..."	"Lord, what fools **these mortals be**!"

Question #26: Literature

10 points per part

This poem observes "What mighty contests rise from trivial things."		
1	Name this poem about a "dire offense" by the Baron against Belinda.	*The* ***Rape of the Lock***
2	This satirist wrote *The Rape of the Lock*, *The Dunciad ["DUNCE"-ee-ad]*, and *An Essay on Criticism*.	Alexander **Pope**
3	Finish the line from *An Essay on Criticism* that begins "For fools rush in…"	"For Fools rush in **where Angels fear to tread**."

Question #27: Social Studies

10 points per part

There were protests in this location from April 15 to June 4, 1989.		
1	Name this location in Beijing where students marched for a more open government.	**Tiananmen** Square
2	This Chinese leader, who was officially the chairman of the Central Military Commission at the time, was criticized for his crackdown against the protests. This person also replaced Zhao Ziyang with Jiang Zemin [j'yahng zuh-MIN] as General Secretary.	**Deng** Xiaoping [prompt on **Xiaoping**]
3	In the middle of the protests, Deng met with this last major leader of the Soviet Union.	Mikhail **Gorbachev**

Question #28: Social Studies

10 points per part

This battle was fought in Embabeh [em-BAH-bay] and is named for objects that were visible on the horizon during the fighting.		
1	Name this 1798 victory in Egypt by Napoleon.	Battle of the **Pyramids**
2	At the Battle of the Pyramids, the French defeated a remnant of this 13th- through 16th-century sultanate that came from slave soldiers.	**Mamluk**s
3	One month later, Horatio Nelson won this major victory over the French at Aboukir [ah-BOO-kir] Bay on the coast of Egypt.	Battle of the **Nile**

Question #29: Mathematics

10 points

This function gives the position of where a ray from the origin intersects the line "y equals 1". The range of the inverse of this function is the open interval from zero to pi. This function equals the derivative of the natural log of the sine function. The derivative of this function is the opposite of the square of the co·secant function, so this function decreases over its entire domain. Adding 1 to the square of this function gives the square of the co·secant function. On the unit circle, this function equals x over y. Name this function that, for an acute angle in a right triangle, equals the adjacent side length over the opposite side length.	**co·t**angent [accept answers that additionally mention a variable; do not prompt on "tan" or "tangent"]

Question #30: Literature

10 points

In response to another character mentioning respect after saying "I never boast, and I never tell lies", this character says "Respect was invented to cover the empty place where love should be." After that argument with her lover, this character visits her brother Stiva's [STEE-vuh'z] wife, Dolly. This character becomes distraught when she receives a telegram from Vronsky saying that he cannot return to her quickly. This woman is the title character of a novel that states "All happy families resemble one another; each unhappy family is unhappy in its own way." Name this woman who throws herself in front of a train in a novel by Leo Tolstoy.	**Anna Karenina** [accept either]

Question #31: Science

10 points

The carriers of this force are represented by a 3-by-3 matrix of complex numbers with 10 conditions on it, which explains why there are eight types of this force. The carrier of this force is affected by this force, and as a result, at very small distances this force increases with distance. The lack of effect of this force at extremely small distances is asymptotic ["ass-imp"-TAH-tik] freedom. This fundamental force is described in the theory of quantum chromodynamics ["CHROME-oh-dynamics"], and it is carried by gluons ["glue-ons"]. Name this fundamental force that binds quarks together to form hadrons [HAY-drahnz], and which binds protons and neutrons together to form an atomic nucleus.	**strong** nuclear force or **strong** interaction

Question #32: Social Studies

10 points

When this person became U.S. Secretary of State, he worked out treaties with 29 countries to refer disputes to the Permanent International Commission. This person was Woodrow Wilson's first secretary of State, but he resigned after the *Lusitania [loo-suh-TAY-nee-uh]* was sunk because he wanted the U.S. to remain neutral. Just before he died, this person tried to uphold Tennessee's Butler Act by arguing a case against John Scopes, who was represented by Clarence Darrow. This person was the Democratic presidential nominee in 1896, 1900, and 1908. Name this politician and orator who delivered the Cross of Gold speech.	William Jennings **Bryan**

Extra Question #1: Fine Arts

10 points

This artist made two paintings with the same title, one now in Milan that shows Jesus pointing with his right hand and another now in London with an open right hand. Both of those paintings depict Jesus identifying himself to two disciples after his death. Another painting by this artist depicts Jesus pointing at a man in a customs house who is about to become a disciple. That painting in the Contarelli [kohn-tah-RELL-lee] Chapel is part of a series of paintings that this person made of that disciple. Name this Italian painter of *Supper at Emmaus [eh-MAY-uss]* and *The Calling of Saint Matthew*.	(Michelangelo **Merisi** da) **Caravaggio** [accept either underlined name; do not accept or prompt on "Michelangelo"]

Extra Question #2: Science

10 points

In S.I. units, electric field strength is given in this unit per meter. To calculate the amount of energy that a capacitor can store in joules ["jewels"], multiply one-half times the number of farads times the square of a quantity that is measured in this unit. A measurement in this unit tells the number of joules required to move a coulomb [koo-lohm] of charge from one point to another. From that definition, it can be derived that this unit times amperes equals watts, which is a common formula for Joule heating. This unit is equivalent to amperes times ohms, and it is the most common unit of electric potential difference. Name this unit commonly used to measure the strength of a battery.	**volt**s [do not accept "voltage"]

Extra Question #3: Social Studies

10 points

This explorer used the ships *Half Moon* and *Discovery*. The navigator Abacuk [AB-uh-kuk] Pricket kept notes about this explorer's journeys, including the end when a mutiny sent this man, his son, and a few other sailors out in an open boat because most of the crew wanted to return home. The mutiny occurred after the expedition got trapped in ice in what is now called James Bay. In 1609, this explorer went along the coast of what is now Canada and the northern U.S., and in 1610, this explorer went across the Labrador Sea in the strait now named for him. Name this explorer who tried to find the Northwest Passage and is now the namesake of a river and a bay.	Henry **Hudson**

Extra Question #4: Literature

10 points

This author wrote about Judith and Hetty Hutter, who learn that Floating Tom Hutter is not their father just before he dies. Floating Tom teamed up with Hurry Harry in a book by this author that describes attacks against the Mingos. In that book, this author wrote about the birth of Uncas, who was the son of Chingachgook [CHEEN-gach-gook]. Several books by this author are set at the frontier in New York State and feature a character with several nicknames, including "Hawkeye". Name this author who wrote about Natty Bumppo in the *Leatherstocking Tales*, which include *The Deerslayer* and *The Last of the Mohicans*.	James Fenimore **Cooper**

Extra Question #5: Mathematics

10 points

Vizing's ["VIE"-zeeng'z] theorem puts graphs into this many classes. This number is the chromatic number of a graph whose edges correspond to the sides of a polygon with an even number of sides, which is one less than for a polygon with an odd number of sides. If multiplying a prime by this number and adding 1 gives another prime, then the original prime is a Germain [zhair-"main"] prime. The sum from zero to k of $1/2$ to the k power equals this number. Identify this number that is the only even prime.	**2**

Extra Question #6: Science

10 points per part

Deuterium [doo-TEER-ee-um] and tritium [TRIH-tee-um] have this relationship to hydrogen.		
1	Give this general term for atoms that have the same number of protons but different numbers of neutrons.	**isotope**s [**"ICE"-oh-tohp**s]
2	This element can be turned into a super·fluid. One of its isotopes has two different superfluid states, and another isotope has only one superfluid state.	**helium** [accept **He**]
3	The Girdler process to separate isotopes of hydrogen is named for this ion, which consists of a sulfur atom with a 2-minus charge.	**sulfide** [do not accept "sulfite" or "sulfate"]

Extra Question #7: Science

10 points per part

This quantity can be called amount concentration or substance concentration.		
1	Name this measure of concentration equal to moles per liter.	**molar**ity or **molar** concentration [do not accept "molality"]
2	This measure of equivalent concentration is always an integer multiple of molarity.	**normality**
3	One way to calculate normality is to divide molarity by an equivalence factor that is less than 1. Find the equivalence factor for phosphoric acid.	**1/3**

Extra Question #8: Social Studies

10 points per part

This person was the president during the September 11 terrorist attacks.		
1	Name this president whose father was also president.	George (Walker) **Bush** [accept **Bush** 43; accept the younger **Bush** or similar answers that specify his relative or absolute position]
2	Bush was criticized for his reaction to this hurricane that struck New Orleans in 2005.	Hurricane **Katrina**
3	Near the end of Bush's presidency, the Great Recession started after this financial services firm filed for bankruptcy. It was the largest bankruptcy filing in U.S. history.	**Lehman Brothers** (Holdings Inc.) [prompt on **Lehman**]

Extra Question #9: Social Studies

10 points per part

This U.S. president gave a speech at the Berlin Wall during which he said "Tear down this wall!".		
1	Name this president who won the elections of 1980 and 1984 by wide margins.	Ronald (Wilson) **Reagan**
2	In 1986, President Reagan ordered the bombing of this country. This country claimed that one of the people killed was the daughter of its leader, Muammar Gaddafi [MOO-ah-mar gah-DAH-fee].	(State of) **Libya** or (Dawlat) **Libiya**
3	While in office, Reagan pushed for the development of this system—nicknamed "Star Wars"—that would block nuclear missiles. It was researched but never implemented.	**Strategic Defense Initiative** or **SDI**