



Question #1: Social Studies

10 points

<p>This explorer was the first person to lead a team that crossed the Antarctic Circle. Tobias Furneaux [fur-noh], who worked for this explorer, took a person named Omai ["OH-my"] from Tahiti to England, and this person brought Omai back on board the HMS <i>Resolution</i>. This person's first trip to Tahiti was to observe a transit of Venus in 1769. This explorer was killed while trying to retrieve a small boat from natives by kidnapping the king of Hawaii. Name this explorer who made the first recorded circumnavigation of New Zealand and who mapped the eastern coastline of Australia.</p>	<p>James <u>Cook</u></p>
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Question #2: Miscellaneous

10 points

<p>This organization's employees Maggie Michael, Maad al-Zikry and Nariman [nah-ree-MAHN] El-Mofty won awards for their recent work in Yemen. The concept of "quasi-property" was given Supreme Court backing when this organization won the <i>I.N.S.</i> case. Moses Yale Beach started this organization, after having worked at <i>The Sun</i>, to improve information-gathering during the Mexican-American War. This organization had a major rivalry with UPI, but since the UPI is now smaller, this organization's biggest rival is Reuters [ROY-turs]. Name this U.S. organization whose members are newspapers.</p>	<p><u>Associated Press</u> or <u>AP</u></p>
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Question #3: Science

10 points

<p>This quantity is multiplied by electric susceptibility and electric field strength to find polarization density. The di-electric constant can be called “specific inductive capacity” or the “relative” type of this quantity. This quantity measures the ability of a material to store electrical potential energy. 1 over this quantity times permeability equals the speed of light squared. The Coulomb force constant is found by taking the reciprocal of 4 pi times the value of this quantity for a vacuum. Name this quantity that equals about 8.854 times 10 to the -12 farads per meter as a measure of “free space”.</p>	<p>(absolute) <u>permittivity</u> [accept <u>permittivity</u> of free space or vacuum <u>permittivity</u> or relative <u>permittivity</u>]</p>
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Question #4: Literature

10 points

<p>One poem by this writer states “Weave the warp, and weave the woof, the winding sheet of Edward’s race.” In that poem, the English king is cursed by a character from Wales. In addition to that Pindaric [pin-DAR-ik] ode, another work by this poet states, “Full many a flower is born to blush unseen.” This person wrote that work after the death of Richard West. In that work, this poet stated “The paths of glory lead but to the grave,” and he ended it with a section called “The Epitaph”. Name this 18th-century English poet who used the line “The curfew tolls the knell of parting day” to begin his poem <i>Elegy Written in a Country Churchyard</i>.</p>	<p>Thomas <u>Gray</u></p>
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Question #5: Mathematics

10 points

Three times the radius of a triangle's in-circle equals this value calculated from the triangle's altitudes. Half of this value is used to solve the crossed ladders problem, giving the height where two ladders meet if the top of each one is above the bottom of the other one. This value is the average speed when an object travels the same distance at two different speeds. This quantity is calculated by dividing the number of values by the sum of the reciprocals of the values. Name this type of average that is neither **arithmetic** [air-ith-MET-tik] nor geometric.

harmonic mean [do not accept or prompt on partial answers]

Question #6: Social Studies

10 points

Some of these texts are classified as “mursal” because the proof of their chain of transmission is weak, in terms of the **isnads** [iz-NODZ] that attest to their authenticity. These texts are classified as **mawdu** [maw-DOO] if they are determined to be untrue. Six of the books containing these texts are collectively called **Kutub al-Sittah** [koo-TUB ahl SIT-tuh]. One of these texts states that people can enter Paradise if they believe in the 99 names of God. Another of these texts states the Six Articles of Faith. These texts are sometimes viewed as documentations of practices called **sunnah** [SOON-uh]. Name these texts that tell of the words and actions of Muhammad.

hadiths [accept **isnad** before it is mentioned]



Question #7: Fine Arts

10 points per part

This building started out as a Hindu temple but long ago was converted into a Buddhist temple.		
1	Name this enormous complex that appears on the flag of Cambodia.	<u>Angkor Wat</u>
2	Angkor Wat is an example of Khmer architecture, which was influenced by this architectural style from southern India and Sri Lanka. This style shares its name with the family of languages that includes Tamil [TAM-il].	<u>Dravidian</u> [druh-VID-ee-un]
3	This is the name of a monumental entrance tower of a Hindu temple, especially in Dravidian architecture. Angkor Wat has these towers, though they are thinner than many Dravidian examples.	<u>gopuram</u>

Question #8: Fine Arts

10 points per part

This title is shared by a 1963 lithograph and a 1964 enamel-on-steel work by the same artist.		
1	Name these works that both show the face of a blonde female, one of whom has her hand by her mouth and the other of whom has her hand just under her eye.	<u>Crying Girl</u>
2	This artist used Ben-Day dots in composing the <i>Crying Girl</i> pictures, as well as in <i>Whaam!</i>	Roy (Fox) <u>Lichtenstein</u>
3	Lichtenstein also used Ben-Day dots in this sculpture that he created for the 1992 Summer Olympics.	<i>The <u>Head of Barcelona</u></i> [or <i>El <u>Cap de Barcelona</u></i>]



Question #9: Science

10 points per part

This compound is the simplest alkene.		
1	Name this compound whose chemical formula is C_2H_4 ["C two H four"].	<u>ethylene</u> or <u>ethene</u>
2	Alkenes are often produced by this type of reaction in which a pair of atoms or groups of atoms are removed from a molecule. These reactions often involve dehydration.	<u>elimination</u> reactions or <u>eliminations</u>
3	What rule states that in elimination reactions, hydrogen is removed from the beta-carbon with the fewest hydrogen atoms?	<u>Zaitsev's</u> rule

Question #10: Science

10 points per part

This constant is often uni-molecular, bi-molecular, or ter-molecular, and it is often represented by the letter k .		
1	Name this constant that is multiplied by the concentration of reactants to find how fast a reaction proceeds.	reaction <u>rate</u> constant or reaction <u>rate</u> coefficient
2	The rate constant was introduced in the development of this law by Cato Guldberg and Peter Waage [VAH-guh] before the work of Jacobus Henricus van 't Hoff [yah-KOE-bus hen-REE-kus vont hof].	law of <u>mass action</u>
3	The uni-molecular rate constant times the half-life of a reaction is always equal to this value. Give a mathematically precise answer, not an approximation.	natural <u>logarithm</u> of <u>2</u> [or the <u>logarithm</u> base e of <u>2</u> ; accept <u>ln 2</u> ; do not accept or prompt on partial answers]



Question #11: Literature

10 points per part

One poem addressed to this woman begins “I hate and love. Why I do so, perhaps you ask. I know not, but I feel it, and I am in torment.”		
1	Name this woman who was probably based on Clodia Metelli, and who is the subject of several ancient poems.	Lesbia
2	This Latin poet wrote to Lesbia. His poems are numbered from 1 to 116 and include several invectives.	(Gaius Valerius) Catullus [kuh-TULL-uss]
3	Catullus occasionally used a meter named after this poet from Lesbos.	Sappho [SAF-oh] [prompt on Sapphic meter]

Question #12: Literature

10 points per part

One of this author’s title characters, Indiana, is married to Colonel Delmare but is in love with Raymon de Ramiere.		
1	Name this French author who also wrote <i>Consuelo</i> .	George Sand [zhorzhsahnd] [or Amantine Dupin]
2	Near the beginning of an extremely long work by this other author, a mother in Combray reads George Sand novels to her son.	(Valentin Louis Georges Eugène) Marcel Proust
3	George Sand dedicated her novel <i>Le Dernier Amour</i> to this close friend of hers who wrote <i>Madame Bovary</i> .	Gustave Flaubert [goo-stahv “flow-bear”]



Question #13: Social Studies

10 points per part

This quantity is usually a good measure of value.		
1	Name this synonym of “cost”, referring to the amount of money charged to buy a good or service.	<u>price</u>
2	This practice of significantly raising prices during an emergency is sometimes a crime, though many economists do not think it should be a crime.	price <u>gouging</u> [prompt on <u>spike</u> or <u>spiking</u>]
3	This name is given to monetary values that are assigned to unknowable costs that may be implicit or intangible.	<u>shadow</u> prices

Question #14: Social Studies

10 points per part

This economic quantity is calculated by dividing the percent change of two variables.		
1	Give this general term for a measure of how one economic variable responds to changes to the other.	<u>elasticity</u>
2	A firm should always select a price in the elastic region of its demand curve in this type of situation in which there is only one supplier.	<u>monopoly</u>
3	In contrast with a monopoly, this situation has the market controlled by a single buyer. When employers are the buyers of labor in this situation, they face a finite labor-supply elasticity.	<u>monopsony</u>



Question #15: Science

10 points

It is difficult to distinguish between BL **Lacertae** [lah-SUR-tee] objects and the optically violent variable types of these objects. Over the last few decades, scientists have gone from thinking that all of these objects are radio-loud to thinking only 10% are radio-loud. One of these objects in the **Boötes** [boh-OH-teez] constellation is over 13 giga-light years away. What used to be thought of as radio galaxies are now known to be these objects seen from a different angle. The name of these objects is based on them looking like stars and producing radio waves. Name these gaseous accretion disks surrounding supermassive black holes, making up extremely bright active galactic nuclei.

quasars [or blazars]

Question #16: Literature

10 points

Several characters in this novel take the painkiller **Dilaudid** [dih-LAW-did], including Nooch and Eugene Fackelmann. Several characters in this novel play a sport that requires 8 to 12 people, at least 40 megabytes of available RAM, and 400 dead tennis balls. That sport, called **Eschaton** [ESS-kuh-tahn], was mastered by Michael Pemulis. In this novel, the sport is often played near the Ennet House Drug and Alcohol Recovery House at the Enfield Tennis Academy. Much of this novel is set during the Year of the Depend Adult Undergarment. Name this novel with a large number of endnotes, written by David Foster Wallace.

Infinite Jest



Question #17: Social Studies

10 points

This person led a group that ambushed Thomas Van Horne at the Battle of Brownstown. This person then worked with Isaac Brock to get William Hull to surrender Detroit. While this person was traveling in order to build a bigger alliance in 1811, his brother got into a costly battle against the U.S. that ended with their village being burned down. This person and his war chief, Roundhead, were killed at the same battle as each other. This leader of the Shawnee was the brother of Tenskwatawa [ten-skwah-TAH-wuh]. Name this leader who died fighting William Henry Harrison at the Battle of the Thames [temz] two years after his brother's loss at Tippecanoe.

Tecumseh

Question #18: Fine Arts

10 points

This opera's aria "In quegli anni" [een KWAY-yee AH-nee] is sung by a music teacher, though that number is dropped from some productions to shorten the fourth act. One character in this opera sings "Non so piú cosa son" and "Voi che sapete" [voy kay sah-PEH-tay]. That character, who announces that he is infatuated with all women and is later taught to act like a woman, is Cherubino ["care"-oo-BEE-noh]. During this opera, the Count believes that he is having an affair with Susanna, who is actually his wife in disguise. Name this opera by Mozart that has many of the same characters as Gioachino Rossini's [joh-ah-KEE-noh roh-SEE-nee'z] *The Barber of Seville*.

The Marriage of Figaro
[or *Le nozze di Figaro*]



Question #19: Science

10 points

When these organisms have scales, they are called “squamulose” [SKWAH-myoo-lohss]. The *Cladonia* genus of these organisms is eaten by animals and used as an antibiotic cream. Reindeer and caribou have an enzyme named for this type of organism, which is useful because this organism is the most important part of those animals’ winter diets. Like mosses, these organisms have rhizines [“RYE”-zynz] that help them attach to surfaces. Recent studies found that these organisms can be made in part from yeast, and they often include cyano·bacteria [“sigh-AN-oh-bacteria”]. Name this composite organism that consists of algae and fungi.

lichens

Question #20: Literature

10 points

When this god’s father Vayu went on strike, the other gods gave powers to this god to bring back the wind. This god’s name came from the time he jumped into the sky in an effort to play with the Sun but was struck down by Indra, who threw a lightning bolt at his jaw. This god often forgot his powers until reminded of them, including the time that Jambavan reminded him he could fly across the ocean. This god carries Sita to her husband Rama, and he is often depicted paying respects to Rama. This god caused Lanka to burn down after his tail caught fire. Name this Hindu monkey god.

Hanuman



Question #21: Mathematics

10 points per part

When a conic section is defined as the intersection of a plane with a double cone, then this term is used for cases when the plane goes through the vertex of the cone.	
1	Give this term for ostensible conic sections that are not circles, ellipses, parabolas, or hyperbolas.
2	Graphing “the quantity x minus $2y$, quantity squared, equals 9” generates two parallel lines, which can be thought of as a degenerate conic section. What is the slope of those lines?
3	A single point can also be a degenerate conic. Find the coordinates of the point generated by the equation “ x squared plus y squared plus $6x$ plus $8y$ plus 25 equals 0”.

degenerate conic sections

$\frac{1}{2}$ [accept 0.5]

(-3, -4) [order matters; accept $x = -3$ and $y = -4$ in either order]

Question #22: Mathematics

10 points per part

In this area of probability, you can change the order of the events by applying Bayes’ theorem.	
1	Name this type of probability in which events are dependent. The notation “ A vertical bar B ” indicates this type of probability, in which A happens given that we already know B happens.
2	Find the conditional probability of A given B if the probability of B is $\frac{1}{2}$ [pause] and the probability of both A and B happening is $\frac{1}{3}$.
3	A coin is tossed three times. Find the probability of three heads given that there was at least one head.

conditional probability

2/3

1/7



Question #23: Social Studies

10 points per part

Identify these places where major floods took place:		
1	Thousands of people in this state died in 1928 in the Okeechobee hurricane when a dike gave way. Some of the bodies were buried in a mass grave in West Palm Beach.	<u>Florida</u>
2	The deadliest hurricane in U.S. history was in 1900 when this resort city on an island was covered with about 10 feet of water.	<u>Galveston</u>, Texas
3	2,000 people in and around this Pennsylvania town were killed in 1889 when a dam burst.	<u>Johnstown</u>, Pennsylvania

Question #24: Social Studies

10 points per part

This organization's first president was Moorfield Storey, and its founders included W. E. B. Du Bois [boyss] and Ida Wells.		
1	Name this civil rights organization that gives out Image Awards and the Spingarn Medal.	<u>NAACP</u> or the <u>National Association for the Advancement of Colored People</u>
2	The NAACP registered nine students in Central High in this city in 1957. This city's mayor, Woodrow Wilson Mann, supported the students, though its state's governor, Orval Faubus, did not.	<u>Little Rock</u>, Arkansas
3	The NAACP grew out of this movement named for the location of an initial meeting.	<u>Niagara</u> Movement



Question #25: Literature

10 points per part

In this novel, one side of a ping-pong table has a calculator and a device for pitting cherries.		
1	Name this novel in which Alfred's children notice his increasing Parkinson's disease and dementia when they return to St. Jude one year for Christmas.	<i>The <u>Corrections</u></i>
2	This author of <i>The Corrections</i> got into a feud with Oprah Winfrey.	Jonathan <u>Franzen</u>
3	Jonathan Franzen wrote the essay "Mr. Difficult" about this author, particularly his novel <i>The Recognitions</i> .	William <u>Gaddis</u>

Question #26: Literature

10 points per part

In this story, John Anderton kills Leopold Kaplan.		
1	Name this story in which Anderton is the head of the Precrime Division.	"The <u>Minority Report</u> "
2	"The Minority Report" is by this author of <i>Do Androids Dream of Electric Sheep?</i> and "We Can Remember It for You Wholesale".	Philip K. <u>Dick</u>
3	Philip K. Dick's novel <i>The Man in the High Castle</i> is mainly set in this city, where Bob Childan owns an antique shop.	<u>San Francisco</u> , California



Question #27: Science

10 points per part

At one point in this cycle, fumarate ["FUME-uh-rate"] and water combine to form malate [MAL-"ate"].		
1	Give the name, based on that of a scientist, for the cycle that is also sometimes called the citric acid cycle or TCA cycle.	<u>Krebs cycle</u>
2	This compound combines with acetyl-CoA [uh-SEE-tul koh "A"] and water to make citrate in the citric acid cycle.	<u>oxaloacetate</u> ["OX-uh-low-ASS-it-ate"] [or <u>oxalo-acetic acid</u>]
3	This enzyme converts citrate into iso-citrate by moving a hydroxyl ion.	<u>aconitase</u> [uh-KAH-nit-"ace"]

Question #28: Science

10 points per part

This phylum includes vertebrates, tunicates [TOON-ih-kuts], and one other subphylum.		
1	Name these animals that, at some point in development, have a stiff rod that is essentially a backbone.	<u>chordates</u> ["CORE-dates"] or <u>Chordata</u> ["core-DAH-tuh"]
2	Chordates are all this type of animal since they develop an anus before a mouth.	<u>deuterostomes</u> [doo-TEER-oh-stohmz]
3	Chordates, hemi-chordates, and this other phylum are the three types of deuterostomes.	<u>echinodermata</u> [uh-KY-noh-dur-MAH-tuh] or <u>echinoderms</u>



Question #29: Social Studies

10 points

Towards the end of this person's life, he translated books and worked as a mechanic using the last name "Shaw". This person was tortured as a prisoner after being captured in **Dera'a** [**DEER-ah-ah**] before helping plan an attack on Damascus. Early in this person's career, after working briefly as an archaeologist, he worked for the person who would become Faisal I of Iraq in an attempt to free territory from control by the Ottoman Empire. After this person refused George V's attempt to make him a knight, he named his motorcycle "George V". Name this Englishman who wrote *Seven Pillars of Wisdom* and tried to unify Saudi Arabia.

T(homas) E(dward)
Lawrence or Lawrence
of Arabia

Question #30: Science

10 points

Molecular orbitals can often be predicted by an approach named for August Möbius or an approach named for this person; together, those approaches give an alternative to the Woodward-Hoffmann rules. This person and Peter **Debye** [**duh-"BYE"**] devised an equation and a limiting law that use the activity coefficient to predict the behavior of **electrolytic** [**"elect"-roh-LIT-ik**] solutions. The rule named for this person, which is not related to his work with Debye, applies to pi bonds in molecules that are cyclic, planar, and conjugated. Name this German scientist whose rule about aromatic compounds is called the " $4n$ plus 2 rule".

Erich (Armand Arthur
Joseph) Hückel



Question #31: Literature

10 points

The end of one poem by this writer brags “that I have kept the form and essence of my love in its decomposition”. In that poem—which begins “Darling, do you recall that thing we found?”—this writer describes a decaying carcass near a path. In another poem by this writer, the narrator repeatedly begs “Take pity on my long misery.” That poem, which this writer ended with a prayer stating “Glory and praise to you, O Satan,” is titled “The Litanies of Satan”. Name this French poet who used the section “Spleen and Ideal” to begin his collection *The Flowers of Evil*.

Charles **Baudelaire** [sharl
boh-deh-lair]

Question #32: Mathematics

10 points

The numbers named after this person are odd numbers k such that k times 2 to the n th power plus 1 is composite for all natural n . One of the figures named for this person is a generalization of the Cantor set to two dimensions and is formed by removing the center of a square, then removing the centers of the remaining squares, and so on. Another shape named for this person is formed by the chaos game, repeatedly moving halfway to one of three points chosen randomly. That same shape is also made by repeatedly removing an upside-down middle triangle from an equilateral triangle. Identify this Polish mathematician who is the namesake of fractals called his “carpet” and his “sieve”.

Wacław (Franciszek)
Sierpinski [VAHT-swaff
seer-PIN-skee]



Extra Question #1: Social Studies

10 points

This person's father was executed for committing murder and rape in Italy during World War II, a fact mentioned in Ezra Pound's *Pisan Cantos*. This person's body was identified because he was wearing a ring with his father's initials. J. W. Milam and Roy Bryant were found innocent of murdering this person but later admitted that they did it. The weekly magazine *Jet* published a picture of this person's open-casket funeral that brought attention to racism in Mississippi. Name this African-American person from Chicago who was 14 years old in 1955 when he was killed for flirting with a white woman.

Emmett (Louis) Till

Extra Question #2: Fine Arts

10 points

In one painting by this artist, there is an animal in a position that suggests it is about to pounce, with lightning bolts in the background. Another painting by this artist shows a naked woman on a couch on the left and a snake charmer playing a flute in the center. Like many paintings by this artist, those works are set in the jungle. This painter of *Tiger in a Tropical Storm* and *The Dream* made another work showing a woman lying next to a mandolin near a lion. That woman is dark, and her hair and dress are colorfully striped. Name this French artist of *The Sleeping Gypsy*.

Henri Rousseau [awn-ree roo-soh]



Extra Question #3: Science

10 points

This scientist improved and popularized a device invented by **Johan Carl Wilcke** [YOH-hahn “Carl” VIL-kuh] that uses a charge on a di-electric to build electro-static charge on metal. That device is an **electrophorus** [EE-lek-TRAH-fur-uss]. This scientist later disproved the notion of animal electricity by showing that a frog’s leg was not necessary to generate electricity. In that experiment, this scientist used only metals to generate electricity, disproving Luigi Galvani’s theory. This Italian scientist used zinc and silver in the first electrical battery. Identify this scientist whose name was shortened slightly to name the unit of electric potential difference.

Alessandro **Volta** [do not prompt on “volt”]

Extra Question #4: Literature

10 points

This character claims “that there is not room in all Paris to turn a wheelbarrow” and that the city looks better than it smells. This character wishes that he had been born on the Moon, or on any of the planets, though he could never bear the cold weather of Jupiter or Saturn. Before a discussion on the training of midwives, this character complains about his mother asking his father whether he forgot to wind up the clock. This character blames Dr. Slop’s forceps for crushing his nose. Name this rambling narrator of an 18th century novel by Laurence Sterne in which this “gentleman” describes his “life and opinions”.

Tristram Shandy [accept either; accept *The Life and Opinions of **Tristram Shandy**, Gentleman*]



Extra Question #5: Mathematics

10 points

If one of these constructs is generated by two relatively prime numbers, then the **Dirichlet** [DEER-ik-let] prime number theorem states that this construct contains infinitely many primes. **Endre Szemerédi** [EN-dray SEM-eh-ree-dee] proved the existence of arbitrarily sized examples of these entities when a set has a positive **Banach** [BAH-nuk] density. If the sides of a right triangle form this type of construct, then the triangle is similar to a 3-4-5 right triangle. Taking the reciprocal of each member in this type of entity generates a harmonic sequence. Name this type of sequence in which each term equals the previous term plus a fixed common difference.

arithmetic [air-ith-MET-ik] sequence or arithmetic progression [accept just arithmetic after “sequence”; prompt on sequence or progression before “sequence”; do not accept answers containing “series”]



Extra Question #6: Literature

10 points per part

The warriors in this hall will help Odin when Ragnarök occurs.		
1	Name this hall located in Asgard.	<u>Valhalla</u>
2	Heidrun [“HIDE-run”], which is this type of animal, provides the mead for the warriors in Valhalla.	<u>goat</u>
3	Valhalla has this many doors, the same number as the number of rooms in Thor’s palace of Bilskírnir.	<u>540</u>

Extra Question #7: Literature

10 points per part

Answer the following about mythological birds:		
1	These birds lived for hundreds of years. Each one died in a fire, and a new bird of this type would come out of the fire.	<u>phoenixes</u>
2	Heracles killed these person-eating birds by shaking a rattle that made them fly, then shooting an arrow at them.	<u>Stymphalian</u> [stim-FAY-lee-un] birds or <u>Stympahalides</u>
3	This place is the underworld in Finnish mythology, where a black swan sings a never-ending song.	<u>Tuonela</u> [or <u>Tuoni</u> or <u>Manala</u> ; accept the swan of <u>Tuonela</u>]



Extra Question #8: Mathematics

10 points per part

Plots of these values are sometimes used to determine if the correct type of regression was used.		
1	Name this quantity equal to an observed value minus the value predicted by a regression analysis.	<u>residual</u> (s)
2	Nonlinear transformations are attempts to increase this property, equal to the correlation coefficient squared and sometimes called “ <i>r</i> squared.”	coefficient of <u>determination</u>
3	Find the coefficient of determination if there are two data points and their dependent variable values are unequal.	<u>1</u>

Extra Question #9: Mathematics

10 points per part

A triangle can have at most one angle of this type, and if it does have one, then the median to the longest side is less than the circumradius.		
1	Name this type of angle that measures between 90 and 180 degrees.	<u>obtuse</u> angle(s)
2	This other type of angle measures between 180 and 360 degrees. A triangle can’t have any of them.	<u>reflex</u> angle(s)
3	Consider a triangle with interior angles <i>A</i> , <i>B</i> , and <i>C</i> . What number must “sine <i>A</i> , quantity squared, plus sine <i>B</i> , quantity squared, plus sine <i>C</i> , quantity squared” be less than, if and only if one of the angles is obtuse?	<u>2</u>