



Illinois Masonic Academic Bowl
2015 Sectional Tournament

Round 1
1st Section
Toss-up Questions

Question #1: Mathematics – Math Concepts

10 points

<p>The symmetry of this quadrilateral is dihedral [die-HEE-drul] group D4, and its rotational symmetry is order four. This shape is generated by the graph of the relation the absolute value of x plus the absolute value of y equals a constant. This quadrilateral has diagonals that are both congruent to each other and perpendicular bisectors. This regular quadrilateral is a rhombus with right angles. Each of the faces of a cube is one of these shapes. Name this shape that is a rectangle with congruent sides.</p>	<p><u>squares</u></p>
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Question #2: Social Studies – World History

10 points

<p>Allied forces in this country, as part of Operation Bertram, built dummy tanks and disguised the real ones. This country's site of Sidi Barrani [sih-dee bah-RAH-nee] was the launching point for an Italian invasion that failed. Following victory at Tobruk [TOE-bruk], Erwin Rommel led an invasion of this country, but was stopped at El Alamein [ah-lah-MAIN]. Forces from what is now this country fought the Hittites at the Battle of Kadesh [KAH-desh] under Ramesses [RAM-sees] the Second, one of its New Kingdom pharaohs. Name this North African country that is the home of the Suez Canal.</p>	<p>Arab Republic of <u>Egypt</u></p>
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1st Section
Toss-up Questions

Question #3: Science – Chemistry

10 points

This element is commonly used to isolate silicon from silica. This element also makes up lampblack, which is used in tires and dry cell batteries. An acid named for this element is blamed for ocean acidification. This element is added to iron to make pig iron, and some remains when the pig iron is purified into steel. Because one allotrope of this element is shaped like a geodesic dome, it is called buckminsterfullerene. This is also the primary element in coal. Name this element found in graphite, diamonds, and organic compounds.

carbon [prompt on C]

Question #4: Fine Arts – Classical Music & Opera

10 points

This composer's *Ave* [AH-vay] *Verum Corpus* was his final completed piece of liturgical music. His symphonies include ones named for Prague and the Haffner family. His 41st symphony in C major ends with a 5-part double fugue, and as a child his father Leopold forced him to tour Europe with his sister Nannerl. Name this child prodigy who composed the "Jupiter" Symphony and *Eine Kleine Nachtmusik* [EYE-nuh KLIE-nuh NAKT-myoo-sik].

Wolfgang Amadeus **Mozart**



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Question #5: Literature – U.S. Literature

10 points

The narrator of this poem compares himself to an apple orchard, and he compares another man to a pine. This work contains a complaint about hunters who please their yelping dogs; the narrator has to follow up after them to fix the title object. The spell “stay where you are until our backs are turned” is used on the boulders that made up the title structure. Name this Robert Frost poem in which the narrator says “good fences make good neighbors.”

“Mending Wall”

Question #6: Social Studies – Geography

10 points

This state is home to the Misty Fjords National Monument, which is part of **Tongass [TON-gus]** National Forest. Some cities in this state, such as **Wrangell [RAIN-gul]** and **Yakutat [YA-kuh-tat]** are considered their own boroughs. This state’s Bush is home to such towns as **Kotzebue [KOTZ-bway]** and Barrow. This state contains Denali National Park and Preserve, the home of Mount McKinley, and this state also includes the **Aleutian [ah-LOO-shun]** Islands. Called “Seward’s Folly” upon Russia’s sale of it to the US, name this northernmost state.

Alaska



Illinois Masonic Academic Bowl
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Round 1
2nd Section
Teamwork Questions

Question #7: Science – Biology

10 points per part

When two of these structures are next to each other, they are held together by a middle lamella [luh-MEH-luh].		
1	Name these rigid structures that surround cell membranes in plants, bacteria, and fungi.	cell <u>walls</u>
2	Cell walls contain this polysaccharide [po-lee-SAK-uh-ride] which is highly concentrated in cotton and used to make paper.	<u>cellulose</u>
3	The middle lamella is made of this substance used in jellies.	<u>pectin</u>

Question #8: Science – Biology

10 points per part

Humans have twelve pairs of these bones.		
1	Name these bones that surround several organs such as the heart and lungs.	<u>ribs</u>
2	Most of the ribs are connected to this bone known as the breastbone.	<u>sternum</u>
3	This is the cartilage that connects the ribs to the sternum.	<u>costal</u> cartilage [prompt on <u>hyaline</u> cartilage]



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Round 1
2nd Section
Teamwork Questions

Question #9: Social Studies – Religion

10 points per part

In Hinduism, the embodied soul, or atman, is untouched by this process, which stops when one achieves moksha, or freedom from suffering.		
1	Name this concept of one's soul surviving after death in the body of someone new.	<u>reincarnation</u> [accept word forms and <u>rebirth</u>]
2	During reincarnation cycles, one's soul still is impacted by this concept, the collection of one's actions, as well as the results of those actions. One could reincarnate into a higher class if this was good.	<u>karma</u> [do not accept "dharma"]
3	In the <i>Bhagavad-Gita</i> [BAH-gah-vahd GEE-tah], karma is presented as one of these "paths" to achieve ultimate enlightenment and union with Brahman.	<u>yogas</u>

Question #10: Social Studies – Religion

10 points per part

The founding of the church at Antioch is found within this New Testament book.		
1	Name this Biblical book which describes a mission from Antioch to Rome, as well as a split in the early church between Hellenists and Hebrews.	<u>Acts</u> of the Apostles [accept <u>Actus Apostolorum</u>]
2	Chapter 9 of Acts contains the story of the conversion of this apostle. By the end of the book, he is in jail and awaiting trial.	<u>Paul</u> the Apostle [accept <u>Saul</u> of Tarsus]
3	This founder of the Coptic Church accompanied Paul on the mission to Antioch, along with Barnabas.	John <u>Mark</u> [prompt on <u>John</u>]



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2nd Section
Teamwork Questions

Question #11: Mathematics – Statistics

10 points per part

Though there is no standard definition of this term, it can be used to mean a percentage of scores lower than the score being measured.		
1	Name this measure often used with standardized tests.	<u>percentile</u>
2	If there are twenty students in a class, what percent of the students scored lower than the highest-scoring student?	<u>95</u> [percent or percentile]
3	Rounded to the nearest whole number, what percentile corresponds to one standard deviation above the mean in a normal distribution?	<u>84</u>

Question #12: Mathematics – Statistics

10 points per part

Answer these questions about trying to fit a curve to data.		
1	This quantity equals the difference between the actual value of a function and the predicted theoretical value of the function. If there is a pattern to this quantity, then you should consider other curves for your fit.	<u>residuals</u>
2	If you fit a line to the two points (2, 8) and (5, 20), what should be the slope of the line?	<u>4</u>
3	On that line, what is the residual for the point (7, 31)?	<u>3</u>



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2nd Section
Teamwork Questions

Question #13: Literature – U.S. Literature

10 points per part

This “memory play” is narrated by a poet that works in a shoe warehouse.		
1	Name this drama in which the narrator joins the merchant marine using funds meant to pay the electric bill. This leads to the lights going out during a dinner featuring the “gentleman caller” Jim O’Connor.	<i>The <u>Glass Menagerie</u></i>
2	This author of <i>The Glass Menagerie</i> wrote about Big Daddy, Brick, and Maggie in <i>Cat on a Hot Tin Roof</i> .	Tennessee <u>Williams</u>
3	Laura’s favorite piece in the menagerie is a figure of this mythical animal. After it is accidentally broken, Laura gives it to Jim as a souvenir.	<u>unicorn</u>

Question #14: Literature – U.S. Literature

10 points per part

This writer satirized Hollywood moguls through the characters of Bobby Gould and Charlie Fox in <i>Speed-the-Plow</i> .		
1	Name this dramatist who wrote about a junk shop owner’s plans to steal back a coin he sold in <i>American Buffalo</i> .	David <u>Mamet</u>
2	This other David Mamet [MA-met] play featuring a robbery concerns the theft of prime leads [leeds] by Shelly Levene and Dave Moss, two real estate salesmen.	<i><u>Glengarry Glen Ross</u></i>
3	Following <i>Speed-the-Plow</i> , Mamet wrote a one-act play about Bobby Gould in this location. Jean-Paul Sartre said this place is other people, and Don Juan is often portrayed going to this place full of demons.	<u>Hell</u> [accept equivalents]



Question #15: Miscellaneous – Consumer Education

10 points

The state of Washington used to have an example of this concept called an opportunity to dance. In Kentucky, this concept is applied to candy without flour but not candy with flour. The Whiskey Rebellion was sparked by an attempt to enforce one of these policies on producers. When applied at multiple levels, it is referred to as “value-added.” A number of states have passed “Amazon tax” laws to force many online businesses to collect and remit it. Name this tax that is most often paid by consumers when purchasing goods.

sales tax [accept excise tax until “value-added”, prompt on tax]

Question #16: Science – Earth Science

10 points

In these regions, barite [BEAR-ite] and gypsum [JIP-sum] can form what look like roses. In these regions, rocks can form patterns called regs or gibber, and one type of valley that forms is called a wadi [WAH-dee]. Welwitschia [wel-WIT-schee-uh] plants tend to grow in these regions, and plants in general in these regions tend to have small leaves or no leaves at all. There is some debate as to whether or not frigid regions should be included in this category, which includes regions with very little plant life. Name these areas that receive very little precipitation, such as the Gobi [GOE-bee] and the Sahara.

deserts



Question #17: Literature – British Literature

10 points

The prelude to this work describes an orphan who destroyed his enemies and their drinking halls to become a king, **Scyld Scefing** [skild SKEH-feeng]. Battle-sweat as a description of blood was among the many kennings in this poem. Translated into English by Frances Grummere, one character has an arm ripped off during an attack on **Heorot** [HAY-oh-rote], a mead-hall. The title character of this work helps **Hrothgar** [HROTH-gahr], the king of the Danes. Name this Old English epic poem detailing the murder of Grendel by the title character.

Beowulf

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

10 points

This country hosted the ceremony for the resolution of the **Chamizal** [chah-MEE-zahl] dispute. Abraham Lincoln's Spot Resolutions concerned relations with this nation. The Punitive Expedition, led by John Pershing, ventured into this country to capture those responsible for the attack on the city of Columbus led by Pancho Villa. This country gave up a lot of territory in the Treaty of **Guadalupe** **Hidalgo** [gwah-dah-LOO-pay ee-DAHL-goe] after losing a war to the United States in 1848. Name this country found directly south of the Rio Grande.

Mexico [or United **Mexican** States]



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Round 1
3rd Section
Toss-up Questions

Question #19: Science – Biology

10 points

<p>A common blood coagulant [koe-A-gyoo-lunt] combines this acid with dextrose and sodium citrate [SIH-trate] in water. Its chemical formula is C₆H₈O₇ [see six aitch eight oe seven] This acid is formed by the combination of oxaloacetate [oks-ah-loe-A-suh-tate] and acetyl-CoA [uh-SEE-tul koe-ae], and it changes into its conjugate when it takes in water and releases coenzyme [koe-en-zime] A. Those steps take place in the process that creates NADH and ATP. Name this acid sometimes used to name the Krebs cycle that is found in high concentrations in certain fruits such as lemons and oranges.</p>	<p><u>citric</u> acid [prompt on <u>citrus</u>]</p>
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Question #20: Literature – World Literature

10 points

<p>This title character is first encountered in the Scythian wild, and he claimed to take away the “expectancy of death” through the planting of “blind hope.” He refused to reveal to Hermes “by whom ’tis fated that Zeus shall fall from power.” Kratos [KRAH-tose] calls this character “the lover of mankind” as he describes the punishment as ordered by Zeus. This Titan tricked Zeus into taking the inedible parts of cows. Name this title character of an Aeschylus [ES-kuh-lus] play, who is bound to a rock for giving mortals fire.</p>	<p><u>Prometheus</u></p>
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Illinois Masonic Academic Bowl
2015 Sectional Tournament

Round 1
4th Section
Teamwork Questions

Question #21: Fine Arts – Art History

10 points per part

This man designed the Rock and Roll Hall of Fame and the City Hall of Dallas.		
1	Name this architect who designed the glass pyramid serving as the entrance to the Louvre.	I(eoh) M(ing) Pei
2	Pei's firm designed this city's tallest building, the John Hancock Tower. Another building in this city is Faneuil [FAN-ul] Hall.	<u>Boston</u> , Massachusetts
3	Pei designed this Illinois city's University Apartments in its Hyde Park neighborhood, where Frank Lloyd Wright's Robie House can also be found.	<u>Chicago</u> , Illinois

Question #22: Fine Arts – Art History

10 points per part

This painter often painted a single subject at different times of day, an example of which is his series of paintings of Rouen [roo-en] Cathedral.		
1	Name this impressionist painter of the <i>Haystacks</i> series.	Claude <u>Monet</u>
2	Monet painted these flowers growing on his estate's pond in Giverny. Some of his paintings show the Japanese bridge over the pond, and his later paintings exhibit reddish hues believed to be caused by his cataracts.	<u>waterlilies</u> [or <u>waterlily</u> , prompt on <u>lily</u> or <u>lilies</u>]
3	Monet painted one of these events in Le Havre [HAH-vrah] in a painting entitled <i>Impression</i> , which gave its name to the impressionist movement.	<u>sunrise</u>



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Round 1
4th Section
Teamwork Questions

Question #23: Science – Chemistry

10 points per part

These depictions typically show pressure on the y-axis and temperature on the x-axis.		
1	Name these pictures that have solid, liquid, and gas sections that all meet at the triple point.	<u>phase diagrams</u> [prompt partial answer]
2	On a phase diagram, the border of the curve between the liquid and gas phases ends at this point.	<u>critical</u> point
3	This is the section of a phase diagram where the temperature and pressure are beyond the critical point.	<u>supercritical fluid</u> [prompt partial answer]

Question #24: Science – Chemistry

10 points per part

This term can refer to hydrocarbons that have no double bonds.		
1	Give this term that often refers to solutions that contain as much solute [SAHL-yoot] as they can.	<u>saturated</u> [accept word forms]
2	If a solute does not dissolve in a solution, this is the name for the solid that forms, typically at the bottom of the solution.	<u>precipitate</u> [or <u>precipitation</u> , do not accept “precipitant”]
3	Almost all salts with this cation [KAT-eye-on] are soluble even though this cation does not contain any alkali [AL-kuh-lie] metals other than possibly hydrogen. The chloride of this ion combines with silver cyanate [SIE-uh-nate] to make silver chloride and urea.	<u>ammonium</u> [or NH_4^+]



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4th Section
Teamwork Questions

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

10 points per part

Its perpetrators were almost trapped on a practice football field before climbing Blanket Hill, which was followed by this controversial event.		
1	Name this conflict between student protestors and the state's National Guard during which four students were killed. John Filo took an iconic photograph that featured the dead body of Jeffrey Miller.	<u>Kent</u> State shootings [accept <u>Kent</u> State Massacre or <u>May 4</u> Massacre]
2	The Kent State shootings took place in this state.	<u>Ohio</u>
3	The protestors who were fired upon were demonstrating against the United States' protracted involvement in this conflict.	<u>Vietnam</u> War [accept answers focused on <u>Cambodia</u>]

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

10 points per part

Following the act for which he would be executed, this man compared himself to the woman the act widowed in an attempt to raise funds for his trial.		
1	Name this lunatic [LOO-nah-tik] who firmly believed his actions swung the result of the 1880 Presidential election, and he thus deserved to be appointed consul to Austria, or later France.	Charles <u>Guiteau</u>
2	Despite his inflated ego, Guiteau [gee-toe] is best remembered for shooting this man, who had become president six months earlier.	James A. <u>Garfield</u>
3	After assassinating Garfield, Guiteau wrote to this Commanding General of the Army, asking him to take over the jail. During the Civil War, this general led the March to the Sea.	William Tecumseh <u>Sherman</u>



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4th Section
Teamwork Questions

Question #27: Mathematics – Geometry

10 points per part

Consider a diagram on which Point C is between Points A and F, and Point B is not on Line AF.		
1	What adjective describes Angle BCF with respect to Triangle ABC?	<u>external</u> angle
2	If Angle A measures fifty-five degrees and Angle B measures sixty-five degrees, what is the measure of Angle BCF in degrees?	<u>120</u> degrees
3	What is the measure of Angle ACB?	<u>60</u> degrees

Question #28: Mathematics – Geometry

10 points per part

There are two triangles, ABC and DEF. Angle A is congruent to Angle D, Angle B is congruent to Angle E, and Angle C is congruent to Angle F.		
1	What is the relationship between the two triangles?	<u>similar</u> [accept word forms]
2	If Segment AB is length eight, Segment BC is length twelve, and Segment DE is length ten, find the length of Segment EF. Ignore units.	<u>15</u> units
3	Assuming all the angle and side relationships described so far hold, if the area of Triangle ABC is sixteen, then what is the area of Triangle DEF? Ignore units.	<u>25</u> square units



Illinois Masonic Academic Bowl
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Round 1
5th Section
Toss-up Questions

Question #29: Science – Physics

10 points

The law adding the electric and magnetic values for this quantity is named for Lorentz. In a conservative field, this quantity is the opposite of the gradient of potential energy. This quantity divided by area gives pressure. The integral of this quantity with respect to time equals impulse. Non-inertial reference frames cause sensations known as the fictitious types of this quantity. This quantity equals the time derivative of momentum, which means that for constant mass this quantity equals mass times acceleration. Name this external influence, one example of which is gravity.

net force

Question #30: Literature – U.S. Literature

10 points

In this novel, a missionary undergoes facial scarring in solidarity with his native wife, who was subjected to female genital mutilation. In this novel, a sentence of twelve years' forced labor was handed down for insubordination; the defendant in that case, Sofia, had knocked down the mayor after being slapped. Much of the action in this novel is described in letters by the protagonist to God and her sister. Shug Avery helps the protagonist discover that letters from Nettie are not being delivered. Name this novel about **Celie** [SEE-lee] written by Alice Walker.

The Color Purple



Illinois Masonic Academic Bowl
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Round 1
5th Section
Toss-up Questions

Question #31: Mathematics – Math Concepts

10 points

This binary operation must be defined for two vectors in a vector space. A term in a Lucas sequence is found by performing this operation on the two previous terms. If two sets are disjoint, then applying this operation to their cardinalities gives the cardinality of their union. The principle of this operation determines how many ways there can be a single event. This operation is applied to vectors using the parallelogram law. The identity for this operation on numbers is zero. Name this operation equivalent to summation.

addition (accept word forms, accept plus and its word forms, accept sum and their word forms until the end)

Question #32: Social Studies – World History

10 points

Rebel leaders supporting the independence of this kingdom wrote the infamous Lubeck letter. Between the reigns of Donald II and Alexander III in 1249, this kingdom was referred to as Alba. Andrew Moray led its winning forces at the battle of Stirling Bridge. This kingdom was victorious at the Battle of Bannockburn under the leadership of Robert the Bruce. King Edward the First of England ordered the death of its hero William Wallace. One of its kings was Macbeth. Name this country that in 2014 voted to remain part of the United Kingdom.

Scotland



Illinois Masonic Academic Bowl
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Round 1
Extra Section
Toss-up Questions

Extra Question #1: Fine Arts – Art History

10 points

This city's Basilica **Cistern [SIS-tern]** is a catacomb that has two columns built atop carved heads of Medusa. Mimar Sinan designed the largest religious building here, which is located on this city's Third Hill. This city is home to the Sultan Ahmed Mosque, which is colored blue, and **Anthemius of Tralles [an-THEM-ee-us of TRAHL-lus]** and Isidore of **Miletus [MY-leh-tus]** designed a church here that has mosaics depicting the Comnenus family. Name this city where the Suleyman Mosque and **Hagia [HAH-jee-uh]** Sophia are found.

Istanbul, Turkey

Extra Question #2: Social Studies – U.S. History

10 points

An uprising in this territory was the subject of the differing Morgan and Blount Reports. The Bayonet Constitution was signed in what would become this state, where Father Damien established a colony for lepers. Prior to annexation, it was ruled from the **Iolani [ee-oe-lah-nee]** Palace by Queen **Liliuokalani [lih-lee-yoe-kah-lah-nee]**. Name this state found in the middle of the Pacific Ocean.

Hawaii



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Extra Question #3: Science – Astronomy

10 points

A 2014 study by NASA and ESA found that the nitrogen in Titan's atmosphere matched the nitrogen in this location, supporting that this is where Titan was created. The inner part of this location is shaped like a disc and called Hills Cloud. This shell is located thousands of astronomical units from our Sun, beyond the scattered disc and the Kuiper belt. Name this source of long-period comets originally hypothesized by Ernst Opik and now named for a Dutch astronomer.

Opik-Oort Cloud

Extra Question #4: Literature – British Literature

10 points

While swimming, this character offended a mouse by asking "where is my cat" in French. After consuming a mushroom, she is mistaken for a snake by a pigeon seeking to protect her eggs. Transported by a gryphon to see the Mock Turtle, her size changes after consuming items labelled "DRINK ME" and "EAT ME." Name this child who ventures into Wonderland in tales written by Lewis Carroll.

Alice [accept Alice's
Adventures in Wonderland]



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Extra Question #5: Mathematics – Math Concepts

10 points

This value is the order of the Klein group, which is the smallest non-cyclic group. This is the least positive integer that is not a **Fibonacci** [fih-boe-NAH-chee] number. A simplex in this many dimensions has five vertices, and this value is also the number of dimensions of a tesseract. Numbers divisible by this value are called doubly even, and this is the middle number in the smallest Pythagorean Triple. This value is the least positive even perfect square. Identify this value equal to the number of faces of a tetrahedron and that is also the number of sides of a rectangle.

four



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Extra Question #6: Literature – British Literature

10 points per part

The narrator of this poem refers to the title phrase as “the old lie,” and indicates that one should not tell it to “children ardent for some desperate glory.”		
1	Name this war poem that describes the dropping of Five-Nines, and the immediate impact on a group of soldiers “knock-kneed, coughing like hags.”	<u>“Dulce et Decorum est”</u>
2	This poet of “Dulce et Decorum Est” described the monstrous anger of the guns replacing passing-bells for those who die as cattle in “Anthem for Doomed Youth.”	Wilfred <u>Owen</u>
3	Wilfred Owen was among the “War Poets” who fought in this major conflict, along with Siegfried Sassoon and Rupert Brooke. Ernest Hemingway and E.E. Cummings both volunteered as ambulance drivers during this conflict.	<u>World War I</u> [accept <u>Great War</u>]

Extra Question #7: Literature – British Literature

10 points per part

The narrator of this poem proclaims “beauty is truth, truth beauty.”		
1	Name this poem dedicated to a piece of pottery that is called a “Sylvan historian” and a “foster child of silence and slow time.”	<u>“Ode on a Grecian Urn”</u>
2	This author of “Ode on a Grecian Urn” describes a knight-at-arms “alone and palely loitering” in “La Belle Dame Sans Merci.”	John <u>Keats</u>
3	Keats wrote two long works about this titan who fathered Helios.	<u>Hyperion</u>



Extra Question #8: Mathematics – Algebra

10 points per part

This concept is often represented by a lemniscate [LEM-nuh-scate].		
1	Name this concept often confused for a number. This concept represents the ability of some quantities to grow without bound.	<u>infinity</u> [or <u>infinite</u>]
2	This mathematician studied different types of infinities and developed the idea of transfinite numbers.	Georg <u>Cantor</u>
3	The set of all numbers divisible by both 6 and 8 is an infinite set equivalent to the set of all numbers divisible by what value?	<u>24</u>

Extra Question #9: Mathematics – Algebra

10 points per part

There are several unsolved problems in mathematics.		
1	One of the Millennium Prize Problems asks whether all of the nontrivial zeros of this mathematician's zeta function have a real part equal to one-half.	Bernhard <u>Riemann</u> [or <u>Riemann</u> conjecture or <u>Riemann</u> zeta function]
2	This mathematician conjectured to Euler that every even integer greater than two can be expressed as the sum of two primes. Over two hundred years later, we still do not know if he is correct.	Christian <u>Goldbach</u> [or <u>Goldbach</u> 's conjecture]
3	This is the only pair of prime numbers that adds up to twelve.	<u>5</u> and <u>7</u> [either order, accept answers such as <u>5 + 7</u>]