Illinois Masonic Academic Bowl
2017 Sectional Tournament

Round 7
1st Section
Toss-up Questions

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

10 points

This President said that he would "settle the question whether the President is registering clerk of the Senate or the Executive of the United States" when he appointed William Robertson to run the New York Customs House, which led to the resignation from the Senate of Roscoe Conkling. This person is the only sitting House of Representatives member to be elected President. This Republican narrowly defeated Winfield Scott Hancock in the election of 1880. Name this man who had been in office for only six months when he was shot by Charles Guiteau [gee-toe].	James A(bram) **Garfield**

Question #2: Science – Health

10 points

This disease is indicated by a score above 6.5 on an A1C test. Pregnant women with this disease are at risk of increased blood pressure through pre-eclampsia ["pre-uh-CLAMP-see-uh"]. People with this disease have increased osmotic [ahz-MAH-tik] pressure in their kidney tubules, causing increased urination. Alcoholism, starvation, and this disease cause ketoacidosis [KEE-toh-"acid"-OH-siss]. During pregnancy, women are supposed to get a blood test after drinking a syrupy solution to test for this disease. Type One of this disease is caused by the destruction of cells in the pancreas that produce insulin. Name this disease in which people have too much glucose in their blood.	**diabetes** [accept more specific answers]

Question #3: Literature – Grammar/Usage

10 points

This alphabet is not a language, but is used by the Dungan language and several others. The Latin alphabet and this alphabet are used for the Aleut [uh-LOOT] language. The Zhuang [zhoo-aing] language incorporates modified portions of this script, as well as IPA. In Romania, this successor to Glagolitic [gla-goe-LI-tik] was replaced with the Latin alphabet. In both this alphabet and the Greek alphabet, the letter that looks like a 'P' is pronounced like an 'R'. This alphabet is named for a ninth-century monk. Name this alphabet used for most Slavic languages, including Russian.	**Cyrillic** [accept **azbuka**]

Question #4: Miscellaneous – Technology

10 points

On the Commodore Amiga, *Lemmings* and *Settlers* allowed for two of these to be used simultaneously. Versatron created a foot-operated version of this device. *Mario Paint* for the Super NES required the extensive use of one of these devices. Green PS/2 ["P S two"] connectors were used for this device before USB became more popular. Trackballs can substitute for these devices, and laptops usually have trackpads to serve the role of this device. Name this computer peripheral used to move the cursor.	computer **mouse** or **mice**

Question #5: Science – Chemistry

10 points

Other than water, this is the simplest product of the Fischer-Tropsch process, though it usually is an unwanted product. Several classes and genuses in the phylum Euryarchaeota [YUR-ih-ARK-ee-OH-tuh] are named for their ability to produce this compound. In recent years, giant holes have been found in Siberia caused by permafrost melting, leading to explosions of this compound. This greenhouse gas is the simplest alkane and simplest hydrocarbon. Name this primary component of natural gas whose chemical formula is CH_4.	**methane** [accept **CH_4** before the end]

Question #6: Social Studies – Religion

10 points

This person remained married to Michal [mee-KAHL] even though they both married other people, and she got mad when she saw him dancing near the Ark of the Covenant. This man said "If only I had died instead of you," when his general Joab [johb] killed this man's rebellious son. According to the Book of Matthew, there are 14 generations from Abraham to this person and 14 more from him until the exile to Babylon. This Biblical leader was anointed by Samuel as the King of Israel after God became angry with Saul. Name this father of Solomon who is credited with writing the Psalms.	**David** [may be pronounced with stress on the second syllable; accept **Dawud**]

Question #7: Fine Arts – Jazz

10 points per part

This musician recorded the Billy Strayhorn songs "Something to Live For" and "Chelsea Bridge".		
1	Name this pianist and bandleader, whose real first name was Edward. He wrote the songs "It Don't Mean a Thing (If It Ain't Got That Swing)" and "In a Sentimental Mood".	(Edward Kennedy) "Duke" **Ellington**
2	Strayhorn wrote this signature song for Ellington about a ride into Harlem.	**"Take the A Train"**
3	Ellington collaborated with this singer on the album *Francis A. & Edward K.* In the movie *Reveille [REH-vuh-lee] with Beverly*, Ellington played "Take the A Train", and this singer performed "Night and Day".	(Francis Albert) "Frank" **Sinatra**

Question #8: Fine Arts – Jazz

10 points per part

This musician won a Grammy for his performance of the song "Hello, Dolly!".		
1	Identify this singer and trumpeter who was nicknamed "Satchmo". His popularity increased when he recorded "What a Wonderful World" and "Cabaret".	Louis **Armstrong**
2	Armstrong often performed with this singer, who is famous for her recording of "A-Tisket, A-Tasket". They collaborated on an album with songs from *Porgy and Bess*.	Ella (Jane) **Fitzgerald**
3	The album *Ella and Louis* includes this song that begins, "The way you wear your hat, / The way you sip your tea, / The memory of all that".	"(No, no,) **They can't take that away from me**"

Question #9: Science – Chemistry

10 points per part

Salts are characterized by having this type of bond.		
1	Name this type of bond between two atoms that have a large difference in electronegativity ["elect"-roh-"negativity"].	**ionic** bond(s)
2	Salts can also be defined as a substance formed by reacting an acid and a base, which is known as this type of reaction.	**neutralization** reaction
3	The constant named for this person is used to calculate the electrostatic potential in an ionic crystal. A rule named for this German scientist is used as part of the Aufbau ["off-bow"] principle to determine which electron orbitals are filled first.	Erwin **Madelung** [AIR-vin MAH-deh-loonk]

Question #10: Science – Chemistry

10 points per part

This person is credited with calculating the charge on an electron, although much of the experiment was done by his student Harvey Fletcher.		
1	Identify this namesake of the oil-drop experiment, in which an electric field was used to balance the Earth's gravitational field.	Robert (Andrews) **Millikan** [do not accept or prompt on "Mulliken"]
2	What is the charge on an electron? Give an answer in coulombs, using scientific notation to two significant digits.	-$\mathbf{1.6 \times 10^{-19}}$ C [The negative sign in front is optional.]
3	Much of the error in Millikan's measurement of elementary electric charge is due to an error at the time in measuring this property of air. This quantity is a measure of resistance to flow.	(dynamic or absolute) **viscosity**

Question #11: Social Studies – World History

10 points per part

Wilhelm [VIL-helm] I was the king of this state before he became the emperor of Germany.		
1	Name this state that unified Germany in 1871 while it was defeating France at war.	(Kingdom of) **Prussia** [or Preußen]
2	This Prussian leader became the first chancellor of Germany.	Otto von **Bismarck**
3	Much of Prussia's success during the Franco-Prussian War was credited to this field marshal, who was chief of staff of the Prussian Army. This person's nephew lost the First Battle of the Marne at the beginning of World War One.	Helmuth von **Moltke** [HEL-moot vawn MOHLT-kuh] the Elder

Question #12: Social Studies – World History

10 points per part

This prime minister stepped down for five days in 1952 in a move that ended up consolidating his power.		
1	Name this prime minister who nationalized his country's oil industry, leading to a 1953 coup sponsored by the CIA.	Mohammad **Mosaddegh** [MOH-suh-day]
2	Mosaddegh led this country, where a 1979 revolution gave power to Ayatollah Khomeini, and involved the taking of American hostages who were held for over a year.	(Islamic Republic of) **Iran** [or (Jomhuri-ye Eslami-ye) **Iran**]
3	Mossadegh's first resignation and the Iranian Revolution both took power away from Mohammad Reza Pahlavi. Pahlavi held this title, which means "king".	**Shah** [accept **Shahanshah**]

Question #13: Mathematics – Algebra

10 points per part

If two quantities are in inverse variation with each other, one decreases when the other increases.		
1	Give the common name for the type of proportional variation in which the dependent variable increases when the independent variable increases. It is often represented by the equation $y = kx$, where k is some positive number.	**direct** variation or **direct** proportion [prompt on **linear** variation]
2	Two variables vary directly, and when the input is 2 the output is 12. Find the constant of variation.	$k =$ **6**
3	If y varies directly with x^2 ["x *squared*"], and $y = 10$ when $x = 5$, then find the value of y when $x = 20$.	$y =$ **160**

Question #14: Mathematics – Algebra

10 points per part

These numbers have a real and an imaginary component.		
1	Name these numbers that can be written in the form $a + bi$, where i is a square root of -1.	**complex** numbers
2	Multiply the number $2 + 3i$ times the number $3 + i$, and give your answer in $a + bi$ form.	$\mathbf{3 + 11i}$
3	Divide the number $4 - i$ by i, and give your answer in the form $a + bi$.	$\mathbf{-1 - 4i}$ or $\mathbf{-1 + -4i}$

Question #15: Literature – U.S. Literature

10 points

In one play by this writer, the title character tells Matt that she used to work in a brothel after he proposes to her. This playwright wrote about Larry Slade, who called death a "long sleep". In the same play, this author wrote about Don committing suicide and Hickey confessing to murdering his own wife. This person also wrote two plays about a family that includes the morphine addict Mary and a son named Edmund who suffers from tuberculosis, in which the father, the washed-up actor James Tyrone, is too cheap to get a doctor. Name this playwright of *Anna Christie*, *The Iceman Cometh*, and *Long Day's Journey into Night*.	Eugene (Gladstone) **O'Neill**

Question #16: Science – Physics

10 points

In the presence of a loop of W bosons [BOH-zahnz], this particle decays into two photons. This particle can also decay into either two Z bosons or into the two types of W boson. This particle is the only fundamental scalar particle, which means that its spin is zero. The mass of this particle is 126 giga-electron volts. A major basis for theories predicting the existence of this particle is spontaneous symmetry breaking, which takes place during electroweak interactions to confer some particles with mass. Name this particle whose existence was confirmed in 2013 after very expensive research at CERN [surn].	**Higgs** boson [or **Higgs** particle]

Question #17: Fine Arts – Art History

10 points

Pietro Perugino's [peh-roo-GEE-noe'z] painting of this event hangs in what used to be the Convent of Fuligno [foo-LEEN-yoh], and shows the central figure with his hand on the shoulder of somebody whose head is down. A painting made in the 1590s showing this event, depicting several extra characters and showing the main subject at an angle, was made by Jacopo Tintoretto. Another portrayal of this event, hanging in the Convent of Santa Maria delle Grazie [DEL-lay GRAH-zyay] in Milan, shows the central figure's open hands above the table. Name this event whose depictions — though not the one by Leonardo da Vinci — sometimes show Judas on the opposite side of the table.	*The* ***Last Supper*** [or *Il* ***Cenacolo*** or *L'****Ultima Cena***]

Question #18: Mathematics – Math Concepts

10 points

The standard type of this quantity equals the standard deviation divided by the square root of the number of measurements. In the context of Taylor series, this value is sometimes called the remainder, and can be bounded using formulas attributed to Lagrange [luh-grahnj] and Cauchy [KOW-chee]. A statistical test is unbiased if it has an equal likelihood of producing type I or type II of these entities, which are false positive and false negative. Name this phenomenon in which two values differ, possibly due to approximation, imprecise measurement, or mistake.	(statistical, measurement, or approximation) **error**s

Question #19: Literature – Mythology

10 points

During the New Moon, this god was known as Mekhenty-er-irty [muh-KEN-tee ur "EAR-tee"], or "He who has no eyes". This god epitomized the newborn sun each morning in the form of a child with a finger to his lips. The four sons of this god represented the four cardinal directions and guarded the canopic [kuh-NAH-pik] jars. The *serekh* [SAIR-ek] name used for early Egyptian pharaohs was closely associated with this god because of depictions on heraldic crests. This god used gypsum [JIP-sum] to disguise his wooden boat during a race on the Nile against his uncle, who had killed this god's father, Osiris ["oh-SIGH"-rus]. Name this falcon-headed rival and nephew of Seth.	**Horus** [accept **Hor** or **Har** or **Her** or **Heru**; prompt on **Harpocrates**]

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

10 points

In 1847, the Supreme Court ruled that both federal and state governments could prosecute people for this crime in *Fox v. Ohio*. The power to punish people for both this crime, piracy, and felonies committed on the high seas are granted to Congress in Article One, Section Eight of the Constitution. The Secret Service was originally created to stop this crime. During the 1990s, watermarks started being used to make this crime more difficult. This crime became more difficult after 1877 when the Bureau of Engraving and Printing was given the exclusive power to print money. Name this crime in which fake money is made.	**counterfeit**ing (money) [accept **forgery** of money or **forging** money; prompt on **fraud**]

Question #21: Mathematics – Analytic Geometry

10 points per part

The system of longitude and latitude, together with altitude, is equivalent to this system.		
1	Name this coordinate system in which points are located using the distance from the origin, one angle that is the same as the angle in polar coordinates, and another angle measured down from the positive half of the z-axis.	**spherical** coordinate system or **spherical** coordinates
2	To ensure that there's only one way to specify each point, it's usually required that the radius be non-negative, the angle from the positive z-axis be between 0 and pi, and the polar angle be between 0 and what value?	**2 pi** radians [or **2** times **pi** or **twice pi** or similar phrasings; accept **360** degrees]
3	Consider the top half of the cone generated by the Cartesian [kar-TEE-zhun] equation $z^2 = x^2 + y^2$. What is the angle between the positive z-axis and any point on that cone?	**π/4** radians or **1/4 π** radians or **45** degrees

Question #22: Mathematics – Analytic Geometry

10 points per part

Consider a square with vertices at the origin, the point $(1, 0)$, the point $(1, 1)$, and the point $(0, 1)$.		
1	Find the area of the shape created by transforming that square with the matrix whose top row is 5, 2, and whose bottom row is 3, 6.	**24**
2	The fast way to find that answer is to use this property of the matrix, which can be calculated in this case with the formula $ad - bc$.	**det**erminant
3	Because the determinant was positive, the transformation represented by the matrix does not include this type of transformation.	**reflect**ion [accept word forms, accept **Householder** or **flip**]

Question #23: Literature – U.S. Literature

10 points per part

This criminal claimed that "God never made a finer woman" than his mother, and his father's heart was pure gold.		
1	Name this character who tells Bobby Lee to bury a grandmother, and describes her as a good woman, "if it had been somebody there to shoot her every minute of her life".	The **Misfit**
2	The Misfit and his accomplices shoot a family to death in this author's story "A Good Man Is Hard to Find." This author also wrote the collection *Everything That Rises Must Converge*.	Flannery **O'Connor**
3	The victims in "A Good Man is Hard to Find" were on their way to this state, despite the grandmother's desire to head to Tennessee.	**Florida**

Question #24: Literature – U.S. Literature

10 points per part

This character's mother called him the "Temper Tantrum Kid" and "Mr. Fly-Off-the-Handle".		
1	Name this character who sees the psychiatrist Dr. Spielvogel [SPEE-ul-VOH-gul] on account of his Oedipus [ED-uh-puss] complex, and finds an interesting way to use a piece of liver.	**Alex**ander **Portnoy** [accept either underlined portion]
2	Alexander Portnoy was created by this author who wrote about Nathan Zuckerman in *The Human Stain* and *American Pastoral*.	Philip (Milton) **Roth**
3	Many Philip Roth characters grew up with this religion, including the character he named for himself in *Operation Shylock*.	**Jew**ish [or **Judaism**]

Question #25: Social Studies – Economics

10 points per part

This Latin word means "let it become".		
1	Give this term that describes a monetary system set up by government decree rather than backed by a commodity. U.S. currency has been this type of money since 1971.	**fiat** [FEE-ut] money or **fiat** currency
2	Between 1934 and 1971, U.S. currency was backed by a "standard" of this metal, with its price fixed at $35 per ounce.	**gold** standard
3	When the U.S. left the gold standard, it ended a system set up in 1944 at this ski resort in the town of Carroll, New Hampshire.	**Bretton Woods** Mountain Resort

Question #26: Social Studies – Economics

10 points per part

If a market features this concept perfectly, every participant has complete information and there are many buyers and sellers.		
1	Name this condition in which there is rivalry between sellers. This condition does not exist for monopolies, and it is limited in duopolies or oligopolies.	perfect **competition**
2	In this type of economic agreement, companies increase profits by agreeing to fix prices instead of competing. OPEC, the oil organization, is an example.	**cartel**s
3	Anne Krueger coined this term for behavior in which a person or company acts to benefit itself without increasing overall wealth or efficiency — for instance, by promoting regulations that would decrease competition.	**rent-seeking** behavior [accept similar answers related to economic **rent**]

Question #27: Science – Biology

10 points per part

The version of this cell that humans produce has a tail about 10 times as long as its body.		
1	Name the male reproductive cell.	**sperm** cell or **sperm**atozoon or **sperm**atozoa
2	Sperm cells have one set of unpaired chromosomes, so they are known by this term.	**haploid** [HAP-loyd] cells [accept **haploid**y]
3	The front of a sperm cell is covered with this cap. It contains enzymes to help the cell get through the ovum's tough outer layer.	**acrosome** [AK-roh-sohm]

Question #28: Science – Biology

10 points per part

This phylum includes many familiar worms like earthworms and leeches.		
1	Name this phylum of segmented worms.	**annelid**s ["AN-uh-lids"] or **Annelida** ["an-uh-LEAD-uh"] [prompt on **ringed worm**s]
2	Many annelids move by this motion, consisting of a series of contractions and expansions. This same motion is used by the human esophagus to move food.	**peristalsis** ["pair"-ih-STAL-siss]
3	While moving, annelids get traction from these structures on their bodies. They are similar to hair or bristles.	**seta**e [SEE-tee]

Question #29: Literature – British Literature

10 points

Near the end of this novel, an insurance company reluctantly pays after a character dies in Aix-la-Chapelle ["ex" lah shah-pel], and another character dies of yellow fever at Coventry Island. The character who died at Aix-la-Chapelle ran from cannonfire during the Battle of Waterloo before returning to a post in India. This novel begins at Miss Pinkerton's academy for young ladies, on Chiswick [CHIZ-ik] Mall. Its two main characters marry Rawdon Crawley and George Osborne. The main characters of this "Novel Without a Hero" are Amelia Sedley and Becky Sharp. Name this novel by William Makepeace Thackeray.	***Vanity Fair***

Question #30: Mathematics – Math Concepts

10 points

The radical axis is the line from which the tangents drawn to two of these shapes are equal in length. In any triangle, the midpoints between each vertex and the orthocenter, the feet of the altitudes, and the midpoints of all sides lie on one of these shapes. That is the nine-point one. In polar coordinates, the equation $r =$ any positive number generates this kind of shape. These shapes are conic sections with eccentricity zero. In Cartesian coordinates, the equation x squared plus y squared equals some positive number produces this kind of shape. Name this shape whose area equals pi times the radius squared.	**circle**s

Question #31: Social Studies – World History

10 points

A 1992 coup [koo] attempt in this country against Carlos Andrés Pérez was unable to free from prison the person rebels wanted to put in charge. A 2002 coup placed Pedro Carmona in charge of this country for two days. An 1895 crisis named for this country revolved around whether the Schomburgk [SHOM-burk] Line should be its eastern border, and it led President Cleveland to expand the Monroe Doctrine. Though now joined by Ecuador, this was the only founding member of OPEC in the Western Hemisphere. Name this country currently headed by Nicolás Maduro, who used to be its vice president under Hugo Chávez.	(Bolivarian Republic of) **Venezuela** [or (República Bolivariana) de **Venezuela**]

Question #32: Science – Biology

10 points

Sphingomyelin [sfeen-goh-"MY"-uh-lin] is an example of this class of molecules. A compound of this type containing a serine [SAIR-een] is flipped from the cytosolic ["site-oh-SAW-lick"] face to the extracellular face of the cell before apoptosis [ay-pop-TOE-sis]. The level of saturation in the "tails" of these compounds contribute fluidity found in liposomes ["LIE"-poh-sohmz] and vesicles [VESS-ih-kulz]. These compounds typically consist of a glycerol [GLIS-uh-rawl] bound to two fatty acids and a charged group, and their amphiphilic [am-fuh-FIL-ik] nature makes them naturally form bilayers. Name these phosphate-containing molecules that form the cell membrane.	**phospholipid**s [prompt on **lipid**s]

Extra Question #1: Mathematics – Math Concepts

10 points

This function can be evaluated on the unit circle by finding the length of a segment along the terminal side of an angle from the origin to the line $x = 1$. An antiderivative of this function is the natural log of the absolute value of this function plus the tangent function. The derivative of this function is this function times the tangent function. This trigonometric function is undefined for the same inputs that the tangent function is undefined, because the two can be thought of as having the same denominator. For an acute angle in a right triangle, this function is the ratio of the hypotenuse to the adjacent side length. Name this function that is the reciprocal of the cosine function.	**sec**ant [accept answers that additionally mention a variable; do not accept "cosecant"]

Extra Question #2: Fine Arts – Classical Music & Opera

10 points

The last concerto by this composer is his 1887 *Double Concerto for Violin and Cello in A minor*, which, like several earlier pieces, he wrote for the violinist Joseph Joachim [YOH-sef YOH-ah-keem]. This composer's *Saint Anthony Variations* are also known as *Variations on a Theme by Haydn*. This composer wrote two overtures in 1880, saying "one laughs while the other cries"; those works are the *Tragic Overture* and the *Academic Festival Overture*. Name this composer of *A German Requiem*, whose song "Good evening, good night" is also known as his Lullaby.	Johannes **Brahms**

Extra Question #3: Literature – British Literature

10 points

The narrator of this work describes being "in lonely rooms, and 'mid the din of towns and cities", and he compares a good man's "little, nameless, acts of kindness and love" to "feelings of unremembered love". The speaker of this poem describes hearing "waters, rolling from their mountain-springs", a sound he had not heard in five years. The last section of this poem is addressed to the writer's sister Dorothy. Name this poem written near the River Wye, "a few miles above" the title structure, by William Wordsworth.	"Lines Written a Few Miles Above **Tintern Abbey**(, on Revisiting the Banks of the River Wye During a Tour, July 13, 1798)" [prompt on **Lines**]

Extra Question #4: Social Studies – World History

10 points

A book attributed to this person "and the Strasbourg Lunation" Tracts warns against a Turkish invasion and is called the *Türkenkalender* [TOOR-ken-KAH-len-dar]. This person was helped by Peter Schöffer, who profited from this man's work due in part to a lawsuit by Schöffer's father-in-law, Johann Fust [YOH-hahn foost]. Cardinal Mazarin's [maz-ar-an'z] library contained a Bible made by this person that is sometimes called the 42-Line Bible because of the number of lines on each page. Name this 14th-century resident of Mainz ["mine"ts], who made bookmaking much more efficient through his development of a printing press.	Johannes (Gensfleisch zur Laden zum) **Gutenberg**

Extra Question #5: Science – Earth Science

10 points

Before becoming these types of rocks, materials go through diagenesis ["die"-uh-"genesis"] and then lithification [LITH-ih-fih-KAY-shun]. Chert, including flint, is an example of this type of rock. This type of rock is the most commonly *seen* rock, though others are more common inside the Earth, and the most common type of it is limestone. This type of rock forms from solution precipitate or from accumulation. Name this category of rock that includes sandstone, and which is neither igneous [IG-nee-uss] nor metamorphic [met-uh-MOR-fik].	**sedimentary** rock

Extra Question #6: Social Studies – U.S. History

10 points per part

Paul Allen and Bill Gates started this company in 1975.		
1	Name this company that in 1998 was sued by the U.S. Department of Justice over its bundling of Windows and Internet Explorer.	**Microsoft** Corporation
2	Microsoft was accused of bundling its software in order to run this company out of business. This company's Navigator browser was very popular during the 1990s.	**Netscape** Communications Corporation
3	Netscape was eventually purchased by this company, which at the time was led by Steve Case. This company was a popular internet service provider in the 1990s, partly due to its practice of distributing *many* floppy disks, and later CD-ROMs, with its software.	**America Online** [accept **AOL**]

Extra Question #7: Social Studies – U.S. History

10 points per part

This scandal is named for a hotel and office complex in Washington, D.C.		
1	Name this 1974 scandal that led to the resignation of a U.S. President.	**Watergate**
2	Much of the information on Watergate was discovered through an anonymous source who was, at the time, identified by this nickname in *Washington Post* reports. He was identified much later as W. Mark Felt.	**Deep Throat**
3	The Committee to Re-Elect the President directed this group — known by a nickname — to break into Democratic Party offices.	White House **Plumber**s

Extra Question #8: Mathematics – Probability

10 points per part

This term refers to the set of all possible outcomes of an experiment.		
1	Give this term from set theory and probability. For a single coin toss, it has two elements: heads and tails.	**sample space** or **universal** set or **universe**
2	The probabilities of each individual element in the sample space always add up to this number.	**1**
3	This term refers to the set of elements that are not in a given set, but are in the universal set.	absolute **complement** [or **complement**ary set]

Extra Question #9: Mathematics – Probability

10 points per part

Continuous random variables have density functions, while this kind of random variable has a mass function.		
1	Give this term for quantities that occur in separate, quantized amounts instead of along a continuous spectrum.	**discrete** (variables or quantities)
2	Suppose a discrete random variable can take on the values 1, 2, and 3 and no other values. If the probability of 1 is 0.4 and the probability of 2 is 0.5, then what is the probability the random variable takes on the value 3?	0**.1** [or **1/10**]
3	In that same distribution, what is the expected value? Remember that the probability of 1 is 0.4, the probability of 2 is 0.5, and the probability of 3 is 0.1.	**1.7** [or **1 7/10** or **17/10**]