2009-2010
SCHOLASTIC BOWL
TOURNAMENT
QUESTIONS

REGIONAL

ROUND: 1

Signed: _____, Moderator

_____
(Print Name of Moderator)

Name of Regional: _____

SPECIAL INSTRUCTIONS FOR MODERATORS

1) The Moderators are to review all rounds of the questions and answers during their Moderators' Meetings.

2) The Moderators may make corrections, changes, deletions, additions and notes in the margins, provided a majority of the Moderators present agree to such items.

3) Please be sure to note any corrections, changes, deletions, additions and notes on the questions in a packet.

4) **NO ADDITIONS, DELETIONS, CORRECTIONS, CHANGES OR NOTES MAY BE ADDED AFTER THE MODERATORS' MEETING -- EXCEPT THAT A MODERATOR MAY MAKE A DECISION REGARDING A QUESTION AND ANSWER IN REGARD TO A <u>LEGITIMATE PROTEST</u> THAT MIGHT ARISE DURING THE MATCH.**

5) During the match, the Moderator is to draw a pencil mark (/) through each question that is used in the match.

6) Immediately after the match is over, the Moderator is to return the questions to the Principal or Sectional Manager. At the State Final the questions must be returned to IHSA personnel working the meet.

Illinois High School Association

2009-2010

Scholastic Bowl State Series

Regional (1)

ROUND 1
ONE---ONE---ONE---ONE---ONE

Replacement/Tie Breaker Question Set
1. If a question needs to be thrown out, replace the discarded question with the first question from the Replacement/Tie Breaker Set that is of the same general category as the discarded question. If a similar-category question is not available, use the first available question in the Replacement/Tiebreaker Set.
2. The Replacement/Tie Breaker questions were collated in a random order. In the event of a tie at the end of regulation play, use the first available toss-up question and the first available bonus question in the order they are printed.
3. Moderators must meet between rounds to update information on which replacement questions were used and should therefore be eliminated from the pool of available questions in the Replacement/Tie Breaker Question Set.
4. As a last resort, a moderator may choose to use an un-read bonus question from the Question Set used in the round that is tied, adapting the Bonus to Toss-up format when necessary.

Notation Guide to Moderators
The following styles and notations were used to facilitate the oral presentation of the questions, even though the style might not follow "correct English" at all times.
1. Commas not usually considered grammatically necessary are often used to facilitate the oral presentation of the questions.
2. Helps for reading, such as pronunciation guides, and directions relative to interpreting answers are in *[bracketed italics]*.
3. Titles of all types in questions are underlined.
4. Other than dates, numbers within questions are presented in prose form to standardize their reading.
5. Boxed reference material, such as math work, is provided in case an answer is challenged. It is not necessary to refer to references unless an answer is challenged.
6. Only the **bold** words in answers are required. All non-bold words are optional. Plural forms are ordinarily accepted as correct, even if not indicated as such in bold letters.

Toss Up #1   Mathematics: Algebra and Pre-calculus – 10 seconds
[NOTE: Pause at the commas for clarity.]
Consider the quadratic polynomials, X squared plus one, and, X squared plus X plus one. Because the discriminant of each of these quadratic polynomials is less than zero, how many real roots does each quadratic have?

Answer: **zero**   *[Accept any answer indicating "There aren't any."]*

Bonus #1   Science: Chemistry – 5 parts
Specify the atomic number of each of these elements.
1. carbon
2. gold
3. helium
4. uranium
5. silver

Answers: 1.   **6**
           2.   **79**
           3.   **2**
           4.   **92**
           5.   **47**

Toss Up #2   Social Studies: Government
[NOTE – DATE SENSITIVE: This information is correct as of January 15, 2010.]
He had been elected as a Reform Party candidate in Calgary West to serve in the
House of Commons in 1993. In 2003, he won the leadership of the Conservative
Party of Canada, a party he helped create. That Party was given a mandate to form
a new government in the 2006 elections. Name the current Prime Minister of
Canada.

Answer: Stephen **Harper**

Bonus #2   Miscellaneous: Interdisciplinary – 4 parts
Name the following musical instruments. Each answer will be one word.
1. In addition to giving its name to a green skinned Namekian from Dragonball Z,
   this instrument is featured in a famous obbligato *[ob-blih-GOT-toh]* of Sousa's
   Stars and Stripes Forever.
2. A Man Ray photograph of a woman superimposes lines on her figure in order to
   make her look like one of these instruments, which Sherlock Holmes frequently
   plays while musing.
3. The concert variety of this instrument features pedals. This national symbol of
   Ireland is commonly used for romantic arias like Musetta's Waltz and for
   techniques like glissando and arpeggio.
4. This flute-like instrument, normally egg-shaped, uses resonance to make its
   sound. A magical one is capable of playing such tunes as Saria's Song and the
   Bolero of Fire.

Answers: 1.   **piccolo**
            2.   **violin**
            3.   **harp**
            4.   **ocarina** *[ok-uh-REE-nuh]*

Toss Up #3   Language Arts: Speech
This Dutch author reiterated the foundational dichotomy for rhetorical analysis in his textbook <u>Copia: Foundations of the Abundant Style</u>. It is a systematic instruction on how to embellish, amplify, and give variety to speech and writing. Name him.

Answer: Desiderius **Erasmus** Roterodamus of Rotterdam

Bonus #3   Social Studies: U.S. History – 4 parts
Name these people from the colonial era.
1. The Frame of Government was a written contract between this man, called the proprietor, and the colonists he led.
2. The territory now comprising the states of Maryland and Delaware was granted by Charles the First to this man in 1632. He governed Maryland more than forty years. I need his name – his title is optional.
3. This Native American leader tolerated the English when the English settled on the James River in 1607, but eventually led his people into war against the English in 1622 and 1644.
4. After being expelled from the Massachusetts Bay Colony because of his religious views, this man acquired a charter from the English Parliament that recognized his four new settlements as the colony of Providence Plantations.

Answers: 1.   William **Penn**
            2.   Cecil **Calvert**, second Lord Baltimore
            3.   **Powhatan**
            4.   Roger **Williams**

Toss Up #4   Science: Physics
I need a one-word answer. Fourier's [*fur-ee-AZE*] Law gives the heat type of this quantity, while the diffusive type of this quantity is used in Fick's Law and the radiative variety is the number of photons per time passing through a point. The Meissner effect involves the decrease of the magnetic variety of this quantity, the time derivative of which is the subject of Faraday's Law; that magnetic variety is also equal to the product of current and inductance, while the electric type is the concern of Gauss's Law. Name this general type of quantity calculated either as a quantity flowing through a surface per unit time, or the integral of a field over a surface.

Answer: **flux**

Bonus #4   Mathematics: Combinatorics, Probability and Statistics – 4 parts
[NOTE: Pause at the commas for clarity.]
Answer these about binomial expansions. In all cases, assume degree descending order is applicable.
1. What is the fourth term in the expansion of the quantity, X minus two Y, quantity closed, raised to the tenth power?
2. If the eighth term of the quantity, X minus Y, close quantity, raised to the fifteenth power is, negative six thousand four hundred thirty-five, X to the eighth, Y to the seventh, then what is the ninth term?
3. Assuming the first row of Pascal's triangle is a single number, what is the middle number of the seventh row?
4. How many terms will be in the expansion of the quantity, A plus B, close quantity, raised to the N power?

Answers: 1. $-960x^7y^3$
2. positive $6435x^7y^8$
3. **20**
4. *[Accept either of these or anything similar.]*
    N plus one terms
    one more than N terms

Notation/Work
1. $(x-2y)^{10} \rightarrow \dfrac{10 \cdot 9 \cdot 8}{3 \cdot 2 \cdot 1} x^7 (-2y)^3$
2. $-6435x^8y^7 \rightarrow +6435x^7y^8$
4. $(a+b)^n \rightarrow n+1$

Toss Up #5   Miscellaneous: Interdisciplinary
A viral web video depicts the Mythbusters recreating this work using a large array
of paint cannons. French poet Guillaume *[gee-YOME]* Apollinaire was once
arrested for its theft, but he was later exonerated. Marcel Duchamp *[die-JAH]*
satirized this work in one of his ready-mades, titled L.H.O.O.Q., while The
Advance Code featured the words "So dark the con of Man" written on the glass
encasing this work. Also called La Giaconda *[lah jeep-oh-KON-duh]*, identify this
famous work of art which depicts a woman with a rather enigmatic smile.

Answer: *[Accept either. Accept La **Giaconda** before it is mentioned.]*
            Mona Lisa
            Portrait of Lisa Geraldine, wife of Francesco del Giaconda

Bonus #5   Social Studies: Current Events – 4 parts
Answer these about the shooting at Darnall Army Medical Center in November
2009.
1. Name the shooter, an officer and a psychiatrist.
2. At what U.S. military base did the shooting occur?
3. At what major military medical facility had the shooter previously worked as a
   psychiatrist?
4. According to Senator Kay Bailey of Texas, the shooter appeared to be upset
   about his scheduled deployment to where?

Answers: 1.   Major Nodal Mali **Has an**
             2.   **Fort Hood**
             3.   **Walter Reed** Army Medical Center
             4.   **Iraq**

Toss Up #6   Science: Chemistry

This term has many definitions, one of which could be a measure of the probability of a system being in a particular atomic or molecular arrangement. The third law of thermodynamics hypothesizes that this characteristic of a system equals zero if the system achieves absolute zero. The second law of thermodynamics states that its value necessarily increases over time. What is this property of a thermodynamic system, typically represented by the letter "S"?

Answer: **entropy**   *[Prompt on" S" before the last sentence.]*

Bonus #6   Language Arts: Mythology – 4 parts

Answer these about women in need of rescue.

1. She was a priestess of Hera who fell in love with Zeus and was pursued by Argus, a monster with a hundred eyes.
2. Her mother offended Poseidon by boasting that she was more beautiful than the Nereid's. She had to be rescued by Peruses.
3. After she was killed by a snake bite on her wedding day, her husband Orpheus tried unsuccessfully to rescue her from Hades.
4. She was abducted by Zeus, who had taken the form of a bull, and taken to Crete.

Answers: 1.   **Io**
             2.   **Andromeda**
             3.   **Eurydice** *[your-ID-in-see]*
             4.   **Europe**

Toss Up #7   Fine Arts: Classical Music History
He was court composer and conductor of the Italian opera, serving as court
Kapellmeister *[kohl-PELL-my-ster]* from 1788 until 1824. His works include
concertos, the Birthday Symphony, and a set of variations on The Folly of Spain.
Name the composer whose students included Beethoven and Schubert, but who is
possibly better known for his perceived rivalry with Mozart.

Answer: Antonio **Salieri**

Bonus #7   Science: Biology – 3 parts
Name each of these photosynthetic pigments or pigment groups.
1. This green pigment absorbs yellow and blue wavelengths.
2. This class of soluble glycoside pigments may produce red, purple, or blue
   colors in flowers depending on the pH of the environment. It is often
   responsible for the bright colors of programmed senescence *[sih-NESS-sunts]*.
3. Pigments in this group are responsible for the yellow to red colors in plants and
   animals. They also play a role in mammalian photosensitivity.

Answers: 1. **chlorophyll**
          2. **anthocyanin** *[AN-thu-SY-uh-nun]* *[LISTEN: not "anthrocyanin"]*
          3. **carotenoid** *[ku-ROT-tuh-noid]*

Toss Up #8   Mathematics: Geometry, Trig and Analytic Geometry – 30 seconds
Find the radius of a circle in which arc AB measures sixteen pi and intercepts a central angle of two hundred forty degrees.

Answer: **12 units**

Reference/Work
$240 \cdot \dfrac{\pi}{180} = \dfrac{4\pi}{3} \rightarrow 16\pi = r \cdot \dfrac{4\pi}{3}$

Bonus #8   Language Arts: U.S. Literature - 4 parts
Answer the following about an American poet and his works.
1. Name the poet whose initial volume of verse, Voices of the Night, contained his poem A Psalm of Life.
2. Gabriel Lajeunesse *[la-juh-NESS]* is separated from his beloved after the deportation of the French from Acadia in what poem?
3. Name the man who courted Priscilla Mullens in another poem by the same writer.
4. With the assistance of James Russell Lowell, Charles Norton and others, the same writer translated this Italian work into English.

Answers: 1.   Henry Wadsworth **Longfellow**
             2.   **Evangeline**
             3.   Miles **Standish**
             4.   The **Divine Comedy**

Toss Up #9   Social Studies: Religion
The first book of the Torah includes two versions of creation: a Priestly account
and a Yahwistic *[yah-WIST-ik]* account. In general, this term describes a
supernatural mytho-religious story that attributes the beginnings of all things and
all life to the deliberate act of one or more deities. What is this synonym for a
creation myth?

Answer: *[Accept any of these. LISTEN: "cosmology" is wrong.]*
            cosmogony
            cosmogonies
            cosmogenic myth

Bonus #9   Mathematics: Geometry, Trig and Analytic Geometry – 5 parts
Find these areas and perimeters. Do not approximate any answers.
1. Find the area of a regular hexagon with a perimeter of twelve.
2. Find the area of a square inscribed in a circle with a diameter of four.
3. Find the area of a circle with a circumference of pi.
4. A rhombus has an area of one hundred fifty. One diagonal measures fifteen.
   How long is the other diagonal?
5. Find the perimeter of a rectangle with integral sides greater than one and an
   area of ninety-one.

Answers: 1. $6\sqrt{3}$ square units
           2. **8** square units
           3. *[Accept either.]*
              $\dfrac{\pi}{4}$ square units

              $\dfrac{1}{4}\pi$ square units
           4. **20** units
           5. **40** units

Reference/Work
1. $a = \sqrt{3} \rightarrow A = \dfrac{1}{2}ap$
2. diagonal $= d = 4 \rightarrow$ side $= 2\sqrt{2} \rightarrow A = s^2$
3. $d = 1 \Longrightarrow r = \dfrac{1}{2} \rightarrow A = \pi r^2$
4. $A = \dfrac{1}{2}d_1 d_2$
5. dimensions $\rightarrow$ 7 by 13

Toss Up #10   Language Arts: Mythology

The earliest surviving depiction of this deity is from the Olmec site of La Venta. Worship of it spread throughout Central America, including a depiction at Chichen Itza *[chi-CHEN ih-TSAH]*. In the Aztec culture, he was associated with death and resurrection, and was considered the patron deity of priests. Hernando Cortez used his predicted return to help him conquer the Aztecs. Name this Mesoamerican god known as the feathered serpent.

Answer: **Quetzalcoatl** *[kwet-soh-kuh-WATT-ul]*

Bonus #10   Social Studies: World History – 4 parts

Answer these about the invasion of Greece during the Second World War.

1. This country launched the initial invasion of Greece in October of 1940 at the behest of its leader, Mussolini.
2. The jumping-off point for that invasion of Greece was this small country on the Adriatic Sea.
3. A canal outside of this city, at the neck of the Peloponnese, was the target of a successful attack of glider troops during the invasion.
4. Elite paratroopers took seven thousand casualties during their assault on this Greek island in May of 1941.

Answers: 1.   **Italy**
            2.   **Albania**
            3.   **Corinth**
            4.   **Crete**

Toss Up #11   Science: Biology
Its name is derived from the Greek for "mouth." This opening is regulated by pairs
of plant cells which utilize a proton pump to generate an electrochemical gradient.
Positive ions rush into the regulatory cells causing them to fill with water and to
bulge. They are found mostly on leaf and stem surfaces. Name these openings that
control the inflow of carbon dioxide and the outflow of water.

Answer: *[Accept either.]*
             stoma
             stomata

Bonus #11   Fine Arts: Art History – 4 parts
Answer these questions about paintings that feature mirrors.
1. This Flemish master of the Northern Renaissance painted himself in a red
   turban and showed a mirror reflecting the title ceremony in the Arnolfini
   Wedding.
2. In this Diego Velásquez *[vuh-LASS-kez]* masterpiece, a mirror reflects King
   Philip the Fourth of Spain as he looks at a kneeling dog and a young Maria
   Theresa.
3. This Italian mannerist painted a Self-Portrait in a Convex Mirror as well as the
   disturbingly disproportionate Madonna with the Long Neck.
4. This twentieth-century artist painted his own version of Self-Portrait in a
   Convex Mirror, but is better known for his work with tessellations and optical
   Illusions.

Answers: 1.   Jan Johannes **van Eyck** *[van IKE]*
           2.   *[Accept either.]*
                 Las **Meninas**
                 The **Maids of Honor**
           3.   *[Accept either.]*
                 Parmigianino
                 Frenceso **Mazzola**
           4.   Maurits Cornelis "M.C." **Escher** *[ESH-shur]*

Toss Up #12   Language Arts: U.S. Literature
This person's work is quoted on one of the gates into Harvard Yard.. To My Dear and Loving Husband expresses her love towards her husband and the bond between them. One of her best known works was inspired by the fire that destroyed her family's home. Name this woman, the first to have her work published in the United States, whose best known work is probably the collection entitled The Tenth Muse Lately Sprung Up into America, by a Gentlewoman in such Parts.

Answer: Anne **Bradstreet**

Bonus #12   Fine Arts: Classical Music History – 4 parts
Answer these about Handel's Messiah.
1. In what city was it first performed?
2. In what language was it written?
3. Which of the parts of Messiah contains the familiar Hallelujah Chorus?
4. Who composed the libretto for the oratorio?

Answers: 1.   **Dublin**, Ireland
              2.   **English**
              3.   **two** *[Be reasonable. There are three parts, so **middle** is OK.]*
              4.   Charles **Jennens**

Toss Up #13
Mathematics: Number Theory - 30 seconds
Use an integer to state the greatest common factor of, four hundred twenty-nine, sixty-six, and forty-two.

Answer: **three**

Work: $429 = 3 \cdot 11 \cdot 13; \ 66 = 2 \cdot 3 \cdot 11; \ 42 = 2 \cdot 3 \cdot 7$

Bonus #13   Language Arts: British Literature – 4 parts
Name these works by Oscar Wilde.
1. In this novel, the title entity and its creator, Basil Hallward, are both stabbed by the protagonist, a young hedonist.
2. Wilde wrote this poem about capital punishment after being released from prison. It states that "…each man kills the thing he loves /…The coward does it with a kiss, / The brave man with a sword!"
3. This play features the title character marrying Gwendolen Fairfax even after she discovers that his name is not what she had thought it was.
4. This play is set at the estate of Lady Hunstanton, where Lord Illingworth tries to seduce several women, including Mrs. Arbuthnot.

Answer: 1.   The **Picture of Dorian Gray** *["Portrait of Dorian Gray" is wrong.]*
          2.   The **Ballad of Reading Gaol**
          3.   The **Importance of Being Earnest**
          4.   A **Woman of No Importance**

Toss Up #14   Social Studies: Geography
Originally, this city's borders were along North, East, South, and West Grand
Avenue. It contains the first drive-through window in the country, located at the
Maid-Rite Sandwich Shop. In 1935, the building of Spaulding Dam across Sugar
Creek created a lake with the same name as this city. It is home to the Southern
Illinois University School of Medicine and to Lincoln Land Community College.
Name the county seat of Sangamon County and the capital of the state of Illinois.

Answer: **Springfield**, Illinois

Bonus #14   Mathematics: Algebra and Pre-calculus – 5 parts
[NOTE: Pause at the commas for clarity.]
Give your answers to these polynomial problems in degree descending order.
1. the quantity, four X cubed minus six X squared plus two X plus one, end
    quantity, plus the quantity, two X cubed minus three X plus four, end quantity
2. the quantity, seven X to the fifth, minus four X cubed, plus twelve X minus
    four, end quantity, minus the quantity, five X to the fifth, plus three X to the
    fourth, plus four X cubed, plus two X minus four, end quantity
3. the quantity, three X minus two, end quantity, times the quantity, X squared
    minus two X plus one, end quantity
4. the quantity X squared plus thirteen, end quantity, times the quantity, X squared
    minus thirteen, end quantity
5. the quantity, X cubed minus four X squared, plus eight X minus five, end
    quantity, divided by the quantity, X minus one, end quantity

Answers:

		Notation
1.	$6x^3 - 6x^2 - x + 5$	1. $\left(4x^3 - 6x^2 + 2x + 1\right) + \left(2x^3 - 3x + 4\right)$
2.	$2x^5 - 3x^4 - 8x^3 + 10x$	2. $\left(7x^5 - 4x^3 + 12x - 4\right) - \left(5x^5 + 3x^4 + 4x^3 + 2x - 4\right)$
3.	$3x^3 - 8x^2 + 7x - 2$	3. $(3x-2)\left(x^2 - 2x + 1\right)$
4.	$x^4 - 169$	4. $\left(x^2 + 13\right)\left(x^2 - 13\right)$
5.	$x^2 - 3x + 5$	5. $\dfrac{x^3 - 4x^2 + 8x - 5}{x - 1}$

Toss Up #15   Fine Arts: Art History
This artist painted a Greek hero reaching for his sword after being told that he can't marry Iphigenia *[if-ih-JEEN-ee-uh]* in The Anger of Achilles. He also showed a Roman general throwing his hands up as the titular Byzantine general panhandles in Belisarius. This painter of The Intervention of the Sabine Women painted three Romans extending their right arms to a man holding three swords. He showed a man drinking hemlock and a Frenchman in a bathtub of blood. Name this French painter of The Oath of the Horatii *[hoh-RAH-tee-i]*, The Death of Socrates, and The Death of Marat.

Answer: Jacques-Louis **David** *[dah-VEED]*

Bonus #15   Science : Earth Science – 5 parts
There are three major types of rock. Which type is each of these?
1. coquina *[koh-KEE-nuh]*
2. greenstone
3. scoria *[SKOR-ee-uh]*
4. pumice *[PUM-us]*
5. conglomerate

Answers: 1.   **sedimentary** rock
            2.   **metamorphic** rock
            3.   **igneous** rock
            4.   **igneous** rock
            5.   **sedimentary** rock

- -
HALF TIME
- -

Toss Up #16   Social Studies: World History
This explorer first left European waters in 1505 to install Francisco de Almeida as the Portuguese viceroy of India. The plan failed when a local king refused to continue paying tribute to Portugal and fighting ensued. As a result of the disgrace, the Portuguese King refused to back this explorer's plan to find a new route to the Spice Islands, so the explorer turned to the king of Spain who financed the voyage. Name the explorer who died in the Philippines, before his crew completed a circumnavigation of the world.

Answer: Ferdinand **Magellan**

Bonus #16   Language Arts: World Literature – 4 parts
Name these plays by Aeschylus *[ESS-kuh-lus]*.
1. The title character returns from the Trojan War and is then murdered by Clytemnestra.
2. Eteocles *[eh-TEE-uh-klees]* leads the defense of this city against an invading army led by his brother Polynices *[pol-lee-NY-sees]*.
3. Orestes kills his mother to avenge the death of his father.
4. This drama is thought to be the first play of a trilogy about the marriage of the fifty daughters of Danaüs.

Answers: 1.   **Agamemnon**
             2.   **Seven Against Thebes**
             3.   **Libation Bearers**
             4.   **The Suppliants**

Toss Up #17 Fine Arts: Music Theory

Shepard tones with this separation cause its namesake paradox. This interval is the foundation of Sibelius' fourth symphony, opens Saint-Saens' *[senz]* <u>La Danse Macabre</u> *[la DANS muh-KAB-ruh]*, and is the basis for a motif that opens Liszt's <u>Dante Sonata</u>. It also is the relationship between fifth movement tetrachords in <u>The Rite of Spring</u>. This musical interval has a frequency ratio of root two and is sometimes known as the Devil's Interval. Name this dissonant interval sometimes enharmonic to a diminished fifth, also called an augmented fourth.

Answer: *[Accept **augmented fourth** before "diminished fifth" is read. Prompt on **fourth** before "diminished fifth." "Diminshed fifth" is wrong.]*
              tritone *[TRY-tone]*

> Reference: Diminished fifths and tritones are not enharmonic in all tuning systems.

Bonus #17   Mathematics: Calculus – 3 parts

[NOTE: Pause at the commas for clarity.]

Consider the function, F of X equals the quantity, X cubed, minus three X squared, plus two X, minus five.

1. Find the first derivative of F of X.
2. Find Y double prime of F of X.
3. Find the X-value that yields the minimum of F of X, over the closed interval from zero to three.

Answers: 1. $3x^2 - 6x + 2$ > Notation: $f(x) = x^3 - 3x^2 + 2x - 5$

            2. $6x - 6$

            3.   *[Accept any of these. Leading "x equals" is optional.]*

            $$x = \frac{3 + \sqrt{3}}{3}$$

            $$x = 1 + \frac{\sqrt{3}}{3}$$

            $$x = 1 + \frac{1}{3}\sqrt{3}$$

Toss Up #18   Language Arts: British Literature
[NOTE: The unusual words with repeated syllables are not errors. The hyphens were added to facilitate pronunciation.]
One character in this work is employed as a shepherd by the title character, and an early conflict concerns chicken bones. That shepherd notably mentions an Aca-ca-ca-cademy of Anthro-po-po-pometry of Essy-in-Possy of Tewtew *[TOO-too]* and Cunard *[kyoo-NARD]* and repeatedly remarks "qua-qua-qua-qua" after being told to "think!". That speech comes from Lucky, the slave of a man who eventually goes blind, named Pozzo. Name this play in which the title action is never completed by Vladimir and Estragon, a play by Samuel Beckett.

Answer: **Waiting for Godot** *[possibly GOD-oh; possibly go-DOH]*
             En **Attendant Godot**

Bonus #18   Fine Arts: Art History – 4 parts
Identify these works by Claude Monet *[moh-NAY]*.
1. Monet painted approximately two hundred fifty images of this kind of flower.
2. He also painted many views of this place, including <u>By Night</u> and <u>Dull Weather</u>.
3. This work, which gave its name to an art movement, depicts the Le Havre *[luh HAHV-reh]* at the titular time of day.
4. Monet also painted a series of twenty-five-paintings of these objects, all depicting harvest time.

Answers: 1.   water **lilies**
             2.   *[Accept either.]*
                    Rouen Cathedral
                    Cathédrale Notre-Dame de **Rouen**
             3.   **Impression: Sunrise**
             4.   **haystack**

Toss Up #19   Mathematics: Algebra and Pre-calculus – 30 seconds
Find the number of distinct real roots of the equation, four X squared plus nine
equals twelve X.

Answer: **one**   Reference/Notation: $4x^2 + 9 = 12x$

Bonus #19   Social Studies: U.S. History – 3 parts
Name these 1862 Civil War battles.
1. Generals Grant and Foote defeated Confederate forces under General Tilghman
   at this fort on the Tennessee River.
2. When the Confederate commander Simon Buckner asked Grant for terms of
   surrender after this battle, Grant replied, "No terms except unconditional and
   immediate surrender can be accepted."
3. Neither side won this battle, but more than ten thousand Americans died when
   Johnston and Beauregard led a Confederate attack on Grant and Buell.

Answers: 1.   Battle of **Fort Henry**   *[Listen: "McHenry" is wrong.]*
            2.   Battle of **Fort Donelson**
            3.   *[Accept either.]*
                  Battle of **Shiloh**
                  Battle of **Pittsburgh Landing**

Toss Up #20   Science: General Science
This one-word term can refer to the luminous energy found in a unit volume of space, or to the blackness of the image on a photographic plate, or to the degree of opacity of a translucent medium. If, when measured in a particular unit, its value in a solid is less than one, then that solid floats in water. What is this term most simply defined as quantity per unit volume?

Answer: **density**

Bonus #20   Language Arts: Vocabulary – 4 parts
Identify these architectural terms describing roofs.
1. All sides of this roof slope gently down to the walls. A square roof of this type would form a pyramid.
2. This type of roof is sharply pitched, delineating a triangular wall between the edges of the roof.
3. This ridged roof has two slopes on each side. The lower slope has the steeper pitch. This type of roof is typical of Dutch Colonial style architecture.
4. This roof has two slopes on four sides. The upper slope is almost horizontal, and the lower slope forms the upper story of the house.

Answer: 1.   **hip**ped roof
            2.   **gabled** roof
            3.   **gambrel** roof
            4.   **mansard** roof

Toss Up #21   Miscellaneous: Pop Culture
This character once sent Wendell and Monica Wilkins on a life-fulfilling journey to Australia. She is so self-conscious of her grades, that her greatest fear is one of her professors telling her she has failed all her classes. She was invited to visit an acquaintance in Bulgaria, but never went. She is described as having rather large front teeth, and enjoys the smells of freshly mown grass, new parchment and the hair of a red-headed friend. She is the owner of a half-kneasel cat named Crookshanks. Identify this brainy best friend of Ron Weasley and Harry Potter.

Answer: **Hermione** Jean **Granger**   *[Accept either or both words.]*

Bonus #21   Mathematics: Algebra and Pre-calculus – 4 parts
[Pause at the commas for clarity.]
If X equals eight, then solve for Y in the following equations. Simplify and rationalize all solutions. Do not give your answers as decimals or mixed numbers.
1. two X plus three Y cubed equals three
2. two Y plus three X cubed equals three
3. one plus the fraction, three over Y, equals two X
4. four times the logarithm, base Y of five, equals X

Answers: *[Leading "Y equals" is optional.]*

1.   *[Accept either.]*
$$y = -\frac{1}{3}\sqrt[3]{117}$$

$$y = -\frac{\sqrt[3]{117}}{3}$$

2. $y = -\frac{1533}{2}$

3. $y = \frac{1}{5}$

4. $y = \sqrt{5}$

Notation
1. $2x + 3y^3 = 3$
2. $2y + 3x^3 = 3$
3. $1 + \dfrac{3}{y} = 2x$
4. $4\log_y 5 = x$

Toss Up #22   Social Studies: U.S. History
He initiated the formation of the Southeast Asia Treaty Organization and the
Baghdad Pact. His controversial threats of "massive nuclear retaliation" against
Communist aggression were unpopular with American liberals. His belief that the
U.S. must be prepared to "go to the brink of war in order to attain its objectives"
probably led to the use of the phrase "brinksmanship". He served as the chief
U.S. negotiator with the Japanese in 1951 to formalize the end of World War
Two. Name Dwight Eisenhower's Secretary of State.

Answer: John Foster **Dulles**

Bonus #22   Fine Arts: Musical Theater – 4 parts
The main character of this Rodgers and Hammerstein musical is a cowboy in love
with Laurey.
1. Name the musical.
2. Name the cowboy who eventually marries Laurey.
3. The "dream ballet" from the first act was choreographed by this woman.
4. Based on the song from the musical, where is everything up to date?

Answers: 1.   **Oklahoma!**
             2.   **Curly** McLain   *[Prompt on **McLain**.]*
             3.   Agnes **de Mille**
             4.   **Kansas City**

Toss Up #23   Science: Chemistry
Double bonds in carbon compounds give rise to geometric forms of these. They come in either structural or spatial forms, sometimes called optical forms. Organic compounds of this type often appear in symmetrical pairs, as "cis" *[sis]* and "trans", or "left" and "right" structures. Nuclear examples differ in such physical properties as half-life, or manner of radioactive decay. What is the general term for molecules that have the same molecular formulas but different structural formulas?

Answer: **isomer**

Bonus #23   Social Studies: Economics – 4 parts
Identify these types of taxes.
1. Unlike sales taxes which are charged only at the retail level, this tax, introduced in France in 1954 and common in Europe, is charged at every transaction level.
2. This is the tax charged on the profit made from the sale of an asset, such as a house, shares of stock, or precious metal.
3. The Twenty-fourth Amendment outlawed this tax, levied as a fixed charge, per person, as a precondition for voting.
4. This payroll tax, separate from regular income tax, collects the money needed to fund Social Security and Medicare.

Answers: 1.   *[Accept either.]*
                    value added tax
                    VAT
            2.   **capital gains** tax
            3.   *[Accept any of these.]*
                    poll tax
                    head tax
                    capitation tax
            4.   *[Accept either.]*
                    FICA
                    Federal Insurance Contributions Act

Toss Up #24   Language Arts: U.S. Literature
Its setting is based on several New Hampshire towns in the Mount Monadnock
[muh-NAD-nuk] region. Some of the members of the audience are plants who will
ask questions of the play's narrator, who also provides commentary on the action.
George and Emily marry; then, in the third act, Emily dies during childbirth.
Name 1938 Pulitzer Prize winning play, set in Grovers Corners, by Thornton
Wilder.

Answer: **Our Town**

Bonus #24   Science: Physics – 4 parts
Answer these about objects used in early studies of electromagnetism.
1. The word "electricity" comes from the Greek name for this substance, which
   the Greeks noticed displayed static electric properties.
2. This early type of capacitor used a foil-coated jar containing water to store
   charge.
3. This device, which features a needle placed between the poles of a magnet, is
   used in combination with a shunt resistor to make ammeters and voltmeters.
4. The namesake of the device from part three made some of his early discoveries
   through investigations of this animal's twitchy legs.

Answers: 1.   **amber**
            2.   **Leyden** jar
            3.   **galvanometer**
            4.   *[Accept any commonly used name like **toad**.]*
                  frog

Toss Up #25   Mathematics: Calculus – 10 seconds
Calculus allows a police officer to assume that, if a driver's average speed on a measured stretch of road is above the speed limit, then the driver may be pulled over for speeding. More generally stating that the instantaneous rate of change must equal the average rate of change somewhere on any interval of a differentiable function, what theorem is being used in this situation?

Answer: the **Mean Value** Theorem

Bonus #25   Social Studies: Geography – 4 parts
Identify the U. S. state that includes these mid-sized cities.
1. Overland Park, Lawrence, and Leavenworth
2. Eugene, Corvallis, and Bend
3. Paterson, Cherry Hill, and Bayonne *[bay-OHN]*
4. Macon, Marietta, and Sandy Springs

Answers: 1.   **Kansas**
             2.   **Oregon**
             3.   **New Jersey**
             4.   **Georgia**

Toss Up #26   Language Arts: World Literature
This specific form of poetry originated at the end of the nineteenth century. It typically contains a seasonal theme or kigo *[KEE-goh]* and is composed of three lines of five, seven, and five syllables, respectively. With seventeen syllables, the poet creates a mental image or impression of common, everyday subjects. Name this Japanese poetic form.

Answer: **haiku** *[high-KOO]*

Bonus #26   Mathematics: Geometry, Trig and Analytic Geometry – 5 parts
Let the conditional statement be: If today is Wednesday, then tomorrow is Thursday. Identify the logical name for each of these statements relative to the given statement.
1. If tomorrow is not Thursday, then today is not Wednesday.
2. Tomorrow is Thursday only if today is Wednesday.
3. If today is not Wednesday, then tomorrow is not Thursday.
4. If tomorrow is Thursday, then today is Wednesday.
5. Tomorrow is not Thursday if today is not Wednesday.

Answers: 1.   **contrapositive**
             2.   **converse**
             3.   **inverse**
             4.   **converse**
             5.   **inverse**

Toss Up #27   Fine Arts: Art History
He designed the museum that contains Edward Hick's <u>A Peaceable Kingdom</u> – the Everson Museum. He also designed a museum whose fourth and fifth floors project out horizontally – the Johnson museum at Cornell University. He designed the "calculator building" in Singapore, as well as one wing of a building that houses the only Da Vinci painting in the Americas – the East Wing of the National Gallery. He also designed the Rock and Roll Hall of Fame. Name this Chinese-American architect who put some glass pyramids in front of the Louvre.

Answer: Ioeh Ming "I.M." **Pei** *[probably: pay]*

Bonus #27   Miscellaneous: Family and Consumer Science – 4 parts
Identify the following about Family and Consumer Science.
1. This gram-negative bacterium usually is a harmless part of the normal flora in your intestines producing vitamin K-two for your body, but it can also be used as an indicator of fecal contamination of food, sometimes leading to food poisoning.
2. This American pediatrician wrote "the" book on parenting, specifically, the book titled <u>Baby and Child Care</u>.
3. This is a type of heating which utilizes the movement of heat over food in order to cook it more quickly and more thoroughly. An oven of this type usually uses an external fan to facilitate the necessary fluid movement of the air.
4. This woman was the first to attend MIT as well as the first woman to receive a degree in chemistry. She is generally regarded as the first great pioneer of the Family and Consumer Science movement.

Answers: 1.   *[Accept either.]*
                          e. coli *[ee KOH-lie]*
                          Escherichia coli *[ESH-uh-RIK-ee-uh KOH-lie]*
                  2.   Dr. Benjamin **Spock**
                  3.   forced **convection** oven
                  4.   Ellen Swallow **Richards**

Toss Up #28   Mathematics: Geometry, Trig and Analytic Geometry
Though this mathematician does not appear to have made significant use of graph visualizations himself, his 1736 solution to a famous problem is considered the first theorem of graph theory. Who solved the problem generally known as the Seven Bridges of Konigsberg *[KAY-niks-berg]*?

Answer: Leonard **Euler** *[probably: OIL-er]*

Bonus #28   Science: Physics – 4 parts
Name the following SI derived units.
1. Equivalent to one newton per meter squared, it is the unit of pressure.
2. Named for the inventor of the relay, it is the base unit of inductance.
3. It is the unit of solid angle measurement; there are four pi of them in a sphere.
4. Even though it is a more fundamental quantity than the ampere, this unit of charge is defined as an ampere-second.

Answers: 1.   **pascal**
           2.   **henry**
           3.   **steradian** *[stir-RAy-dee-un]*
           4.   **coulomb**

Toss Up #29   Science: Biology
This butterfly-shaped endocrine gland is commonly associated with the element iodine. The gland lies just below the laryngeal *[luh-RIN-jee-ul]* prominence, or Adam's apple, on the anterior side of the neck. Certain disorders of this gland can result in fatigue, depression, and general malaise. Name the gland.

Answer: **thyroid**   *[LISTEN: "parathyroid" is wrong.]*

Bonus #29   Language Arts: British Literature – 4 parts
Answer these about a couple of poets and their works.
1. This man's poems include Fra Lippo Lippi and Porphyria's Lover, in which the lover strangles Porphyria with her own hair.
2. The wife of the poet named in part one wrote a poem in which she declared of him "How do I love thee? Let me count the ways." It turns out there are seven such ways.
3. The poem How Do I Love Thee? is found in this collection, which also includes a reference to the sadness of Electra.
4. This poem is narrated by the Duke of Ferrara, who discusses a painting by Frà Pandolf of his apparently murdered wife.

Answer: 1.   **Robert Browning**   *[Prompt on Browning.]*
             2.   **Elizabeth** Barrett **Browning**   *[Prompt on Browning.]*
             3.   **Sonnets from the Portuguese**
             4.   **My Last Duchess**

Toss Up #30   Social Studies: World History
This man lost two fingers on his left hand at the battle of Tsushima, one short of
the number needed to disqualify him from further military service. This was
fortunate, for it allowed him to study at Harvard at the Japanese Navy's expense.
He later proved to be so adept at military planning that Admiral Halsey dispatched
a squadron of P-thirty-eight Lightnings to kill this Japanese leader in 1943. Name
the admiral who masterminded the attacks on Midway and Pearl Harbor.

Answer: Isoruku **Yamamoto**

Bonus #30   Science: Biology – 3 parts
Identify these amino acids with one-word names.
1. It is found abundantly in turkey meat. The code is U-G-G.
2. It is found naturally in breast milk, and can be fatal to babies with
   phenylketonuria *[FEE-nul-KEE-tun-YER-ee-uh]*. The RNA codes are U-U-U
   and U-U-C.
3. This is the smallest of the amino acids, with only hydrogen as its variable chain.

Answers: 1.   **tryptophan**
            2.   **phenylalanine** *[fen-ul-AL-uh-neen]*
            3.   **glycine** *[GLY-seen]*