

## 2015 SCOP Middle School 5

### Round 9

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#### Tossups

1. **This phenomenon is described by the code GR in the METAR system. The magnitude of this phenomenon can be predicted with Vertical Integrated Liquid Density, which measures both the moisture content of a cloud and the strength of its updrafts. This phenomenon is caused when (\*) water droplets are blown upward, where cold air freezes them, before falling to the ground. For 10 points, name this type of precipitation consisting of balls of ice.**

Answer: hail

2. **This was the site of the mural "My God, Help Me to Survive This Deadly Love," a picture of Leonid Brezhnev and Erich Honecker kissing. Peter Fechter died in a "death-strip" at this structure, which included Checkpoint (\*) Charlie. It was shut down on November 9th and gradually torn down over the rest of 1989. For 10 points, name this barrier between West and East halves of a German city, whose fall symbolized the end of European Communism.**

Answer: Berlin Wall

3. **The Epitaphios [eh-pih-tah-fee-ohs] is used during the week leading up to this holiday, and the Harrowing of Hell is celebrated on the day before this holiday. The Orthodox Church precedes this holiday with forty days of fasting. The week leading up to this (\*) moveable feast celebrates the washing of feet on Maundy Thursday, which occurs near the end of Lent. For 10 points, name this springtime Christian holiday that celebrates the resurrection of Jesus.**

Answer: Easter Sunday (accept Pasch or Pascha)

4. **This artist painted his sister Sophie surrounded by grieving family members in *Death in the Sickroom*, one of his *Frieze of Life* paintings. The eruption of Krakatoa may have inspired the red sky in this artist's most famous work, which overlooks a (\*) harbor and focuses on a bald, twisted figure that holds its hands to its face and performs the title action. For 10 points, name this Norwegian artist who painted *The Scream*.**

Answer: Edvard Munch [moonk]

5. Competing populations of species in this phylum are used to measure climate change in Antarctica's dry valleys. The fungus *Arthrobotrys* [ar-throw-BAH-tris] grows nets to catch soil-dwelling members of this phylum, which also includes the model organism *C. elegans* and the parasite that causes (\*) heartworm infection in pets. For 10 points, name this phylum, whose members have external cuticles and cylindrical bodies and which is commonly known as roundworms.

Answer: Nematoda (accept nematodes, accept roundworms before it is read)

6. A character in this play is said to have "chanted snatches of old tunes" after falling out of a willow tree, and another character warns an actor not to "saw the air too much with your hand" before a performance of *The Murder of Gonzago*, which is staged for King (\*) Claudius in this play. Gertrude is the mother of the title character, who causes the death of Ophelia by pretending to be insane. For 10 points, name this Shakespeare tragedy about a title Prince of Denmark.

Answer: The Tragedy of Hamlet, Prince of Denmark

7. This group's size in Indiana shrank after the rape and murder trial of its leader D.C. Stephenson. Catholics were admitted into this group in the 1970s under the leadership of David Duke. Members of this group committed the Greensboro massacre against the Communist Workers' Party and (\*) bombed the 16th Street Baptist Church in Birmingham. For 10 points, name this American hate group known for burning crosses and wearing white robes.

Answer: Ku Klux Klan

8. This function gives the y-coordinate of a point rotated from standard position along the unit circle. This odd function, which passes through the origin and has a period of two pi, is the reciprocal of (\*) cosecant. For an acute angle in a right triangle, it is the ratio of the opposite side to the hypotenuse. For 10 points, name this trigonometric function, which gives the tangent function when divided by cosine.

Answer: sine

9. This nation's official language is Amharic, though Oromo is spoken by more of its people. The ancient capital of the Kingdom of Axum is in this modern-day country, which became the most populous landlocked country in the world in 1993 when (\*) Eritrea declared independence from it. Djibouti lies between this country and the Gulf of Aden on the Arabian Sea. For 10 points, name this country on the Horn of Africa with capital at Addis Ababa.

Answer: Ethiopia

10. A schoolhouse in this work was designed so a thief could easily get in, but not out, though this proves ineffective against Abraham Van Brunt. Katrina Van Tassel marries Brom Bones after a schoolteacher disappears in this story, which was collected in *The (\*) Sketch Book of Geoffrey Crayon*. Ichabod Crane flees the Headless Horseman in, for 10 points, what story by Washington Irving?

Answer: The Legend of Sleepy Hollow

11. **Pliny the Elder wrote 120 historical remarks on this substance, noting how it names a reward bestowed upon winning soldiers, giving us our modern word "salary." A 1930 march to Dandi that protested a British (\*) tax on this substance was led by Mahatma Gandhi, who produced this substance illegally by boiling off seawater. For 10 points, name this commonly iodized food preservative, found with pepper on Western table settings.**

Answer: (table, rock, or sea) salt (accept sodium chloride before mentioned)

12. **Aldehydes can be reduced to primary types of these compounds. This organic group can be created using hydroboration and oxidation. These compounds have a carbon bonded to a hydroxyl group; that is, to an (\*) oxygen bonded to a hydrogen. Yeast can ferment sugar into molecules of this type like ethanol and methanol. For 10 points, name this compound found in "wood" and "rubbing" varieties.**

Answer: alcohol

13. **This agreement is made, explicitly or implicitly, to escape the state of nature, according to John Locke. Locke argued that, if this concept is broken, people have the right to form a new government. This two-word term describes the (\*) agreement between individuals and their rulers to give up some freedom in exchange for the community's protection of all other rights. For 10 points, give this term which titles a work by Jean-Jacques Rousseau.**

Answer: social contract

14. **In one work by this author, Herbert Pocket teaches the protagonist to be a gentleman, while in another work, Salem House-educated James Steerforth runs off with Little Em'ly. After Dora Spenlow dies in one of his novels, her widower marries (\*) Agnes Wickfield, and this author wrote about Estella and the jilted Miss Havisham. The creator of Uriah Heep and Pip is, for 10 points, what author of *David Copperfield* and *Great Expectations*?**

Answer: Charles John Huffam Dickens

15. **In this movie, communism was "just a red herring," and Tim Curry counts "one plus two plus two plus one" to conclude that a loaded gun is empty. The six primary characters are being blackmailed, and so all have motive to use the weapons provided by "Mr. Boddy," including a rope and a (\*) candlestick. For 10 points, name this movie, based on and named for a board game, which ends with Mr. Green killing the real Mr. Boddy in the hall with the revolver.**

Answer: Clue (do not accept Cluedo)

16. **Rhoecus and Hylaeus were two of these creatures killed by Atalanta, and another, Eurytion, demanded to marry Dexamenus's daughter. This race was descended from Ixion and Nephele, and they warred with the Lapiths. One of these was killed by Heracles and was named (\*) Nessus, and another was a renowned teacher named Chiron. For 10 points, identify this race of half-man half-horse creatures from Greek myth.**

Answer: centaur

17. **This author wrote about the *Abraham Lincoln* and her crew members Conseil, Ned Land, and Pierre Arronax. In one work by this man, Phileas Fogg and (\*) Passepartout [pass-par-too] win a bet by completing the title action. Another of his novels centers on the submarine *Nautilus* and Captain Nemo. For 10 points, identify this author of *Around the World in 80 Days* and *20,000 Leagues Under the Sea*.**

Answer: Jules Gabriel Verne

18. **Victorious soldiers in this war, worried about unfunded pensions, tried to organize the Newburgh Conspiracy. The Conway Cabal was a short-lived attempt to replace the winning leader. During this war, John André was hanged for his role in an attempted (\*) betrayal of the fort at West Point, a plan organized by Benedict Arnold. For 10 points, name this war, which ended when Lord Cornwallis surrendered at Yorktown to George Washington.**

Answer: American Revolutionary War (or Revolutionary War)

19. **Composer and work required. Count von Walsegg commissioned this work, whose "Lux aeterna" [ee-turn-ah] ending and all but eight bars of the Lacrimosa section were completed by Franz Süssmayr as he edited this work. This piece's composer simultaneously worked on (\*) *The Magic Flute* and this piece, and remarked to his wife Constanze that this piece may be played at his own funeral. For 10 points, name this mass for the dead, left unfinished at the death of its Austrian composer in 1791.**

Answer: Wolfgang Amadeus Mozart's Requiem Mass in D minor, K. 626 (both answers required; prompt on Requiem (mass); prompt on mass; prompt on Mozart)

20. **This planet's satellites include Mimas, which takes less than one day to orbit it. Multiple moons of this planet, including Tethys, Enceladus, and its largest moon, feature ice volcanoes. In 2005, the Huygens probe landed on this planet's largest moon, the only moon in the solar system with (\*) surface liquid and a nitrogenous atmosphere. For 10 points, name this gas giant orbited by Titan and the largest set of rings in the solar system.**

Answer: Saturn

## Bonuses

1. For 10 points each, give the following about Cold War-era military unions.

[10] This anti-Soviet military alliance, named for an ocean, formed in 1949 and included the United States, Canada, the United Kingdom, and other European countries.

Answer: North Atlantic Treaty Organization (or NATO)

[10] After multiple rejections from NATO, and in protest of West Germany's 1955 acceptance into NATO, the USSR organized this other military alliance, named for a Polish city. It included East Germany and other Soviet-controlled republics.

Answer: Warsaw Pact (accept Treaty of Friendship, Cooperation, and Mutual Assistance)

[10] The Southeast Asia Treaty Organization, or SEATO, only included two Southeast Asian countries - the Philippines and Thailand - when it originally formed via a 1954 Pact named for this Philippine capital city.

Answer: Manila

2. Identify the following important locations in Norse myth, for 10 points each,

[10] This “middle land,” the realm of men, was formed by Ymir’s [ee-meer’s] eyebrow. It is encircled by a namesake “Serpent,” and during Ragnarök, it will sink into the sea.

Answer: Midgard

[10] Midgard is connected to Asgard by this rainbow bridge, which is guarded by Heimdall.

Answer: Bifrost

[10] This realm, separated from Asgard by the river Ifing, contains frost giants that pester both gods and men in Norse mythology.

Answer: Jotunheim [yoh-tund-hime]

3. Electroplating uses this process to coat an electrode with another metal. For 10 points each,

[10] Name this process in which an atom or ion gains electrons. Its opposite is oxidation.

Answer: reduction

[10] In a voltaic [vol-TAY-ic] cell, reduction takes place at this positively-charged electrode, as opposed to an anode, where oxidation takes place.

Answer: cathode

[10] Iron is reduced to iron oxide in this corrosive process, which often takes place in the presence of acid or water.

Answer: rusting (or word forms)

4. Animals play some strange roles in literature. For 10 points each,

[10] In Steinbeck's *Of Mice and Men*, Lennie dreams of owning these soft animals, which are also the main characters in the Richard Adams novel *Watership Down*.

Answer: **rabbits** (accept **bunnies**, I guess; accept **leporidae** or **leporids**; do not accept "hares")

[10] After a storm, Janie is pulled to safety by a cow while Tea Cake is bitten by a rabid dog in this novel by Zora Neale Hurston.

Answer: **Their Eyes Were Watching God**

[10] Lithuanian immigrant Jurgis [YUR-gus] Rudkus participates in the unsafe butchering of cows in a Chicago slaughterhouse in this muckraking novel by Upton Sinclair.

Answer: The **Jungle**

5. This two-day event was organized by Elizabeth Cady Stanton and a group of Quaker reformers in upstate New York. For 10 points each,

[10] Name this 1848 women's rights convention, which drafted the Declaration of Sentiments.

Answer: **Seneca Falls** Convention

[10] This Quaker orator's visit to Seneca Falls was the impetus for the Convention. Her husband chaired the second day of the Convention, during which she opposed a resolution demanding women's suffrage, noting it made the other resolutions less reasonable to opponents of women's rights.

Answer: Lucretia **Mott**

[10] This women's rights advocate was not at Seneca Falls in 1848, though her parents and sister were there and signed the Declaration of Sentiments. In 1873, she was convicted and fined \$100 -- a fine she refused to pay -- for voting while female.

Answer: Susan B. **Anthony**

6. For 10 points each, answer some questions about quantum physics.

[10] This is the only atom for which an exact quantum mechanical solution exists. It is comprised of one proton and one electron.

Answer: **hydrogen** atom (accept **H**)

[10] The quantum hydrogen atom is based on a solution to this equation of quantum mechanics that describes how a wavefunction changes over time. Its namesake also had a famous thought experiment regarding a cat.

Answer: **Schrodinger** equation (accept **Schrodinger**'s cat)

[10] This constant, symbolized lowercase *h*, appears in many quantum phenomena such as the Heisenberg uncertainty principle. It is the ratio of the energy and frequency of a photon of light.

Answer: **Planck**'s constant

7. For 10 points each, answer the following about subtraction in pop culture.

[10] Dan Walsh created a webcomic subtracting this orange, lasagna-loving cat from his regular Jim Davis comic. The result is, usually, a lonely, depressed Jon Arbuckle, talking to no one.

Answer: **Garfield** (accept **Garfield Minus Garfield**)

[10] A similar concept, filled with just as much existential angst, is the video series “Full House Without Michelle.” It takes the classic 1990s sitcom and removes a toddler whose role was shared by these twin girls, who are now involved in the fashion world.

Answer: **Mary-Kate and Ashley** Olsen (or the **Olsens**, **Olsen twins**, **Olsen sisters**, etc.; prompt on partial answers)

[10] In this 1946 Christmastime film by Frank Capra, George Bailey wishes he had never lived; the angel Clarence shows him that, had he not lived, Mr. Potter would have ruined the town of Bedford Falls.

Answer: **It's a Wonderful Life**

8. On August 9th, 2014, police officer Darren Wilson shot and killed 18-year-old Michael Brown in this city. For 10 points each,

[10] Name this suburb of St. Louis, Missouri, where anti-police protests were met with force in summer 2014.

Answer: **Ferguson**, Missouri

[10] Wesley Lowery, a Pulitzer Prize-winning reporter for this newspaper, was arrested while covering the Ferguson protests. Other Pulitzer-winning journalism from this Washington, D.C. newspaper was done by Woodward and Bernstein, who exposed the Watergate scandal.

Answer: The Washington **Post**

[10] A few weeks prior to the death of Michael Brown, Eric Garner was killed in New York City by a police officer using this illegal procedure. The NYPD contend that this police officer used a headlock, not this procedure.

Answer: **chokehold** (prompt on “choking”)

9. This novel is framed by Nelly Dean explaining the recent history of the title location to Mr. Lockwood, a resident of Thrushcross Grange. For 10 points each,

[10] Name this novel, in which the deaths of Hindley, Edgar, Isabella, and Linton give Heathcliff control of Thrushcross Grange and the title house.

Answer: **Wuthering Heights**

[10] In *Wuthering Heights*, Heathcliff is driven by his frustrated love for this woman, his adopted sister and the eventual wife of Edgar Linton.

Answer: **Catherine** Earnshaw Linton (accept either surname; do not accept “Cathy,” who is a distinct character in the book)

[10] *Wuthering Heights* is by this author, the sister of Charlotte and Anne, who published the book under the pen name Ellis Bell.

Answer: **Emily** (Jane) **Brontë** (full first name required; prompt on partial answer)

10. This work's most famous selection notes that "he shall reign for ever and ever." For 10 points each,  
[10] Name this three-part oratorio, written in 1741, whose Hallelujah Chorus ends its second part.

Answer: Messiah

[10] This composer of *Water Music* and *Music for the Royal Fireworks* composed the oratorios *Israel in Egypt*, *Samson*, and the aforementioned *Messiah*.

Answer: George Frederic Handel

[10] The Hallelujah Chorus is written in this triumphant major key, also used for the final movement of Mahler's *Titan* symphony. This major key has two sharps in its signature.

Answer: D Major

11. The Bailey-Borwein-Plouffe formula can compute the nth digit of pi without first calculating the n minus 1 digits that come before, but the formula requires the use of this number base. For 10 points each,  
[10] Name this number base. A single digit in this base is equivalent to a four-digit number in binary, and like binary, it's often used in computing.

Answer: hexadecimal or base-16

[10] The largest possible digit in binary is 1, and the largest possible digit in decimal is 9. This is the largest possible hexadecimal digit, corresponding to the base-ten number 15.

Answer: F

[10] In HTML, a six-hexadecimal-digit number is used to express colors in the RGB system; for example, six zeroes indicate black. What color does FF0000 [F-F-zero-zero-zero-zero] indicate?

Answer: red

12. In one story about this character, he summons the spirit of Helen of Troy. For 10 points each,  
[10] Name this scholar who made a deal with the devil. Mephistopheles later collects this character's soul.

Answer: Doctor Heinrich Faustus (accept Faust)

[10] This author adapted the Faust legend into a two part play, *Faust*. In this author's novel *The Sorrows of Young Werther*, Werther is in love with Lotte, despite Lotte being engaged to Albert.

Answer: Johann Wolfgang von Goethe

[10] In Goethe's version of the Faust legend, this character's mother is given a sleeping potion. This character has a child with Faust, and is arrested for killing that child.

Answer: Gretchen (accept Margaret)



13. Pablo Picasso painted many works of his native Spain. For 10 points each,

[10] A tired-looking man plays the title instrument on the streets of Barcelona in this Picasso work.

Answer: The **Old Guitarist**

[10] *The Old Guitarist* was painted during this sad, colorfully-named period of Picasso's work.

Answer: **Blue** Period

[10] This painting depicts the aftermath of a bombing on a Spanish city, and shows a dead man holding a broken sword and a woman cradling her dead child.

Answer: **Guernica** [gayr-NEE-kah]

14. The current holder of this position recorded 20 points, 11 rebounds, and 6 assists in the 2014 NBA All-Star Celebrity Game. For 10 points each,

[10] Name this Cabinet position, currently held by Arne Duncan, the former CEO of the Chicago Public Schools.

Answer: U.S. Secretary (or Department) of **Education**

[10] As Secretary of Education, Arne Duncan ranks 15th in this constitutional list, which is topped by the Vice President, the Speaker of the House, and the President pro tempore of the Senate.

Answer: (Line of) **Presidential succession** (accept equivalents that describe the **order** in which a **presidential vacancy is filled**; prompt on partial response)

[10] This other Cabinet position has been filled by Janet Napolitano and Jeh [JAY] Johnson in the Obama administration. It is last in line of Presidential succession, as its department was created most recently, in 2001.

Answer: U.S. Secretary (or Department) of **Homeland Security**

15. In May 2014, NASA announced that this entity has shrunk to half its former size. For 10 points each:

[10] Name this large anticyclonic storm in its planet's South Tropical Zone. It is around twice the size of Earth and its notable color is thought to be produced from phosphorous or sulfur compounds.

Answer: **Great Red Spot**

[10] The Great Red Spot is found on this largest planet of the Solar System.

Answer: **Jupiter**

[10] The Great Red Spot was first described in 1665 by this scientist. This astronomer also discovered four moons of Saturn, and the largest gap in Saturn's rings is named for him.

Answer: Giovanni Domenico **Cassini**

16. This concept is symbolized by a solid line and a broken line; the ba gua are the eight possible trigrams formed from a set of three of those lines, and represent concepts like fire and water. For 10 points each, [10] Give this Chinese philosophical term that describes complementary, yet opposing, forces. It is also symbolized by a circle with swirling black and white regions.

Answer: **Yin** and **Yang**

[10] This text, dating to before 1000 BCE, lists and describes hexagrams, the 64 possible pairs of ba gua. Its title is sometimes translated as "Book of Changes," and it can be used for divination.

Answer: **I Ching** (or Zhouyi)

[10] The ba gua for wind and water give their name to this practice of creating harmony within one's surroundings. It strives to properly control qi [chee], or life energy, by carefully placing of buildings within an area or items within a room.

Answer: **feng shui**

17. In this event, Father Gapon organized a peaceful march in St. Petersburg that was met by the Tsar's troops; hundreds of people were killed. For 10 points each,

[10] Name this event, which started the 1905 Russian Revolution. The name of this event applies to numerous other massacres, including one of Irish protesters by the British army in 1972.

Answer: **Bloody Sunday**

[10] The Russian Bloody Sunday took place at this building, the official residence of the Romanov family, though they hadn't actually lived in this home since a bombing attempt on Alexander II in 1880.

Answer: **Winter Palace**

[10] This final Romanov Tsar refused to meet the protestors on Bloody Sunday. His family was arrested and executed in the Bolshevik Revolution.

Answer: **Nicholas II**

18. This third-largest island of its chain is also its most populous; it's also home to the Punahou School, whose graduates include Barack Obama. For 10 points each,

[10] Name this island, whose tourist attractions include the royal 'Iolani Palace and the probably-dormant volcano Diamond Head.

Answer: **O'ahu**

[10] O'ahu's largest city, Honolulu, is the capital of this U.S. state.

Answer: **Hawai'i**

[10] This neighborhood of Honolulu is dominated by hotels and tourist facilities, as it is home to the most visited beach in Hawai'i.

Answer: **Waikiki** (Beach)

19. Answer some questions about English poetry across time, for 10 points each:

[10] The unknown “Pearl Poet” is generally considered to be the author of “Sir Gawain of the Green Knight.” Sir Gawain is one of the many Knights of this specific furniture item.

Answer: the **Round Table**

[10] John Keats’ poem “Ode on a Grecian Urn” ends by comparing two abstract concepts. Name either.

Answer: **beauty** OR **truth**

[10] This later English poet wrote “You’ll be a man, my son.” in his poem “If-.” His other poems include the incredibly racist “The White Man’s Burden.”

Answer: Rudyard **Kipling**

20. This process requires the enzyme RNA polymerase and pairs adenine with uracil. For 10 points each,

[10] Name this process in which DNA is used as template for synthesizing a complementary strand of messenger RNA.

Answer: **transcription**

[10] Transcription in bacteria is organized around these blocks of genes with a single switch that can be turned off by a repressor protein. The *lac* [LACK] and *trp* [TRIP] ones are found in *E. coli*.

Answer: **operons**

[10] Operons and eukaryotic genes are always preceded by this type of DNA sequence where the RNA polymerase attaches. The TATA box is commonly found within this region of DNA.

Answer: **promoter**