1. A bud found on this type of swollen stem is called an 'eye.' Taro roots, water chestnuts, and yams are all examples of this thick, fleshy stem. Usually found underground, what is the term for this kind of stem, such as the potato?

   TUBER

2. A rhombus has a side length of 37 units. What is the perimeter of the rhombus, in units?

   148 (UNITS)

3. According to one saga, he sailed from Greenland to Norway about A.D. 1000, and was converted to Christianity. On his return, he sailed off course and landed not at Greenland but in an unknown land. What son of Eric the Red is given credit for establishing the first European settlement in the Americas?

   LEIF (ERIKSSON)  (Accept: LEIF THE LUCKY)

4. After volunteering as a nurse during the American Civil War, this woman was inspired to write "Hospital Sketches." In addition to Eight Cousins, she also wrote a novel based on the exploits of Meg, Beth, Amy, and Jo March. Identify this author of Little Men and Little Women.

   (LOUISA MAY) ALCOTT

5. This element of dance remains stationary when the dancer doesn't move her feet. It includes both the dancer's level and direction. Identify the element of dance that describes the area in which the dancer moves.

   SPACE

6. A car company named for this inventor produced an electric automobile called the Model S, with zero emissions. A Serbian-American, he advocated the use of alternating current. Who is the man that helped build the first hydro-electric power plant, located on Niagara Falls?

   (NICOLA) TESLA

7. Although he worked during the Baroque period, his work served as a forerunner of Impressionism, and particularly influenced Manet [ma-NAY]. He painted many of his best known works while he was the court artist for King Philip the Fourth. Identify this seventeenth-century Spanish artist.

   (DIEGO) VELÁZQUEZ [vuh-LAHS-kehss]

8. Although one of the most influential thinkers ever, his life was largely unremarkable: plain and real in a Chinese expression. He was born in 551 B.C. in Lu, which is now part of Shandong Province. Identify this man considered China's most famous teacher, political theorist, and philosopher.

   CONFUCIUS [kuhn-FYOO-shuhs]  (Accept: KONGZI, KONGFUZI)
9. Angle ABC and CBD share ray BC. What name is given to a pair of angles that share a common ray?

   ADJACENT (ANGLES)

10. Her novel Home of the Brave follows Kek, an African immigrant who adjusts to life in Minnesota. She won a Newbery Medal for the story of Ruby the baby elephant and her gorilla mentor. Which young adult author wrote The One and Only Ivan?

   (KATHERINE) APPLEGATE

11. A condition commonly called Dowager Hump is part of the effects of this disease. The word literally means porous bone. Identify the disease common in women due to loss of calcium in the bone-matrix.

   OSTEOPOROSIS

12. Alfred Hitchcock drew inspiration from this painting when creating the Bates Motel in Psycho. Its stern geometric form and lack of vegetation create sense of loneliness that is further imposed by the railroad tracks that divide the viewer from the house. Identify this work that employs the typical harsh lighting employed by Edward Hopper.

   HOUSE BY THE RAILROAD

13. Consider the equation 3X minus 4 equals 2X plus B. If the solution to this equation is X equals 12, then what is the value of B?

   (B EQUALS) 8

14. He is a feral child whom his adoptive parents call "the Frog" because of his hairlessness and constant squirming. Throughout his childhood, he befriends Baloo the bear, but avoids Shere Khan the tiger. Name this Indian child raised by wolves in Rudyard Kipling's The Jungle Book.

   MOWGLI

15. He left Norway as a boy when his father was exiled to Iceland. When he himself was exiled from Iceland, he sailed west with his household and livestock. What explorer established the first European settlement in Greenland in the late tenth century A.D.?

   ERIK (THE RED) (Accept: ERIK THORVALDSON [TOOR-vahl-sun])

16. A mycologist could tell you that the world record holder for largest organism isn't the blue whale, but this type of organism, beginning with the letter "F." By growing along tree roots via hyphae (HIGH-fee), and extending rhizomorphs, this organism has spread to cover nearly four square miles. Identify the kingdom this organism belongs to, which includes yeasts, molds, smuts, and mushrooms.

   FUNGUS  (Accept: FUNGI)
17. Both Gothic and Art Nouveau forms were incorporated into the design of this church in Barcelona, Spain. The architect spent his last years working on it, and when he died in 1926, less than a quarter of it had been completed. Name this church designed by Antoni Gaudi [GOW (as in "how") dee] that is still under construction today.

(CHURCH OF THE) SAGRADA FAMILIA suh-GRAH-duh fuh-MEEEL-yuh]  (Accept: (CHURCH OF THE) HOLY FAMILY)

18. Given the arithmetic [ar-ith-MET-ick] sequence 100, 91, 82, 73, and so on, what is the twenty-first term of the sequence?

NEGATIVE 80

19. He served under George Washington at Valley Forge, briefly represented Virginia in Congress, and was named secretary of state by John Adams. When John Jay refused reappointment after the resignation of Oliver Ellsworth, Adams nominated this man for the Supreme Court. Name the chief justice of the United States Supreme Court whose tenure spanned thirty-four years.

(JOHN) MARSHALL

20. Her lesser-known books include Jumped and No Laughter Here. Her two novels about sisters Delphine, Vonetta, and Fern earned Coretta Scott King Awards, as well as a Scott O'Dell Award and a Newbery Honor. Give the author of One Crazy Summer and P. S. Be Eleven.

(RITA) WILLIAMS-GARCIA

21. A prankster group has tried to have this common compound banned by several cities, using its technical name. It is a colorless, odorless compound when at room temperature. What compound with the chemical name dihydrogen monoxide is necessary for life?

WATER   (Accept: H2O)

22. As a twenty-year-old college dropout, this biography's subject founded a tech company in his parents' garage. He co-founded and was CEO of Pixar, but is best known for running the company that makes the iPhone. Name this biography, subtitled The Man Who Thought Different, by Karen Blumenthal.

STEVE JOBS

23. He shared the 1993 Nobel Peace Prize for his efforts to smooth the transition to majority rule in his country. He suffered a lung infection, and several months of ill health, before dying in 2013 at the age of ninety-five. Name this Nobel Peace Prize recipient, and former president of South Africa.

(NELSON) MANDELA

24. If five cans of soup costs $1.85, what is the cost of one can of soup?

37 CENTS
25. Nickname required. Even as a child, the composer of this symphony was noted for his sense of humor, and he demonstrated it with this work. According to one story, he was conducting it when he instructed the musicians to play the final chord of the second movement fortissimo [fore-TIS-uh-moe] to wake up a sleeping member of the audience. As a result, what nickname was given to this startling composition by Haydn [HIDE-un]?

SURPRISE (SYMPHONY)

26. A step-up transformer will increase this quantity of electricity. The quantity can be added up when batteries are arranged in series. Identify the quantity that measures electrical potential.

VOLT(AGE)

27. Born in Pennsylvania, this songwriter was primarily known for his parlor and minstrel music. Many of his songs remain popular even today, including "Oh! Susanna" and "Camptown Races." Name the American composer who wrote Kentucky's official state song.

(STEPHEN COLLINS) FOSTER

28. His father and uncle paved the way for his historic adventure by trading with the Mongols on the Volga River. He went east himself in 1271 as a teenager, remaining there until his return to Europe in 1295. Who spent many years of his life at the court of Kublai Khan before returning to Italy?

(MARCO) POLO

29. If X is the mean of a set of 10 numbers, what will be the new mean if each number is increased by 5?

X PLUS 5

30. In one poem, this writer describes silver, golden, brazen, and iron bells "Keeping time, time, time / In a sort of Runic rhyme." The death of his wife, Virginia Clemm, prompted him to write "Annabel Lee." Identify the American short story writer and poet best known for "The Raven."

(EDGAR ALLAN) POE

31. A woman who travels 500 meters in 5 minutes. What is the woman's speed in meters per minute?

100 (METERS PER MINUTE)

32. Although it is considered a type of flute, this instrument is usually made of wood or plastic. Composers like Bach and Vivaldi used it to suggest shepherds and imitate birds in their music. Identify this instrument with a whistle-type mouthpiece and holes along its length that can be covered to change its pitch.

RECORDER

33. First and last name answer required. On May 25, 1961, this man declared his goal of landing a man safely on the moon by the end of the decade. His inaugural address instructed listeners, "ask not what your country can do for you--ask what you can do for your country." Which American president was assassinated in 1963 by Lee Harvey Oswald?

JOHN (F. OR FITZGERALD) KENNEDY
34. In this battle, the Greeks were led by Miltiades [mil-TIE-uh-deez], and lost 192 men. In the battle, the Athenians surrounded the Persians' infantry, forcing a Persian retreat. What 490 B.C. battle that gave its name to a race, based on the legend of an Athenian messenger who took word of the victory back to Athens?

(BATTLE OF) MARATHON

35. Mary takes 6 different classes during the school day. In how many ways could these 6 classes be ordered?

720

36. An artificial system of this type was created for eight individuals in 1991, named Biosphere 2. An example of one found in nature is the Great Barrier Reef. What is defined as the interactions between a community of living organisms in a particular area, along with its nonliving environment?

ECOSYSTEM

37. Because it is intended to be played indoors, this style of music is usually played by small groups of string and woodwind instruments. It was often written to be light entertainment at a party or gathering, but was rarely the sole focus of an event. Which type of music takes its name from the fact that its players were originally sequestered in a separate room from the audience?

CHAMBER (MUSIC)

38. In "One Ordinary Day with Peanuts," this author explores the Johnsons' attempts to influence their acquaintances' days for better or worse. Kindergartener Laurie blames his imaginary friend for his own misbehavior in her story "Charles." Name the author best known for her story of Tessie Hutchinson's stoning, "The Lottery."

(SHIRLEY) JACKSON

39. More than a hundred people died in this country in November 2012 in a fire at a factory that made sweaters and shorts. Five months later, more than a thousand people died when a garment factory collapsed in Savar, a suburb of the capital. What south Asian nation, once part of Pakistan, has its capital at Dhaka [DAK-uh]?

BANGLADESH

40. Multiple answer required. Consider the relation consisting of the points (3, 5), (4, 7), (2, 8), and (5, 12). What is the range of this relation?

5, 7, 8, 12 (ANY ORDER)

End of First Half - Begin Three-Minute Inquiry Period
1. According to legend, this man's camp stove covers an acre, and men grease his hotcake griddle by using bacon for skates. The cousin of Tony Beaver, he created the Grand Canyon, Black Hills, and Puget [PYOO-jit] Sound, as well as Minnesota's ten thousand lakes. Who is this mythical lumberjack and companion of Babe the Blue Ox?

(PAUL) BUNYAN

2. An example of this growth pattern is a plant tendril coiling around a supporting string. Give the biological term for an organism's "oriented growth...in response to mechanical contact."

THIGMOTROPISM [thig-MO-truh-piz-uhm]

3. Beginning in 1907, this dancer was the first to tour the world with her own company. She performed many iconic roles, but is best known for her depiction of the Dying Swan. Name this ballerina credited with bringing Russian dance to the rest of the world.

(ANNA) PAVLOVA [PAH-vluh-vuh]

4. Multiple answer required. Solve the equation for X: X squared minus 3X minus 40 equals 0.

(X EQUALS) 8, NEGATIVE 5

5. Multiple answer required. Colonists in these two towns were warned by Paul Revere that the British were coming to capture their military stores. At what two towns was the British force met by local minutemen, and turned back to Boston?

LEXINGTON, CONCORD (Either order)

6. A well-known modern adherent of this religion was Freddie Mercury, the lead singer for Queen, the group that recorded "We Will Rock You." It was one of the earliest religions to reject the idea of multiple gods, worshipping only Ahura Mazda, although it venerates the forces of nature, particularly fire. Identify this religion closely associated with ancient Persia and modern India.

ZOROASTRIAN(ISM) (Accept: PARSI(ISM))

7. An example of this kind of sentence is, "Katie adopted a kitten from the humane society." What type of sentence makes a statement?

DECLARATIVE

8. Ancient astronomers deemed this planet the slowest-moving, while Galileo first observed it with a telescope in 1610. Its mean density is the lowest of any object's in the solar system, meaning it could float in a large enough ocean. Identify the second largest planet, known for its rings.

SATURN

9. Rounded to the nearest mile, how many kilometers are in 10 miles?

16 (KILOMETERS)
10. The first settlement in this colony was St. Marys City, which was founded in 1634. It was a proprietary colony formed under a charter given to Cecilius Calvert in 1632. Name this colony whose major city was named for George Calvert, the first Baron Baltimore.

MARYLAND

11. An example of this sentence structure is, "The computer crashed, so I lost my term paper." Identify the sentence structure that contains two or more independent clauses.

COMPOUND (SENTENCE)

12. Animals that exhibit this feeding behavior include alligators, owls, and lions. The "apex" type resides at the top of its ecosystem's food chain. What type of consumer survives by hunting and eating its prey?

PREDATOR

13. For his ninth labor, Hercules was sent to this queen to retrieve her magic girdle. Some versions say he killed her when taking it, others that she gave it to him freely. What fierce warrior was the daughter of Ares, and the queen of the Amazons?

HIPPOLYTE [hih-PAWL-ih-tee] (Accept: HIPPOLYTA [hih-PAWL-ih-tuh])

14. Solve the inequality: 3 plus 5X is greater than 4x minus 5

X IS GREATER THAN -8

15. The five clauses included in this amendment include the assembly clause and petition clause. The first clause is called the establishment clause. What amendment also protects the freedoms of speech and the press?

(Accept: FIRST (AMENDMENT)) (Accept: (AMENDMENT) ONE)

16. Although the family fled to Italy, this musical has them fleeing to Switzerland to escape the Nazis. Created by Rodgers and Hammerstein, the musical features songs like "My Favorite Things" and "Climb Ev'ry Mountain" as well as the title song. What musical follows the story of a young nun and her interactions with Captain Von Trapp and his seven children?

(THE) SOUND OF MUSIC

17. Every few years, this weather irregularity appears off the coast of Peru and Ecuador in late December. Its warm ocean currents vary in intensity, but can disrupt global climates. Identify this set of ocean conditions, whose name means "the Christ child" in Spanish.

EL NIÑO

18. Examples of this kind of conjunction include unless, before, and because. Name the kind of conjunction that introduces an adverb clause or joins an independent and a dependent clause.

SUBORDINATING (CONJUNCTION)
19. State your answer as a simplified radical.

3 CUBE ROOT OF 2

20. The spread of this economic system was spurred by the English cloth industry beginning in the sixteenth century. It has been the most dominant economic system since the end of feudalism. Identify the economic system found in the United States.

CAPITALISM  (Accept: Other forms of the word, FREE ENTERPRISE, FREE MARKET)

21. After completing school, this British royal chose to go into the military. He served in combat in Afghanistan until a story was published in an Australian magazine revealing his location. Identify this member of the royal family who, after the birth of his nephew Prince George, is currently fourth in line of succession to the British crown.

(PRINCE) HARRY (OF WALES)

22. As a noun, this word can refer to an arched structure that forms a ceiling over a room. It also names a strong, fireproof metal cabinet for storing materials. Give this word that, as a verb, one may perform with a pole at a track and field event.

VAULT

23. In a Punnett square, this type of organism will possess one capital and one lowercase letter for a given characteristic. Give the term for a diploid organism whose cells contain two different alleles of a given gene.

HETEROZYGOUS [het-er-uh-ZIGH-gus]  (Accept: HETEROZYGOTE)

24. The dimensions of a rectangular prism are 4 units by 5 units by 8 units. What is the volume of this prism, in cubic units?

160 (CUBIC UNITS)

25. This cylindrical map projection became the standard projection for nautical purposes, beginning in the sixteenth century. Name this projection that shows lines of latitude and longitude as straight lines, but exaggerates the size of objects far from the equator.

MERCATOR (PROJECTION)

26. A Latin root appears in the English words legislature and legal. What is the English meaning of the Latin root leg?

LAW

27. Examples of this dramatic element include stage left, upstage, and downstage. Actors must practice it consistently so that they know where to be in each scene. Identify the performance element of drama that tells the actors where to go and how to move onstage.

BLOCKING  (Accept word forms)
28. In animals, these structures move liquids along internal epithelial [ep-uh-THEE-lee-uhl] tissue. In certain protozoans [proh-tuh-ZOH-uhnz], they provide locomotion by beating in rhythmic waves. What are these tiny, hairlike organelles?

CILIA [SILL-ee-uh]

29. This declaration may not have been legal, simply because it applied to areas of the country not under Union control. It was preceded by a warning in September 1862 that it would be issued unless the states in the Confederacy returned to the Union. By what statement did Abraham Lincoln declare that slaves in the states in rebellion were now free?

EMANCIPATION PROCLAMATION

30. Triangle ABC is similar to triangle DEF. If AB has a length of 5 and BC has a length of 8, then what is the length of EF if DE has a length of 40?

64

31. In a duet, this element of music is sung by the lead vocalist. When you whistle a song, this is the part that you whistle, without any of the instrumental accompaniment. What musical element is the progression of single notes that make up a song or musical phrase?

MELODY

32. In French, this term means "chewed paper." What art medium consists of paper pulp and glue that is molded into a desired shape and allowed to harden?

PAPIER-MÂCHÉ [pay-per-muh-SHAY]

33. This kind of map adds a third dimension to latitude and longitude by showing natural features of the Earth's surface, elevation in particular. What kind of map may use color or contour lines to show elevation?

TOPOGRAPHIC (MAP)

34. This property is a major component in determining an object's inertia. The connection between itself and energy is seen in the equation E equals m c squared. Identify this fundamental property of matter.

MASS

35. What is the degree of the polynomial, F of X, equals 4 X raised to the fifth, plus 3 X cubed, minus 2 X squared?

5

36. All three kinds of this literary device rely on the contrast between what is expected and what actually happens. Examples include Mark Antony's statement, "Brutus is an honorable man," and the audience's awareness that Montresor plans to murder Fortunato in "The Cask of Amontillado" [uh-mon-tee-AH-doh]. Name this device, which can be dramatic, situational, or verbal.

IRONY
37. In a song, this element of music is demonstrated when a soprano sings one part and an alto sings a different part. In a chord, it is demonstrated when two or more complementary notes are played at the same time. Name this element of music where notes are added to complement the main melodic line.

HARMONY

38. This mountain system, part of the Appalachians, includes the Unaka [YOO-nuh-kuh] Mountains. It contains the highest mountains in North Carolina, South Carolina, Virginia, and Georgia. What colorfully named chain includes the Great Smoky Mountains?

BLUE RIDGE (MOUNTAINS)

39. This type of reaction can be halted by removing either air or heat. Its spontaneous form can occur when pistachio nuts are stored in large quantities. Name this reaction that usually includes oxygen, and results in heat and light in the form of fire.

COMBUSTION (REACTION)

40. What is the largest 3 digit integer that is divisible by 6?

996

End of Second Half - Begin Three-Minute Inquiry Period
**Extra Questions**

**H-1** Our Town by Thornton Wilder does not use this element of drama. It can be as elaborate as an entire building or street, or as simple as a backdrop and a few raised platforms. What element creates a physical environment for a play?

**SCENERY**

**SS-2** This policy resulted from fears that European nations might help Spain recover some of its colonies in the Americas. It was announced on December 2, 1823, during an annual message to Congress. What U.S. foreign policy doctrine declared that the Western Hemisphere was closed to future colonization?

**MONROE DOCTRINE**

**M-3** What is the sum of the absolute value of 8 with the absolute value of negative 8?

16

**SC-4** When a drop of nitric acid is placed on this element to determine its purity. The only acid that can dissolve this element is aqua regia. Name this element with atomic number of 79 and symbol A-u.

**GOLD**

**LA-5** Works in this literary form include The Adventures of Huckleberry Finn and Moby Dick. It is "a fictitious prose narrative of considerable length and complexity" that presents characters and a sequence of events. Identify this literary form, whose name can also be a synonym for "new."

**NOVEL**