27. At its height, the Roman Empire included areas surrounding the Mediterranean Sea; Southern Europe (including Spain, Portugal, France, Belgium, Switzerland, Italy, Greece, Yugoslavia, Parts of Germany, Romania, etc.), Turkey, parts of the Middle East (Israel, Iraq, Jordan, etc.), Northern Parts of Africa and along the Nile in Egypt. The Egyptian empire was centered on the Nile River in Egypt, Africa. The empire of Alexander the Great extended east from Greece to India. It did not go west into Europe. The empire of Charlemagne was centered on and around France, Europe.

28. The first civilizations of Africa and Asia were concentrated in areas where there were river valleys, which supplied fresh water and fertile soil. Most notable of these are the Nile River with Egyptians and the Tigris and Euphrates rivers with Babylonians. These areas were important because this is when humans began to stop being hunter/gatherers and live a more sedentary life.

29. Hinduism teaches that its social system should be diversified according to spiritual development, by karma. This system became hereditary and is now known as the caste system.

30. The Kush Empire was centered on the headwaters of the Nile River, which had annual floods. There was lots of timber around this region. There were also lots of iron ore, gold and emerald deposits in the nearby mountains. It’s capital city, Napata was located on the Nile, which was the major trade route for the empire. Ancient Israel did not have large deposits of iron or emeralds. Also its rivers did not flood annually. Ancient Phoenicia did not have a large timber production. Ancient Persia was mostly desert and mountains.

31. The legal code of France (promulgated by Napoleon I in 1804) is a revised form of Roman law, or civil law. The art and architecture of Spain was greatly influenced by Islamic culture. Great Britain’s educational influence comes from the Catholic Church. German literature has many influences, spread between its segmented historical periods.

32. The Roman Empire was so large around AD 190 - 330 that it had to hire mercenaries to protect itself from invading armies. There were many wars and skirmishes along its borders. The Legions of Rome were not large enough to protect all of the borders or fight in several wars at once. The growth of Christianity did not spread conflict throughout the empire. In fact, there were Christian Caesars, namely Constantine I.
33. The samurai tradition of Japan is Bushido. Bushido is not unlike the chivalry and codes of the European knights. It puts emphasis on loyalty, self-sacrifice, justice, sense of shame, refined manners, purity, modesty, frugality, martial spirit, honor and affection.

34. The modern university today sprang from the Roman Catholic Church in medieval Europe. Universities were first developed in Italy at Bologna and Padua, in Spain at Salamanca and Alcala, in France at Paris and in England at Oxford.

35. The Incas are best known for their engineering and architecture. They built an extensive system of roads, covering at least 23,000 km. These roads facilitated communications and the movement of people and goods. To cross the steep ravines in the Andes, they built impressive suspension bridges. On the mountainsides, they built elaborate terraces to increase food production. Inca architecture is well-known for its finely worked tones which are fitted together so well, without the use of mortar, that you cannot fit a knife blade between the stones.
   A council of lords, who were mostly related, ruled the Inca Empire.
   The Inca used elaborate terraces for their agricultural production.
   The Inca used their road system for travel and trade.

36. John Cabot (1490’s) was an Italian navigator and explorer, Jacques Cartier (1550’s) was a French explorer, and Henry Hudson was an English Explorer (1600’s). They were all mostly looking for a new trade route with China through the new world.

37. John Winthrop's Fleet landed at present day Salem, but almost immediately moved to the present day site of Boston harbor, with the first mass exodus of Puritans from England. In the next ten years, 20,000 persons, most from England and most of the Puritan philosophy, immigrated to Massachusetts to form the backbone of the Massachusetts Bay Colony. The Puritans came to the new world because they were being persecuted for their religious beliefs.
   The Virginia colony was formed to make money.
   The Quakers, who wanted to practice their religion without being persecuted, founded Pennsylvania.

38. The Battle of Saratoga helped decide the outcome of the American Revolution. Early in 1777, Lord George Germain approved a plan calling for an army to be lead south from Canada to Albany, New York. A smaller expedition would converge on Albany from the west. By occupying Albany and controlling the Hudson River, the British intended to cut off New England from the other colonies and force an end to the American rebellion. As they marched south toward Albany, some 7,000 Americans who had taken up an entrenched position a few miles south of Saratoga blocked them. The beaten British army withdrew to Saratoga, where, surrounded by the American army, which now numbered up to 17,000. They surrendered on October 17. His defeat encouraged France to join the American side and thus proved to be the turning point in the war.
The British victory at Bunker Hill allowed the British to keep their hold on Boston. It also gave the resistance a stronger spirit because the militiamen at Bunker Hill were able to withhold for so long and cause so many casualties. General George Rogers Clark captured most of the Northwest Territory from the British. John Paul Jones sailed with a mixed colonial and French fleet off of the coast of Britain.

39. Elizabeth Cady Stanton and Lucretia Mott, two American activists in the movement to abolish slavery called together the first conference to address Women's rights and issues in Seneca Falls, New York, in 1848. Applying the analysis of human freedom developed in the Abolitionist movement, Stanton and others began the public career of modern feminist analysis. The Declaration of Sentiments and Resolutions at the Seneca Falls Convention. Using the model of the U.S. Declaration of Independence to forthrightly demand that the rights of women as right-bearing individuals be acknowledged and respected by society.

40. The Articles of Confederation was the first constitution of the U.S. It’s purpose was to establish a national government in the New World, namely the United States.

41. The Oregon Territory was an area that was contested between the U.S. and Great Britain. This dispute was finally settled in the Treaty of 1846, which set the boundary between the U.S. and Canada at the 49th parallel. Region B was the Louisiana Purchase, which was from the France in 1803. Region C was the land that was disputed in the Mexican-American War (1846). Region D was land colonized by Spain.

42. The Union had a stronger manufacturing base than the Confederacy did. There were more textile mills and production centers in the north. The south was primarily agricultural and sent its crops north to be processed. The Confederacy had a much more experienced officer corps. General Lee was offered the command of the Union Army, but said that he was a Virginian first and an American second and commanded the Confederate army.

43. The postwar radical republicans wanted to punish the south, control the transition of freedmen from slavery to freedom, and to keep the Republican Party in power in both the north and the south. The presidential election of 1876 is one of the most controversial the U.S. has ever had. There were controversial electoral votes, some states turned in more than one set of votes. The Electoral Commission made a decision on who was going to be president, but their decision would have to go before congress. Republicans controlled the Senate; Democrats controlled the House. There was no way that they would agree on what to do. A compromise was reached. Southern Democrats in Congress were persuaded to vote for the Electoral Commission decision in exchange for a promise of an end to Reconstruction by the removal of all federal troops from the south.

44. A national market economy is characterized by; a specialization in agriculture, a national and international market system, use of money and credit, domestic manufacturing, rapid economic growth, and a potential growth of domestic investment capital. The reasons that the U.S. shifted to a national market economy after 1815 are; high profits from the
Napoleonic Wars (including War of 1812), internal expansion to the Mississippi River, development of commercial agriculture, revolution in communication and transportation creating cheaper and faster modes, public policy decisions at the state and national levels to foster enterprise, nationalism of the Republican (Jefferson) Party, judicial nationalism which created the legal requirements for a national market.

45. The mission’s primary function was to Christianize the natives. The pueblo was where the Spaniards settled. A presidio (military garrison) protected the mission and pueblos. These things worked together to maintain social order.

46. California’s American Indians were primarily hunter/gatherer societies. They were not nomadic and stayed in their collective areas. Among these were the Bear River, Mattale, Lassick, Nogatl, Yahi, Wintun, Wailaki, Kato, Yuki, Lake Miwok, Interior Miwok, Coast Miwok, Interior Miwok, and Yokuts tribes.

47. Many Californians had disliked the wealth and power of the missions during Spanish rule. Eventually the new republic agreed to reduce the power of the missions, and in 1833 the Mexican congress released Native Americans from the control of the missions and opened mission lands for settlement by Californians.

48. In 1845 the United States annexed the Republic of Texas, which had just won its independence from Mexico. Tension between the United States and Mexico mounted following a dispute over the location of the Texas border. This dispute led to the Mexican War (1846-1848).

49. In 1965, Congress amended the Immigration and Nationality Act. The amendments abolished the national origins quota system, capped immigration from Western Hemisphere countries (previously without quota restrictions) at 120,000, and raised the limit on immigration from the rest of the world to 170,000.

50. In the 1990’s, the Latino population of California swelled. NAFTA and relaxed migrant worker laws helped this increase. Because of this, their political base grew as their voting power was flexed.

51. Popular sovereignty is defined as: the doctrine that the inhabitants of a territory should be free from federal interference in determining their own domestic policy.

52. The aircraft industry of California changed greatly during World War II. Many production companies started to produce airplanes during the war. With the many new innovations in the aircraft industry, many of these companies became enormous, including Lockheed and Beech.
17. Use the information below to complete the exercise that follows.

A fifth-grade student attempts to spell a list of words that are read aloud. Shown below are the words and the student's spellings.

<table>
<thead>
<tr>
<th>Target Word</th>
<th>Student's Spelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>yellow</td>
<td>yelloe</td>
</tr>
<tr>
<td>natural</td>
<td>nacheral</td>
</tr>
<tr>
<td>muffin</td>
<td>muffin</td>
</tr>
<tr>
<td>doctor</td>
<td>dockter</td>
</tr>
<tr>
<td>special</td>
<td>spechui</td>
</tr>
<tr>
<td>sign</td>
<td>sine</td>
</tr>
<tr>
<td>quick</td>
<td>quick</td>
</tr>
</tbody>
</table>

Write a response in which you describe the student's spelling development. Make sure to cite specific examples to support your conclusions.
Examples of Responses to Sample Constructed-Response Questions for CSET: Multiple Subjects Subtest I

Reading, Language, and Literature

Question #17 (Score Point 3 Response)

This fifth-grade student has demonstrated a knowledge of sound-symbol relationships on all the words in this list as far as beginning sounds and blends are concerned, such as the blend “sp” in special. An understanding of consonant-doubling is demonstrated in the words yelloe and muffin. However, there are mistakes in some of the ending sounds, such as the "oe" in yelloe and the "er" in docter. These mistakes are common for a first or second grader but are not expected of a fifth grader. The fifth-grade student’s sight vocabulary should be such that these mistakes are eliminated due to practice and exposure to written words. Another weakness of this student is in the area of medial sounds, as shown in the words natural/nachedral and special/spechul. This student’s development is at the transitional level, and the student is still using sign-symbol relationships mastered at the lower grade level. This student could build up a better understanding of the correct spelling of words though practice and exposure to more literature. More reading would also help to develop better morphological understanding, as of the relationship between natural and nature.
Question #17  (Score Point 2 Response)

The student has demonstrated a high level of phonemic awareness, using a letter or letter combination to represent each sound in a word. Consonant doubling was also used correctly in “yelloe” and “muffin.” However, there were errors with common word endings, as in “yelloe,” “dockter,” and “spechul.” By fifth grade, students should be able to spell these words correctly. The student has not learned common spelling patterns and still over-relied on sounding words out. More practice reading and writing should help this student improve his or her spelling.

Question #17  (Score Point 1 Response)

This fifth grade student shows some strengths and weaknesses in spelling. In my evaluation, he is only an average speller. He does know his beginning letter sounds and most of the ending sounds in these words. He is also spelling muffin and yelloe with double consonants. But the rest of the words shows weaknesses. He doesn’t know how to spell the “tu” in natural and the “ci” in special, and instead spells them how they sound. And he misses the spelling of doctor, not knowing that “c” has the sound of “k” like in quick, alone. I would suggest that this student needs to have some remedial help with spelling to catch up with the others in his class.
18. **Read the passage below from *The Story of My Life* (1903), Helen Keller's autobiography; then complete the exercise that follows.**

Have you ever been at sea in a dense fog, when it seemed as if a tangible white darkness shut you in, and the great ship, tense and anxious, groped her way toward the shore with plummet and sounding-line, and you waited with beating heart for something to happen? I was like that ship before my education began, only I was without compass or sounding-line, and had no way of knowing how near the harbor was. "Light! give me light!" was the wordless cry of my soul, and the light of love shone on me in that very hour.

Write a response in which you describe the use of analogy in the passage. Be sure to cite specific evidence from the text.
In this passage from Helen Keller’s autobiography, Ms. Keller compares herself, “before [her] education began,” to a fogbound ship, without instruments of navigation, adrift in ignorance and fear. We know that Ms. Keller was both deaf and blind, and was ignorant of any outwardly expressive language in early childhood. In this passage she speaks of the isolation she then felt, “groping” and wordlessly trapped in her “tangible white darkness.”

The imagery of the fog is an evocative analogy not only of ignorance and isolation, but of sensory deprivation. It is most telling that the light that came to shine on her, that led her to the acquisition of knowledge, was the light of love. Her education began with the love of her teacher, Anne Sullivan, who went on to deliver literally into Ms. Keller’s hands the compass and sounding-line of language and intelligibility. This light of love, with its Biblical resonance, has to her almost the quality of the divine.
Question #18 (Score Point 2 Response)

Helen Keller compares herself before her education began to a ship lost in a dense fog, “without compass or sounding line.” Ms. Keller illustrates her feelings of fear and isolation by comparing herself to a fogbound ship. She explains that, “Light! Give me light!” was the wordless cry of her soul, meaning that she was longing for a beacon or guide.

Question #18 (Score Point 1 Response)

In this passage, there is a ship that is lost because of a heavy fog. The people on it don’t know where they are and so feel tense and anxious. They wonder if they are close to the shore and far from the harbor.

Helen Keller, in her autobiography, tells us that she was like that ship before she had any education. But after being educated she didn’t feel lost anymore. The ship was her before she began to learn. After being educated, she found light and love.
19. Complete the exercise that follows.

In 1776, after more than ten years of growing resistance, Great Britain's North American colonies in America declared their independence.

Using your knowledge of U.S. history, prepare a response in which you:

• identify two important causes of the American Revolution;
• select one of the causes you have identified; and
• explain why that cause was a decisive factor in bringing about the decision for independence.
History and Social Science

Question #19 (Score Point 3 Response)

One major cause of the American Revolution was colonial opposition to British efforts to tax the colonies. Another was colonial discontent over British policies that restricted westward expansion. The first of these causes was particularly significant because it involved differing conceptions of colonial rights. Americans insisted that they could not be taxed by a government in which they were not represented, and thus could not be subject to acts of Parliament; the British disagreed. These differences were at the heart of disputes surrounding the Stamp Act, the Townshend duties, and the Tea Act—disputes that contributed considerably to the growing tensions that resulted in war.

Question #19 (Score Point 2 Response)

Two major causes of the American Revolution were the Stamp Act and the Quartering Act, enacted by the British government on the colonial peoples. The Quartering Act required that colonial governments pay for quarters and supplies for the English troops stationed in the colonies, as well to house soldiers in colonial homes. Although these acts both led to great protests and demonstrations, Great Britain refused to repeal these abhorrent laws. This made people even more angry and discontented. It led to increased hostility.
Question #19 (Score Point 1 Response)

Two major causes of the American Revolution included the fact that the colonists had developed a local political structure that resented being treated as inferior by the English leaders and accompanying this was the practice of taxing the colonies without their input.

The sense of not being equal to the English leaders was a driving factor in developing a home grown leadership of such people as Washington, Franklin, and Adams who would take the leadership roles in contesting what they saw as English injustice. Had they been granted equality with the English leaders, it is less likely that Washington et al would have taken the drastic step of breaking away from the home country.
20. **Complete the exercise that follows.**

In the 1930s, approximately 300,000 people migrated from the southern plains region of the United States to California.

Using your knowledge of California history, prepare a response in which you:

- identify three effects (social, economic, political, cultural) of this migration on California;
- select one of the effects you have identified; and
- explain how the effect of the migration you have selected helped shape modern California society.
During the Great Depression of the 1930’s California was subjected to a mass immigration of poor farmers from the Southern Plains states. Although poor, these were proud people who valued their families, had a strong work ethic, found solace in a strong evangelistic Protestant faith, and who believed in the Democratic party.

The initial reception for these people was quite negative, and in some cases California police turned people back at the borders. Those who persevered and did take up residence within California made up two important groups. One group continued their work in agriculture but found themselves competing with other immigrants for poor-paying migrant jobs. The second group added to the state’s growing urban population, especially in Los Angeles, where they competed for entry-level jobs. Eventually, as the economy strengthened during World War II and more jobs became available, the members of the “Okie subculture” found themselves helping to form a solid middle class.

Because of their physical features, assimilation was eventually easier for them than for other immigrants; however, their contributions to the development of the California defense industries, along with such cultural factors as food and music, added another dimension to the diversity of cultures that comprise California.
Question #20 (Score Point 2 Response)

In the 1930’s there was a mass migration of desperate farmers fleeing from deplorable agricultural conditions, such as severe drought, in the Midwestern states in search of a better life in California. These refugees who fled the Dust Bowl disaster were lured by California’s warm climate, reputation as land of opportunity, and an economic boom in areas such as oil, movies and manufacturing. This migration, which was facilitated by the advent of the automobile and government road building programs, affected California in many ways. These Midwesterners, who became known as “Okies,” brought with them their strong work ethic, fervent Protestant evangelism, and staunch Democratic political ideals, which had great political, economic and social impact on California.

Many of the immigrants attempted to continue to make their living in agriculture, while some sought employment in factories performing low paying jobs. However, despite their desire to work hard and efforts to obtain employment, because of the nation wide depression and large influx of immigrants, the Okies had difficulty finding jobs. And, if they were successful, they received little pay for their long hours of labor. Consequently, they were forced to reside in crowded, sub-standard housing with little food for nourishment. Life in California was not the “land of milk and honey” of which they had dreamed. These refugees from the severe conditions of the Dust Bowl did not obtain the good life that they were seeking. Although, they helped California’s economy with their hard work, they did gain rewards from their labor. They remained poor farmers.
In the 1930’s a large number of people moved to California from the Southern Plains of the United States. A substantial number were from agricultural areas of Oklahoma and in general this group was to be known as the Okies. As a result of the inflow of people into the state, and it was the time of the height of the Great Depression, a great burden was placed upon the California communities affected by the movement. This added economic burden alienated local residents and the added competition for jobs gave rise to tensions. Probably the main impact at the time was that economic competition for work made low wages and social disruption. The appearance of the new arrivals differed greatly from that of the established local residents. Over the long term, the immigrants changed the political and social climate of many communities.
Subtest II: Science

1. A chemical change occurs when a new substance is formed from an old substance: For this to happen energy is usually released, a gas is given off, or water or a solid is formed. On most occasions a chemical change occurs when heat is applied to the original substance. In this case it is the propane that undergoes a chemical change as it burns, releasing gasses, one of which is oxygen. *Note: Boiling water ran through the coffee grounds appears to change, color and taste, but this action only forms a uniform mixture we know as the drink coffee. The water’s properties have not been changed they have only been mixed with the coffee.

2. The periodic table is arranged with numbers, elements, ascending left to right, row upon row. The elements are also stacked vertically, top to bottom, in columns. Elements in the same column usually have very similar chemical properties, especially those elements right next to each other like 6 C (carbon) and 14 Si (silicon), 14 Si and 32 Ge (germanium), 50 Sn (tin) and 82 Pb (lead), ect. *Note: The chemical properties and similarities are based upon the arrangement of the electrons in the last electron shell. Elements in a column all have the same number of electron in the outside shell.

3. The pH scale runs from 0 pH (most acidic) to 14 pH (most basic). Vinegar has a pH of 2.9, the lowest of all these solutions. Distilled water has an even pH of 7.0, the middle of the scale, and is milk slightly more basic with a pH of 6.3 to 6.6. Ammonia has a pH of 11.

4. Isotopes always deal with the number of neutrons, so B and C are false. To determine if A or D is correct pay attention to the Atomic Number, 6. The Atomic Number always tells us how many protons (6), neutrons (6), and electrons (6) the atom has; add the proton and neutrons together and the total is 12, hence C12. C14 is an isotope meaning it has a different number of neutrons than protons, in this case two more than normal.

5. Breaking down the word ‘proton’ the prefix ‘pro’ (meaning positive) automatically eliminates the phrase ‘negative for a charge’, so A and D are out. And the proton, along with the neutron, is always part of the nucleus, where all the mass of an atom is found. *Note: amu is the unit of mass for the proton and the neutron. (1 proton = 1 amu ; 1 neutron = 1 amu)

6. Refraction is the bending or breaking of light waves (heat and soundwaves also) as they pass through another medium, such as raindrops. Light, or white light, is the combination of all visible light and separates into the separate wave bands during refraction, red being the longest wave length to violet being the shortest. This spectrum is often referred to as our friend, ROY G. BIV; the color order being red, orange, yellow, green, blue, indigo, and violet.
7. The air inside the balloon wants to escape, hence the name air pressure. When given a route to escape the air leaves the neck, this creates a force, or action, in the direction the neck is pointing. If the balloon is not being held in place the balloon launches because of the force in the opposite direction of the original action, the reaction.

8. **Thermal Energy** is the total kinetic energy of the particles in a material. **Temperature** is a measure of the average kinetic particles in an object. This means that even though the temperature of the cup is higher there is more **total** energy in the bathtub. Larger volume, more total energy.

9. The choice has to be B because the distance and the time must both start at 0, this leaves A and D out. B shows us the rock takes more time to travel a distance at first, this is when it is starting to roll down hill, and then, as the rock speeds up as it travels down the hill, it takes less time to travel a more distance (notice that the graph line curves up sharply at the end indicating more distance traveled).

10. Water continues to flow through the stems of the flowers because the flowers are still alive and feeding even though they have been cut. We have all seen this when we get flowers, they will last a few days looking fresh until they wither and die. The better care we take of the flowers the longer they will last. Because the flowers are still feeding and water is flowing to the petals the dye is carried to the petals and they will take on a blue tint because they are white. Flowers require a relatively neutral pH to survive. When the salt is added to the water the flowers wilt and die faster than they normally would.

11. Blood enters the right side of the heart; therefore C and D are wrong. The ventricle is a larger muscle chamber than the atrium, the chamber responsible for allowing the blood to enter the body. The larger muscle does most of the work.

12. Life, as we know it, is often referred to as carbon based life. Carbon can easily be formed, with many other elements, into simple and complex compounds. This is due to carbon’s **electron** arrangement. Compounds usually formed by **electron bonds**. An electron bond is formed when electrons are shared, between two or more elements, to fill up the **electron shells** of the elements involved (ex. Hydrogen has one electron in its electron shell and oxygen has six electrons in its outside shell and it wants eight. To fill up oxygen’s outside shell two hydrogen atoms will attach to the oxygen atom and share electrons in an electron bond. We know this as the molecule, or compound, H2O). Carbon has only four electrons in its outer electron shell and it wants four more. This makes for many opportunities for other atoms to attach themselves to an atom of Carbon.
*Note: Carbon is so versatile in its ability to form a compound that there is a whole field of study based on this called Organic Chemistry

13. **Mutualism** means a mutual advantage to both or all organisms involved living in a symbiotic relationship. Lichens growing on rocks, fences, or trees are an example of mutualism. Lichen is made up of alga or cyanobacterium that lives within the tissues of a fungus. Photosynthesis of the alga provides energy to the alga and the fungus. The fungus provides protected space in which the alga can live.

14. An energy pyramid shows that each feeding level contains less energy that the level below it. **Consumers** cannot make their own food. Instead they obtain energy by eating producers or other consumers. **Producers** – plants, algae, and other organisms that are capable of **photosynthesis** or chemosynthesis – are always the first step in a food chain. Animals that consume producers, such as **herbivores**, is the second step. **Carnivores** and **omnivores** – animals that eat other consumers – are the third and higher steps.

15. B is the most likely choice based upon the need for non-saturated soil for certain plant species to grow. If the ground has too much moisture certain plants can not grow in that area, this is especially true for the more forest based type plant species. The reverse is true for the swamp based type plant species; they will need much more moisture than the forest vegetation and could not survive without that moisture.

16. In biology the term ‘**survival of the fittest**’ can be rephrased ‘**he who produces the most offspring or can replicate her genes wins**’. C most clearly follows this line of thinking. The question references an (biological) advantage during sexual reproducing, thus evoking the Darwin’s claim to fame survival of the fittest.

17. The third part of the Cell Theory states: **All cells come from cells that already exist.** When a reproductive cell divides the genetic encoded material is split into the new cells. This, along with maternal genetic material, allows for differences between the offspring and the parents.

18. This question is tricky. Answers A, B, and D are very closely related to the subject and are the reasons for the overall success of the seed turning into a plant. The roots need the moisture and nutrients found in the soil and the shoots seek to get out of the ground and into the light. Light is the main source of food for the plant. **Photosynthesis** is the process of the plant converting light into **glucose**, the main source of energy for the plant. A is correct because the question is asking for the seeds or plants response during **germination**. The seed responds to the gravity at the time of germination allowing for the plant to grow in the proper manner so these other factors can be effective.
19. B is the correct answer because, according to the diagram, the Earth has to be between the Moon and the Sun for the Moon to be a Full Mood. Since the rotation of the Earth is much slower than the 28 day Lunar Cycle, and the Sun’s position is stationary relative to the Earth, the Full Moon and the Sun cannot share the sky. The Moon and the Sun can share the same sky when the Moon is in a different phase, hence the Quarter Moons or New Moon sharing the sky with the Sun.

20. The Milky Way is a spiral galaxy. Spiral galaxies have spiral arms that wind outward form inner regions. They are made up of bright stars and dust and flat like a disk. An Elliptical Galaxy is another type of galaxy. These galaxies are shaped like large, three-dimensional ellipses. Many are egg shaped, but others are round. Some of these galaxies are small, while some are so large that several galaxies the size of the Milky Way could fit inside one of them. The third type, Irregular Galaxies, include those that don’t fit into the other classifications. Irregular galaxies have many different shapes and are smaller than other types of galaxies.

21. The houses in San Francisco were built on a landfilled marsh. Even though wet sediments and fill can be strong the shaking from an earthquake can cause it to act more like a liquid. This is called Liquefaction. When liquefaction occurs in soil under buildings, the buildings can sink into the soil and collapse. Liquefaction allowed the forces of the earthquake to be more readily transferred to the San Francisco homes, causing severe damage.

22. Break the word barometer into its parts and you find baro- is Greek for the word pressure; meter means to measure. During the weather report on the news meteorologist always refer to low or high-pressure systems and the falling or rising barometer.

23. Thunderstorms occur in warm, moist air masses and along fronts. Warm moist air can be forced upward where it cools and condensation occurs, forming cumulonimbus clouds that can reach heights of 18 km. When rising air cools, water vapor condenses into water droplets or ice crystals. Smaller drops collide and form larger drops. The large raindrops cool the air around them as they fall. This cool, dense air then sinks and spreads over the Earth’s surface. As the cool air sinks, warm air rushes in to take its place and causes the strong winds associated with thunderstorms.

24. The shape of the seacoast and the shape of the ocean floor affect the range of the tide. Along a smooth, wide beach the tide can spread over a large area. This can cause the water level to rise only a few centimeters at high tide. In a narrow gulf or bay the water
might rise many meters at high tide. The other areas (points 2, 3, and 4) would probably not have a **tide range** as large as point 1.

25. These saltwater lakes have surrounding areas that have high concentrations of salt. This salt is brought to lakes in some manner adding to the salinity of the lake. Situations like answers A and B might even be the source of how the salt gets into the lakes. If there are no rivers to continue carrying the water and salt further than C must occur. The water and salt stay in the lake until the water evaporates. When the water evaporates this leaves the level of salt in the lake extremely high.

26. C shows refers to official information that directly bears on the environmental impact of the area and its ecosystem. Logging roads and clear-cutting forest is definitly going to have and impact on the streams and lakes in the area. A researcher would only want to work with information that was of an official nature. This means that a researcher would not want to work with the materials found in answers A and B. The report in answer D is of an official nature but has nothing to do with logging.
Subtest II: Mathematics

27. The prime factors of 360 are $2 \times 2 \times 2 \times 3 \times 3 \times 5$. By that formula, $a=2$, $b=3$, and $c=5$. Therefore $a + b + c = 2 + 3 + 5 = 10$.

28. The shaded areas of the circles represent $\frac{5}{8} + \frac{1}{6} + \frac{3}{7}$. The common denominator is $8 \times 7 \times 6 = 336$. This would make the problem $\frac{210}{336} + \frac{56}{336} + \frac{144}{336} = \frac{410}{336}$, or $1 \frac{74}{336}$. By reducing the fraction, the answer is $1 \frac{37}{168}$.

29. By finding the common factors of $p$ and $q$, you would be able to find out the number of cookies that could be put evenly in bags.

30. The equation would equal 0.0021. The 2 would represent $2/1000$.

31. Point $P = \frac{5}{8}$ and point $Q = \frac{6}{8}$. The fraction $\frac{39}{59}$ is the only fraction that lies between points $P$ and $Q$. By giving the fractions a common denominator $(8 \times 59 = 472)$, they would be $\frac{295}{472} < \frac{312}{472} < \frac{354}{472}$.

32. $8\%$ of $4800 = 364$. 364 evenly divided between 6 grades is 60.6 students per class. Which would round off to approximately 64.

33. The sum of the numbers is 1573. The sum of the numbers rounded to the nearest ten is 1580. The difference between the two $1580 - 1573 = 7$.

34. $1 \frac{1}{2}$ divided by $\frac{1}{4}$. The first number is being divided into 4 equal parts. Answer C best illustrates this.

35. There is $2 \frac{1}{4}$ cups flour to $\frac{1}{2}$ pound of butter. To keep the proportions equal, the flour was increased by $(\frac{9}{4} \times X = 3, X = 4/3) 4/3$, so the butter should also be increased by $4/3$. $1/2 \times 4/3 = 2/3$ pounds of butter.

36. The only answer that is being sought is the hundreds place in the answer. To get it you only need to multiply the 9 and the 3. That would put a 7 in the second line of the problem. Add $9 + 7 = 16$. Put the 6 in the answer and carry the 1. Then add the carried $1 + 2 + 4 = 7$ which goes in the hundreds place in the product. There is no need to finish the problem.

```
   9
X 3 6

  2 9
+  4 7
  17 6

   4 9
X 3 6

  2 9 4
+ 1 4 7 0
  17 6 4
```

37. By plotting the points of Radius (X) and Area (Y) as (X, Y) coordinates on the Coordinate Plane, the graph should look like the one in answer C.
38. The bottom layer has $5 \times 5 = 25$ Grapefruit. The next layer has $4 \times 4 = 16$. The next has $3 \times 3 = 9$. Next $2 \times 2 = 4$ and the last has $1$. The sum of these would be $25 + 16 + 9 + 4 + 1 = 55$.

39. Slope is defined as Rise over Run. So a slope of 2 would be $2/1$. Starting at point E, going up 2 and to the right 1 (because the slope is positive) would cause the line to go through point B.

40. The fixed rate of $30 would be added to $45 times the number of hours worked. $45n + $30 where n = the number of hours worked.

41. The equation would be solved as follows:

\[
\begin{align*}
3n + 2 & (n - 4) = N + 15 \\
3n + 2n - 8 & = N + 15 \quad \text{Distributive Property} \\
5n - 8 & = N + 15 \quad \text{Combine Like Terms} \\
-n + 8 & = N + 15 \quad \text{Combine Like Terms} \\
4n & = 23 \quad \text{No Need to Continue}
\end{align*}
\]

42. Since triangle ABC and triangle ARS are similar, their side would be proportional. Side AS = 4, AC = 6, RS = 3, and BC = x.

\[
\frac{4}{3} = \frac{6}{x} \quad \text{Cross Multiply}
\]

\[
4x = 18 \quad \text{Divide both sides by 4}
\]

\[
x = 4.5 \quad \text{Length of Lake}
\]

43. Isosceles triangles have 2 angles that are equal. Since a triangles angles’ sum is 180 degrees, the one angle of 120 degrees would leave 60 degrees $(180 - 120)$ to be divided evenly between the other two angles. Which would have to be 30 and 30.

44. By following the Pythagorean theorem:

\[
\begin{align*}
6 \times 6 + 8 \times 8 & = c \times c \\
36 + 64 & = c \times c \\
100 & = c \times c \quad \text{Take the square root of each side.} \\
10 & = c
\end{align*}
\]

45. The volume of a cylinder is it’s height timed the area of it’s end circle. With a volume of 10 cm squared, and a height of 2 cm, the areas of it’s ends must be 5 cm squared.
46. Since the figure is a parallelogram, the lines AD and BC are parallel. Moving from point A to point D would add (+2, +2) to the point. The same would be true for moving from point B to point C, which would be (6+2, 2+2) = (8, 4).

47. A hexagon’s sides are equal. The equilateral triangle’s sides are equal. The triangle has a perimeter of 18, so each side = 6. The hexagon made from the triangle would evenly divide the triangle’s sides into 3 equal parts. That would make the hexagon’s side = 2. The perimeter of the hexagon is 6 x 2 = 12.

48. The scale on the map would make 13 inches = 195 miles. Traveling at 60 MPH would = 1 mile per minute. The travel time would = 195 minutes which = 3 hours 15 minutes.

49. The piece of land 22 feet x 27 feet = 594 square feet which equals 33 pings. To figure how many square feet equals 1 ping, divide 594 by 33 which = 18 square feet.

50. Range is defines as the difference between the greatest and least numbers of the data set. 78 – 50 = 28.

51. If there are 15 employees, and only 1 is earning money that is in the median position (the middle number), then there are 7 employees earning more than the median and 7 earning less than the median.

52. Of the numbers from 4 – 24, there are only 7 prime numbers (5, 7, 11, 13, 17, 19, and 23). The total of numbers from 4 – 24 is 21. The probability of drawing a prime number is therefore 7/21 = 1/3.
16. **Complete the exercise that follows.**

A butterfly collector is studying a species of butterfly that has expanded its range into a new area over the last thirty years. The butterflies in the new area feed on a species of flower that has a deeper throat than the flowers exploited by the butterfly species in its original range. The average length of the proboscis that is used to suck nectar from flowers is also greater in butterflies that inhabit the new area. The collector hypothesizes that individual butterflies that moved into the area and exploited the new flower grew longer proboscises during their lifetimes in order to reach the nectar. The gene for the longer proboscis was then inherited by the offspring of these individuals until the entire population consisted of butterflies with longer proboscises than butterflies in the original population.

Using your knowledge of evolutionary theory:

- discuss the validity of the researcher's explanation for the increase in average proboscis length in butterflies inhabiting the new area; and

- provide an alternative explanation that is consistent with accepted evolutionary theory for the change in proboscis length in butterflies inhabiting the new area.
17. Use the diagram below to complete the exercise that follows.

![Geological Cross Section](image)

The diagram above represents a geological section through a sequence of layers of sedimentary rock. In this sequence, the following events, which are listed in random order, have occurred.

- deposition of the Elliot limestone
- Parkside fault
- deposition of the Martin shale
- deposition of the San Luis till
- erosion between the Martin shale and the San Luis till
- deposition of the Hosta sandstone

Using your knowledge of geology:

- list the correct order in which the events occurred, from longest ago to most recent; and
- identify one piece of evidence that supports the conclusion that erosion has occurred between the Martin shale and the San Luis till.
An artist is planning to construct a rectangular wall design from square tiles. The wall design is to be 72 inches long and 42 inches wide. All the square tiles must be the same size, and the length of the sides of the tiles must be a whole number.

Using your knowledge of number theory and geometry:

- find three different sizes of square tiles that could be used to completely fill the rectangular space, with no tiles overhanging the border; and

- determine the smallest number of square tiles that could be used to fill the rectangular space.
19. Complete the exercise that follows.

Four congruent triangles, each having legs of length $a$ and $b$ and hypotenuse of length $c$, are arranged as in the diagram above to produce square $EFGH$.

Using your knowledge of algebra and geometry:

- write an expression for the area of square $EFGH$ in terms of the length of its sides;
- write an expression for the area of square $EFGH$ in terms of the area of its component parts (i.e., four triangles and a square); and
- set these two expressions equal and show that this leads to a proof of the Pythagorean theorem.
Science

Question #16 (Score Point 3 Response)

The researcher’s explanation for the increase in average proboscis length is not valid because the ability of the butterflies in the newly colonized area to reach the nectar in the flowers with deeper throats must have already existed as a genetic variant in the original population of butterflies. As the butterfly species moved into the new region those butterflies with longer proboscises were able to take advantage of the resource. The genetic variants in the population with shorter proboscises were not able to take advantage of this resource and therefore were not able to survive and reproduce as effectively as those with the longer proboscises living in the newly colonized region. Eventually, the longer-proboscis variant dominates the population of butterflies living in the newly colonized region. This process is referred to as adaptive radiation.

The researcher’s explanation borrows on an evolutionary mechanism proposed by Lamarck, in which physical adaptations of one generation are passed on to the next generation. However, a physical adaptation to new environmental conditions during the lifetime of the individual does not change the makeup of the genome. Only genetic changes to sex cells are passed on to the next generation.

Natural selection, according to Darwin, states that only the fittest genetic variants will survive to dominate a particular habitat over time through increased survival of their offspring. Therefore, in the newly colonized area the number of butterflies with longer proboscises will increase over time while those with shorter proboscises will decrease.
Question #16 (Score Point 2 Response)

The researcher does not have a valid explanation for the increase in average proboscis length in the butterflies inhabiting the new area. This researcher hypothesizes that individual butterflies grew longer proboscises then passed this trait onto their offspring. Only genetic traits can be inherited by offspring, not traits acquired by an individual.

An alternate explanation would be that, when these butterflies moved into the new range, only the ones with longer proboscises were able to feed and therefore survive. If the proboscis length is a genetic trait, the longer length would be passed on to their offspring.

Question #16 (Score Point 1 Response)

The researcher's explanation for the increase in average proboscises length is valid when Lamarkian inheritance is involved. The butterfly had to adapt to a different food source if it was to survive, which means that it had to find a way to reach the nectar that was necessary to survival. The average length of the proboscises is increased over time in order for the butterfly to reach the nectar in the deeper throat of the flowers.

Genetically, this change was not passed on to offspring as only genetic changes to sex cells can be passed on.
Question #16 (Score Point 1 Response) continued

Natural selection, according to Darwin, says that those who adapt to new situations will survive and will reproduce more successfully than those unable to adapt and change. The evidence of this natural selection will be the increase of the number of butterflies with the longer proboscises and a decrease of those with shorter proboscises. Survival of the fittest prevails here as the new trait prevails.

Question #17 (Score Point 3 Response)

Longest ago – Elliot Limestone deposited – had to be there before layer on top of it

Hasta Sandstone
Martin shale
Fault formation
Erosion of Martin Shale

Most recent – San Luis Till

Martin shale “evened itself out” when the higher Martin shale on the left eroded. Right-hand Martin shale is thicker than left.
Question #17 (Score Point 2 Response)

Oldest deposit was Elliot limestone. Then the Hasta sandstone, Martin shale, Parkside fault, and finally the San Luis till. The Martin shale is thicker on one side.

Question #17 (Score Point 1 Response)

Oldest - Elliot
   Hasta
   Fault formation
   Martin
   Erosion

Youngest - San Luis Till

Erosion is required to make till.
Mathematics

Question #18 (Score Point 3 Response)

The length of the sides of a tile must divide both 72 and 42, so it is necessary to find the common factors of 72 and 42. This can be done as follows:

\[
\begin{align*}
42 & \quad 72 \\
\text{6} \cdot \text{7} & \quad \text{8} \cdot \text{9} \\
1 \cdot 2 \cdot 3 & \quad 1 \cdot 2 \cdot 4 \cdot 3 \cdot 3 \\
& \quad 1 \cdot 2 \cdot 2 \cdot 3 \cdot 3
\end{align*}
\]

Since 1, 2, 3, and 2 \cdot 3 appear in both lists of factors, the common factors of 42 and 72 are \(1, 2, 3, 6\).

Three different size tiles that could be used are \(2\" \times 2\", 3\" \times 3\", \) and \(6\" \times 6\"\) tiles. These sizes will fill the space without overlapping.

To find the fewest number of tiles used, observe that the larger the square tile used, the fewer tiles will be needed. Therefore, the \(6\" \times 6\"\) tiles should be used. Since \(6 \times 7 = 42\) and \(6 \times 12 = 72\), twelve \(6\" \times 6\"\) tiles will be needed along the base of the rectangle and seven \(6\" \times 6\"\) tiles will be needed along the height. Therefore a total of \(12 \times 7\) or \(84\) tiles will be needed to cover the rectangle.
Question #18 (Score Point 2 Response)

Factoring 72 and 42 we find

\[ 72 = 1 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 3 \]
\[ 42 = 1 \cdot 2 \cdot 3 \cdot 7 \]

Therefore, three possible tile sizes are

1 \cdot 1, 2 \cdot 2, and 3 \cdot 3

The fewest tiles would be the largest. This would be 6 \cdot 6.

Question #18 (Score Point 1 Response)

Each tile could be 1 inch by 1 inch or since each side is divisible by 2, then each tile could be 2 in. by 2 in. Therefore by using the 2 in. by 2 in. tiles we would only have one-half the number of tiles. Since \( 2\sqrt{72} \approx 36 \) and \( 2\sqrt{42} \approx 21 \), a total of 36 + 21 = 57 tiles would be needed. This would be the fewest number of tiles.
Notice that the length of a side of EFGH is equal to $a + b$, since the length of each side of the square is equal to the sum of the lengths of the legs of a triangle. Therefore the area of EFGH = $(a + b)^2$.

The area of EFGH can also be written as the area of 4 triangles plus the area of the shaded square, which is $c^2$.

\[
(a + b)^2 = 4 \times \text{area of triangle} + c^2
\]

\[
(a + b)^2 = 4 \left( \frac{1}{2} a \cdot b \right) + c^2
\]

\[
a^2 + 2ab + b^2 = 2ab + c^2
\]

\[
- 2ab - 2ab
\]

\[
a^2 + b^2 = c^2, \text{ which is the Pythagorean theorem}
\]
Question #19 (Score Point 2 Response)

a.) The area of square EFGH is \((a + b)^2\).

b.) \(c^2 + 4\left(\frac{1}{2}ab\right) = EFGH\) the total area is the shaded square plus the four triangles

c.) \((a + b)^2 = c^2 + 4\left(\frac{1}{2}ab\right)\)
\[(a + b)^2 = c^2 + 2ab\]
\[a^2 + 2(a + b) + b^2 = c^2 + 2ab\]
\[a^2 + (2a + 2b) + b^2 = c^2 + 2ab\]
\[a^2 + b^2 = c^2\] which is the Pythagorean theorem

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Question #19 (Score Point 1 Response)

![Diagram](image)

The area of the square is \(a + b + a + b = 2a + 2b\).

The area of the four triangles and the square is \(4ab\) and \(c^2\). So the entire area is \(a^2 + b^2 = c^2\).
Subtest III: Physical Education

1. The activity described demonstrates that a proper stance can help in a body’s stability. The wider the base of the stance, the more stability and balance that is obtained.

2. The key to a proper kick is translating the proper stance into good body position at the point of impact with the ball. By following through with the leg in the direction of the kick, substantial velocity and desired direction are obtained.

3. The key to a proper kick is translating the proper stance into good body position at the point of impact with the ball. By moving the striking arm in a pendulum motion, sufficient force is applied to the ball for it to reach the other side of the court.

4. Dynamic balance is defined as: The ability to maintain control of the body when suspended in air for a length of time. Riding a unicycle is a demonstration of this.

5. Locomotor skills involve self-movement. Galloping to music is the only example of self-movement in the given answers.

6. The time in FITT refers to the amount of time used for the activity. An increase in time is progression. According to FITT, time should be increased to improve cardiorespiratory endurance.

7. By increasing flexibility, reduction of injuries to soft tissue and joints is acquired. If a person is not flexible, then their body is not working as efficiently as possible and can become damaged because of this.

8. Children with asthma require performance levels that are reduced during cold, dry weather because they are at a greater risk of attack.

9. California standards for Physical education for grade school emphasizes activities that promote responsible social behavior while participating in movement activities that provide opportunities for enjoyment, challenge, and self-expression. This is to promote a positive attitude towards physical activities.

10. Larger students will find activities requiring stability easier than they would activities that require speed or agility since those would require a lighter, more efficient, physically fit body.

11. By guiding students in analyzing their own fitness test results and designing their own activity programs, they can continue having a physically fit lifestyle that will help reverse the trend of deteriorating physical fitness and health among children and promote a healthy generation of students that can achieve their highest potential possible. This will also help them to learn to learn skills such as goal setting, problem solving, and self-assessment.
12. The activity described promotes responsible social behaviors because it prompts children to work cooperatively to achieve a common goal. California state standards for physical education define responsible social behaviors in physical activities as:
   1. Play cooperatively in groups of three to five.
   2. Work productively with partners toward a goal.
   3. Invite a peer to take a turn at a piece of apparatus before repeating a turn.
   4. Identify and accept differences in each other’s physical performance.
For example, solving motor challenges or problems that require planning, cooperation, and sharing.

13. Many state standards now focus on fostering a life-long physical activity based lifestyle. The growing trend of declining health and physical activity levels, as well as a growth in youth who are unfit and/or overweight. By having a program that promotes a physically active lifestyle, that trend can be reversed.

14. This question relates to Kohlberg’s Theory on moral understanding and behavior. There are six stages to this theory. The statement reflects stage 1: Obedience to authority. At the earliest stage of moral development, a child’s moral judgments are based on a perceived need to follow rules and a desire to avoid punishment.

   Preconventional Level: Punishment and Reward
   Stage 1: Obedience to authority
   Stage 2: Nice behavior in exchange for future favors

   Conventional Level: Social Norms
   Stage 3: Live up to others’ expectations
   Stage 4: follow rules to maintain social order

   Postconventional Level: Moral codes
   Stage 5: Adhere to a social contract when it is valid
   Stage 6: Personal morality based on abstract principals

15. Howard Gardner’s Theory of Multiple Intelligences and Robert Sternberg’s Triarchic Theory of Intelligence present a much broader theory of intelligence and how it develop than previous concepts. These multiple factor models share the idea that intelligence consists of various components and are susceptible to change.

16. Learning disabilities are not linked to intelligence or memory. The disability causes a problem in performance, the struggle is often perceived as a lack of intelligence. In fact, studies have often showed many students with learning disabilities have above normal or high levels of intelligence. There are many types of learning disabilities. The variety of learning disabilities complicates the task for teachers because it suggests that each type of learning disability may have its own cause and treatment.
17. This is detailed in Piaget’s Theory of Cognitive Development – **The Concrete Operational Stage.** In this stage, which spans ages 7 to 11, children use mental operations to solve problems and to reason. Games using reason for anticipating an opponent’s move will only benefit this stage by helping to develop mental operations.

18. By fifth grade, children can be expected to monitor and control their own behavior in most school situations and to exhibit positive, cooperative behaviors in interactions with peers. The fifth grader described has failed to develop the social awareness and skills expected of children this age and would benefit from adult intervention. In Conventional Level - stage three of Kohlberg’s Theory the aim of behavior is to act according to others’ expectation. If the adult intervention is limited then this may be the reason for a lack of appropriate behavior.

19. There are four states in the search for identity; they are **Diffusion, Forclosure, Moratorium, and Achievement.** These stages do not necessarily occur in sequence. In this case the question is alluding to the state of Moratorium, when individuals are still examining different alternatives and have yet to find a satisfactory identity.

20. This period in question is **puberty, the adolescent growth spurt where several physical changes occur.** These changes occur at different times for all adolescents, some as early as 10 years old and others as late as 15 or even 16 years old.

21. Children’s fine-motor skills improve during the ages of 6 – 8. This increase in fine motor control enables children to participate successfully in many activities the previously would have found difficult or impossible. Such activities would be handwriting, dressing and eating without adult assistance.

22. Formal operational thinking involves the ability to think systematically by using logical reasoning to formulate alternative hypotheses about an event or other occurrence and then deduce which one is accurate. Research results indicate that differences in experience, especially regarding the availability of opportunities to apply this type of thinking, can play a significant role in increasing or decreasing the likelihood that an individual will develop formal operational thinking skills.

23. A child suffering from physical neglect would possibly exhibit the behavior of fatigue due to **malnutrition.** Malnutrition would have a great affect on the amount of energy a child would have.
24. This takes us back to Kohlberg’s Conventional Level: stage 3. Basically summed up this is the stage of social norms where an early adolescent tries to live up to other’s expectations in an attempt to win approval.

25. This question takes us back to The Concrete Operational Stage where a child is trying to use reason within an area of context. In this case the area is ‘academic success’ so the child rationalizes that he must ‘study hard’ to have been successful.

27. In dance, the overall structural organization or plan for patterning and sequencing movement is known as form (some examples of dance forms include AB, ABA, call and response, rodono, theme and variation, and canon. The term form is consistently used though out all disciplines of art (dance, music, drama, art, and even writing). In the most fundamental sense, form is used to refer to the manner in which the art takes shape (ex. the form of the sculpture is a round or that dancer has good form). A deeper meaning of the word form applies to the artistic nature of the work or, to put it in leman terms, the structural organization of a work (e.g. the harmonious proportioning of the various parts and their arrangement is order to create tension and bring about climaxes.

28. Introduce the students to one form of dance at a time. Have the students get intimate with that work of dance by solving problems and taking ownership in the end results. By using their artistic and mental reasoning skills they will start making judgments about different forms of dance.

29. Young, inexperienced singers typically have a limited vocal range. This range is about five to eight pitches in the octave above middle C. Trying to have a young singer, or any singer, sing outside their natural vocal range is inviting damage to their vocal cords.

30. The easiest instruments for young children to learn how to play are percussion instruments, such as the triangle and the xylophone. These instruments are easier to learn because they only require a striking motion to play notes rather than the intricate finger work needed for the string instruments, such as the guitar and the Autoharp. The single line of music in this question is a Melody line. The triangle can only play one note, whereas the xylophone can play the multiple notes found in the melody line.

31. The time signature has two parts. The top number tells us how many beats there are per measure. The bottom number tells us what kind of note receives one beat. The first measure was two dotted quarter notes, the second measure has six one-eighth, and so on. Simply put, each measure has a total of six beats. The dominant note is an eighth note. The time signature is 6/8.

32. To identify a key signature you must be able to identify notes on the staff and also know what the symbols for sharps and flats. There are seven notes (A – G). Eight notes complete what is known as an octave, such as C – C. The staff tells us how to read the notes. There are five lines and four spaces in the Treble Clef. The best way to remember the note names are to remember them in order, from bottom to top, by lines and then by spaces. The line names are, starting at the bottom, E, G, B, D, F (remember
by stating Every Good Boy Does Fine). The spaces of the treble clef are the letters F, A, C, E (or the word FACE). A sharp or flat symbol on a line or a space indicates to always play that note as a sharp or a flat unless otherwise noted. Major scales are designated by their primary note, whether it is a regular, sharp, or flat note. Here is how to identify key signature of a piece of music:

1. No sharps or flats in the key signature. **C major**

2. For sharps find the last sharp (the sharp furthest to the right of the signature), go up to the next note (line or space, whatever is next), this is the primary note and that is the name of your key. Remember if the primary note has a sharp then your key name will have that sharp in it. (ex. **E major, B major, F# major**)

3. For flats if there is one flat, b flat, in the key signature the key is **F major**. If there is more than one flat identify the last flat (the flat furthest to the right of the signature), go to the previous flat and that is the name of the key.

---

33. Students are not allowed to use words to express themselves. This forces the students to observe and concentrate on how their movements express their feelings to others. The use of several different scenarios provides students with many opportunities to explore the concept of nonverbal communication.

34. The term is ‘realistic dialogue’. Conversations do not usually have a whole lot of extraneous description. This is also dialogue for a play, which is a visual medium so a lot of literary description is not needed.

35. The children involved in creative drama can identify and learn from the characters they portray. By experiencing the development of a character they become more associated with their own feelings that maybe mirror those of their character.

36. A, B, and C are all techniques for creating the illusion of depth on a flat surface. **Linear perspective** was developed during the Italian Renaissance and creates the illusion of depth through the use of **horizon lines**, **vanishing points**, and **convergent lines**. **Atmospheric perspective** attempts to create depth through the use of tonal and color changes. The simplest form of creating depth in a picture is through overlapping and size relationship. When one object overlaps another, the former is perceived to be in front of the latter.

37. Value contrast is often used in painting and drawing to emphasize one area over another. In Daumier’s painting **Third-Class Carriage**, Daumier has used this play of value contrast to highlight the women in the foreground, while the darker figures fade away into the background. The focus of the painting becomes the women in the light whose posture and facial expressions carry the emotional content of the work.

38. American Indian cultures throughout the United States have developed many art forms. All of which had a high level of technical and aesthetic excellence. Their areas of expertise were determined based upon need and available materials. Beadwork and coil pottery where developed in areas where clay was easy to access, like in the southwest states. Weaving is going to have developed where there were natural fibers in
abundance. The land and environment in California lent itself to basketry. California is known for its Native American basketry.

39. Like the term form, **rhythm** is a versatile term used in many of the other art forms. Rhythm in art refers to the repetition of forms or elements throughout the work of art. This repetition usually imparts some kind of meaning to the work. **Dissonance** refers to the intentional placement of opposing forces within the same piece of work to create tension. **Contrast** is similar to dissonance, in most cases the contrasting elements are opposing forces, but the elements work together to create harmony not tension. **Dominance** is the intentional overuse of one or more elements of art, such as the overuse of color, shadow, or disproportion.
16. **Complete the exercise that follows.**

Shown below is an obstacle course used in a physical education program for children in the early elementary grades.

Using your knowledge of physical education activities, discuss two ways in which use of this obstacle course can promote young children's development of movement skills and concepts.
17. **Complete the exercise that follows.**

Using your knowledge of human development:

- identify one change that typically occurs in children's thinking between the ages of 6 and 12; and
- discuss the significance of that change for children's everyday lives and functioning.
18. Use the Japanese children's song *The Moon Is Coming Out* below to complete the exercise that follows.

Using your knowledge of vocal music, prepare a response in which you:

- describe the melody, rhythm, and form of this song; and
- discuss one reason why this song would be appropriate for elementary school students to sing.
Acknowledgments

Question Number


Physical Education

Question #16 (Score Point 3 Response)

Two ways the obstacle course can promote young children’s development of movement skills and concepts are:

1. To improve gross-motor skills -- both locomotor and non-locomotor. Climbing, crawling, walking, hopping, and jumping through the obstacles helps children develop better balance, stability and coordination, in turn improving the actual motor skill. Part of the gross-motor skills is good body awareness. Students can practice safe movement in a whole group while maintaining safe self-space.

2. To help develop concepts of directionality. The teacher can reinforce terms such as under, over, through, around, up, down, right/left, and backward/forward while students show an understanding of both receptive and expressive language skills through demonstration and verbalization.
Question #16 (Score Point 2 Response)

This is a very complicated and interesting obstacle course that can teach children to jump, climb, balance, crawl, go over and under, and zigzag. It would definitely help to develop coordination and balance. Balance would be needed for the long narrow plank, and also for the following obstacle, that looks like rolled-up gym mats. Then there is a series of mini-trampolines or maybe hula hoops where the child must jump from one to the next. This would take good balance and coordination both. Coordination would also be needed for running around the traffic cones with its quick changes in direction. It's hard to tell if the bars on the hurdle are the kind that fall off if you touch them. If they are, then climbing through between the two of them without knocking them down would certainly require balance and coordination too.

Question #16 (Score Point 1 Response)

There are many ways the obstacle course shown can promote young children's development of movement skills and concepts. By having students go through as quickly as possible, the teacher will be able to see which students are the most coordinated. They could divide the students into teams to compete in a relay race. Another way the obstacle course could be used is to have students choose a partner and come up with a game to be played using their assigned obstacle.

Movement skills and concepts are important for early elementary grades to improve skills and understanding and an obstacle course is easy to set up and does this well.
Human Development

Question #17 (Score Point 3 Response)

Between the ages of six and twelve, children become less egocentric. Among other things, this means that as they are more aware of their social context and the feelings of other people and can take these into account; they also have a better-developed ability to anticipate the consequences of their actions, even consequences that are not immediate. Both these abilities greatly affect the behavior of children in this age range. They are able to be compassionate and generous: to share things, to avoid hurting other people’s feelings. They are able to follow instructions and obey rules in order to win approval and avoid punishment or danger: they can play a game by the rules and not cheat, they can get their homework done on time, and they can be trusted to cross the street safely. They can also make plans and work toward goals, so they can practice to learn skills, or save money toward some expensive purchase.

Question #17 (Score Point 2 Response)

As children age from six to twelve their language skills change a great deal. Take speech: a young child speaks out loud to guide himself in a task; a twelve-year-old speaks primarily to communicate with others. And reading: a six-year-old can barely read; a twelve-year-old can read chapter books.

These language changes influence the child’s everyday life. As the child matures, voiced language becomes more a tool for connection and communication.
Question #17 (Score Point 2 Response) continued

rather than a form of self-guidance. As children learn to talk, develop fluency, and become skilled in conversation, they become socialized to others. They learn the dynamics of human communication: ask and answer, speak and listen.

In addition to verbal language development, written language (literacy) development also affects a child’s everyday life and functioning. A literate person can take in a great deal more information than a non-reader, and can do this independently. A literate person can also express his or her ideas in writing. So a twelve-year-old can form ideas based on facts they have acquired on their own rather than what they have heard from others, and can organize these ideas in written form.

These dramatic changes in language in six short years transform a child’s ability to reflect on his or her daily experiences from concrete and limited to verbally rich and expressive.

Question #17 (Score Point 1 Response)

As children develop their thinking processes between the ages of six and twelve, they begin to develop an ability to tell the difference between make believe and reality. The significance this would have on their lives is that they no longer believe in Santa Claus, the Easter bunny, or Superman. However, they still may not be able to give up the belief that some things are impossible. They may not yet be able to judge the truth of certain information they have been given. This is because the children between six and twelve remain egocentric.
This is a simple twelve-bar melody, with three four-bar phrases, written in 2/4 time. It is in the key of F major and uses only a six-note range. Rhythmically, it is also very simple, using only quarter notes and eighth notes. Its six-note range gives it a pentatonic sound, characteristic of Asian music.

This would be an appropriate song to teach elementary school children for a number of reasons. Its range and simplicity are suitable for beginning singers. The opening phrase is the simplest, all quarter notes, and then is elaborated in the eighth-note second phrase, which is fun to sing. The intervals are small (mostly seconds and thirds) and easily navigated. The lyrics are also simple and repetitive. At the same time, they are unexpected, so they’re interesting: “Moon is big and round, just like a tray.” The song could easily be taught by rote, or read by students who are beginning to learn to read music.

For children unfamiliar with non-Western music, this song could also serve as an introduction to the tonality of Japanese music. For Japanese-American children, the song might be pleasingly familiar.
**Question #18 (Score Point 2 Response)**

The children's song, The Moon is Coming Out, has a simple melody and rhythm that will make it easy to teach. It begins with all quarter notes and then speeds up with eighth notes in the middle which are twice as fast. But the marking, "serenely," tells us that the tempo will not be fast, so it will still be easy for children to sing. The range is very narrow. Another feature of this song that is child-friendly is the lyrics, which are very simple and repetitive. All children love the moon. It is a very short song, which is appropriate to small children's short attention spans.

**Question #18 (Score Point 1 Response)**

The Japanese children's song "The Moon Is Coming Out" is a simple song in 'Song Form.' It would be appropriate for elementary children to sing.

I would sing the song a phrase at a time and the children would echo me until they had the melody in their memory.

I would also invent hand and arm movements to add to the tactile or kinesthetic experience of the song.

Since there is very little rhythm, I would just have the children clap on the down beat to feel the steady beat.