



SECTION 4

TEST II SAMPLE QUESTIONS

This section of the Georgia Assessments for the Certification of Educators® (GACE™) Preparation Guide provides sample selected-response questions with an annotated answer key for you to review as part of your preparation for the test. The sample selected-response questions are designed to illustrate the nature of the test questions. Work through the questions carefully before referring to the annotated answer key, which follows the sample selected-response questions. The answer key provides the correct response to each question, describes why each correct response is the best answer, and lists the objective within the test framework to which each question is linked.

Please note that a set of formulas and a periodic table are provided for this test. Please refer to these materials as needed in responding to the sample test questions and assignments. These materials are located in the Assessment Reference Materials section at the end of this preparation guide.

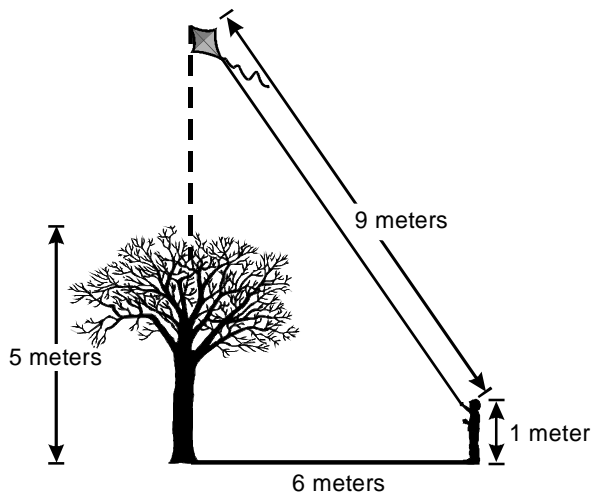
A scientific calculator may be used for this test as needed in responding to the sample test questions and assignments. Please refer to the current GACE registration bulletin for information about the use of calculators at the test administration.

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QUESTIONS

- Which of the following best demonstrates the distributive property in mathematics?
 - $2(xy) = (2x)y$
 - $2 + (x + y) = (2 + y) + x$
 - $2(x + y) = 2x + 2y$
 - $2 \div (x + y) = 2 \div x + 2 \div y$

- Use the diagram below to answer the question that follows.

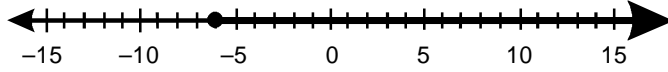


Kim is about 1 meter tall and is flying a kite that is attached to a string approximately 9 meters long. The kite is flying directly over a tree that is 5 meters tall. If Kim is standing 6 meters from the base of the tree, approximately how high above the top of the tree is the kite?

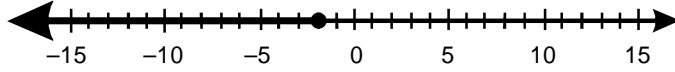
- 8 meters
- 6 meters
- 5 meters
- 3 meters

3. Which of the following number lines accurately graphs the solution to the inequality $3x - 6 \geq 12$?

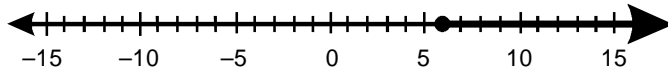
A.



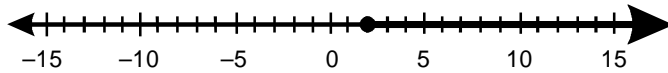
B.



C.



D.

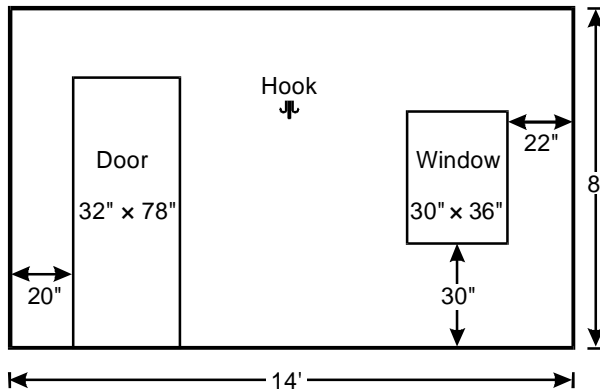


4. A bag contains five marbles, only one of which is green. Without looking, a person takes a marble out of the bag. After returning the marble to the bag, the person repeats the process one more time. What is the probability that the person will select the green marble both times?

- A. $\frac{1}{4}$
- B. $\frac{1}{5}$
- C. $\frac{1}{10}$
- D. $\frac{1}{25}$

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5. Use the diagram below to answer the question that follows.

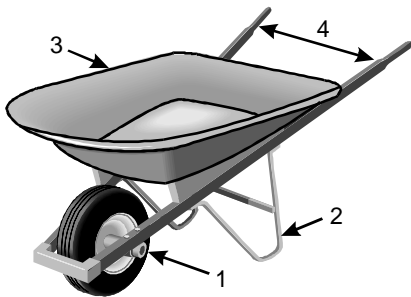


Leo wants to hang a mirror on a hook on the wall. He wants the hook for the mirror to be centered between the door and the window and to be even with the top of the window, as shown in the diagram above. Where should Leo position the hook?

- A. 29" left of the window and 30" lower than the ceiling
- B. 29" right of the door and 66" up from the floor
- C. 32" left of the window and 60" up from the floor
- D. 32" right of the door and 30" lower than the ceiling

6. The use of coal as a fuel source is unsustainable over the long term primarily because:
- A. energy needed to obtain coal exceeds the energy coal provides.
 - B. rates of consumption of coal far surpass the rate at which coal deposits are created.
 - C. combustion of coal is inefficient as a means of producing energy.
 - D. technologies to clean pollutants from the burning of coal are not sufficiently developed.

7. Use the diagram below to answer the question that follows.



A wheelbarrow is a type of lever. In the diagram of a wheelbarrow shown above, which number represents the fulcrum?

- A. 1
- B. 2
- C. 3
- D. 4

8. Human lungs contain a branching network of increasingly small tubes that end in clusters of tiny sacs called alveoli. This complex network gives the lungs a sponge-like character. Which of the following is a functional consequence of the lungs' internal complexity?
- A. preventing particulates in the air from moving from the respiratory system into the circulatory system
 - B. providing a large surface area for the diffusion of gases between the respiratory and circulatory systems
 - C. separating gases inhaled into the respiratory system from gases that diffuse out of the circulatory system
 - D. allowing white blood cells to move from the circulatory system to the respiratory system to fight infection

9. Which of the following representations would be most effective for depicting the changing rate at which a car is moving as it accelerates from a stop?
- A. a table
 - B. a bar graph
 - C. a circle graph
 - D. a line graph

ANNOTATED ANSWER KEY

For question	The correct response is	Reason	Test Objective
1	C	The distributive property is a property of multiplication. This property states that the same value will be obtained if multiplication is performed on a sum or if it is performed on each of the addends individually and then the resulting products are summed. This can be represented symbolically as $a(b + c) = ab + ac$, whereby the a is "distributed" to the b and the c . Response C, $2(x + y) = 2x + 2y$, matches this pattern.	0012
2	D	The total distance between the ground and the kite can be found using the Pythagorean theorem, $a^2 + b^2 = c^2$, where a and b are the two legs of the triangle and c is the hypotenuse. The value of 10 meters can be used for the approximate length of the hypotenuse to account for Kim's height of 1 meter. Substituting the known values into the formula gives $a^2 + 6^2 = 10^2$. Solving for a gives 8 meters, the approximate height of the kite above the ground. To find the height of the kite above the top of the tree, the height of the tree, 5 meters, must be subtracted from 8 meters. Therefore, the kite is approximately 3 meters above the top of the tree.	0013
3	C	The inequality needs to be solved for x , so $3x - 6 \geq 12 \Rightarrow 3x \geq 18 \Rightarrow x \geq 6$. Since the symbol \geq represents greater than or equal to, the solution is all values equal to or greater than 6. This is represented graphically by the number line in response C.	0014
4	D	There is a one in five, or $\frac{1}{5}$, chance of selecting the green marble the first time. Since the marble is returned to the bag, the chance of selecting the green marble the next time is also $\frac{1}{5}$. The probability of selecting the green marble both times is found by multiplying the probabilities for each drawing, so $\frac{1}{5} \times \frac{1}{5} = \frac{1}{25}$.	0015
5	D	The first step is to convert the measurements in feet to inches by multiplying by 12. Thus, the length of the room is 168" and its height is 96". The right side of the door and the left side of the window are both 52" in from the edges of the wall. The distance between the door and window is $168 - \frac{3}{4}(2 \times 52) = 64$ ". The midpoint between the door and the window will be the correct horizontal position for the hook, so $64 \div 2 = 32$ ". The hook needs to be 32" to the right of the door. The correct height for the hook can be found by subtracting the height of the top of the window ($36" + 30" = 66"$) from the height of the room, so the hook needs to be 30" lower than the ceiling.	0016

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For question	The correct response is	Reason	Test Objective
6	B	Coal being mined today as a fuel source was created from the remains of plants that lived hundreds of millions of years ago. The process required to change plant matter into coal requires particular environmental conditions and takes millions of years to complete. The rate of human coal consumption is much greater than the rate at which coal deposits form.	0017
7	A	A lever is a simple machine that consists of a bar that rotates about a fixed point known as the fulcrum. While many levers have a fulcrum near the middle (e.g., a seesaw), the fulcrum can also be located at the end of a lever. In the case of the wheelbarrow, the handles rotate about the fulcrum created by the axis of the wheel, labeled I in the diagram.	0018
8	B	The function of the lungs is to facilitate gas exchange between the blood and the surrounding air. The walls of the alveoli are well-supplied with capillaries, and it is through these smallest vessels of the circulatory system that gas exchange occurs. The many tiny air sacs in the lungs create much more surface area than would be possible if the lungs were large hollow balloon-like structures. This large surface area ensures that the blood is able to pick up enough oxygen to supply the cells of the entire body and is able to get rid of cellular wastes, including carbon dioxide.	0019
9	D	In the case of a car accelerating from a stop, the data are continuous; that is, for any moment in time, there is a corresponding rate at which the car is moving. A line graph would be the most effective way to show this, with time on the horizontal axis and rate of movement on the vertical axis. The slope of the graphed line corresponds to how quickly the car increases speed.	0020