Module ❶

Reading and Writing
33 QUESTIONS

DIRECTIONS:
The questions in this section address a number of important reading and writing skills. Each question includes one or more passages, which may include a table or graph. Read each passage and question carefully, and then choose the best answer to the question based on the passage(s). All questions in this section are multiple-choice with four answer choices. Each question has a single best answer.

1

In ancient Egypt, hieroglyphics were used as the formal writing system for over three thousand years. Because it accurately represented the spoken language, hieroglyphics achieved _____ use and were used for all aspects of Egyptian life: from religious texts and government documents to graffiti on temple walls.

Which choice completes the text with the most logical and precise word or phrase?

A) widespread

B) careful

C) unintended

D) infrequent

2

When British archaeologist Howard Carter discovered the tomb of Tutankhamun in 1922, he found many ancient sculptures and artifacts. However, the small and obscure sculptures depicting the pharaoh in various poses were initially _____ by the public and other researchers as insignificant; it was only later that they were recognized as important representations of Tutankhamun's reign.

Which choice completes the text with the most logical and precise word or phrase?

A) acknowledged

B) ignored

C) denied

D) underestimated

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3

While the Aurora Borealis is typically associated with the northern polar region, it has also been observed at lower latitudes during periods of increased solar activity. However, the precise factors that determine when and where these occurrences will happen remain difficult to _____

Which choice completes the text with the most logical and precise word or phrase?

A) predict

B) quantify

C) observe

D) extrapolate

4

In the highlands of Peru, fanners have been using terrace farming technique for thousands of years to cultivate crops in the steep Andean mountains. With its complex system of retaining walls, irrigation channels, and drainage ditches, terrace farming is a/an _____ form of agriculture that requires deep knowledge of the local topography and climate in order to be successful.

Which choice completes the text with the most logical and precise word or phrase?

A) advanced

B) ornamental

C) intricate

D) rudimentary

17

Organic farming emphasizes the use of natural and renewable resources, such as compost and biological pest control, to promote soil health, biodiversity, and water conservation. Additionally, organic farming practices typically avoid synthetic pesticides, genetically modified organisms (GMOs), and synthetic fertilizers, which can help reduce potential negative impacts on human health and the environment. In recent years, there has been a growing interest in organic farming as a more sustainable and environmentally friendly alternative to conventional farming.

Which of the following statements, if true, would challenge the argument that organic farming can be a viable option for large-scale agriculture?

A) The use of organic farming techniques requires significantly more labor and time investment than conventional farming, making it impractical for large-scale operations.

B) The availability and cost of organic fertilizers and pest management products are highly variable and inconsistent, making it difficult to maintain consistent yields over large acreages.

C) Organic farming often requires the use of tillage and other soil-disturbing practices, which can lead to soil erosion and reduce long-term soil health.

D) The profitability of organic farming is highly dependent on consumer demand, which is subject to fluctuations and may not be reliable enough to support large-scale operations.

33

Santhali is an indigenous community in India. While researching this community, a student has taken the following notes:

• Santhali is the third largest tribe in India.

• The Santhali language belongs to the Austroasiatic language family.

• Dr. Boro Baski is a Santhali social activist and linguist who founded the Ghosaldanga Bishnubati Adibasi Trust in 1987.

• The Ghosaldanga Bishnubati Adibasi Trust is a non-profit organization that works to promote the development of Santhali communities.

• The trust's efforts have led to the establishment of schools, community centers, and health clinics in Santhali villages.

The student wants to emphasize Dr. Boro Baski's role in promoting the development of Santhali communities. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) The Santhali community in India is the third largest tribe and speaks a language belonging to the Austroasiatic language family.

B) The Ghosaldanga Bishnubati Adibasi Trust is a non-profit organization that has established schools, community centers, and health clinics in Santhali villages.

C) Dr. Boro Baski, a Santhali social activist and linguist, founded the Ghosaldanga Bishnubati Adibasi Trust in

1987 to promote the development of Santhali communities.

D) The Ghosaldanga Bishnubati Aclibasi Trust's efforts have led to significant improvements in Santhali villages, including the establishment of schools, community centers, and health clinics.

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1

According to astronomers, a planet experiencing a transit event may cause a temporary dip in the brightness of its host star. A planet with an eccentric orbit in a habitable zone, on the other hand, will not cause any _____ transit events.

Which choice completes the text with the most logical and precise word or phrase?

A) capricious

B) detectable

C) retrograde

D) massive

2

Critics have observed that the French composer Maurice Ravel's _____ attention to detail is evident in his meticulously crafted compositions, such as his iconic piece "Bolero," which features a hypnotic, repetitive melody that gradually builds in intensity.

Which choice completes the text with the most logical and precise word or phrase?

A) casual

B) perfunctory

C) fastidious

D) nonchalant

33

While researching the environmental impact of EVs, a student has taken the following notes:

• EVs produce fewer emissions than gasoline-powered vehicles.

• However, the manufacturing process for EVs typically produces more emissions than the manufacturing process for gasoline-powered vehicles.

• In addition to emissions, the production of EV batteries also requires the extraction of minerals such as cobalt and lithium, which can have negative environmental and social impacts.

• Despite these concerns, some argue that the long-term environmental benefits of EVs, such as reducing greenhouse gas emissions and air pollution, outweigh the negative impacts of their production.

The student wants to emphasize the potential long-term benefits of EVs for the environment. Which choice most effectively uses relevant information from the notes to accomplish this goal?

A) The manufacturing process for EVs typically produces more emissions than the manufacturing process for gasoline-powered vehicles, and the production of EV batteries can have negative environmental and social impacts.

B) Despite concerns about their production, some argue that the long-term environmental benefits of EVs, such as reducing greenhouse gas emissions and air pollution, outweigh their negative impacts.

C) EVs produce fewer emissions during use than gasoline-powered vehicles, but the production of EV batteries requires the extraction of minerals that can have negative environmental impacts.

D) The extraction of minerals such as cobalt and lithium for EV batteries can have negative environmental and social impacts, but some argue that the long-term benefits of EVs for the environment outweigh these concerns.

Math

## 27 QUESTIONS

DIRECTIONS

The questions in this section address a number of important math skills.
Use of a calculator is permitted for all questions.
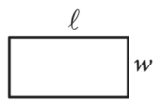
NOTES

Unless otherwise indicated:

- All variables and expressions represent real numbers.
- Figures provided are drawn to scale.
- All figures lie in a plane.
- The domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.
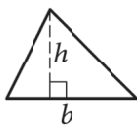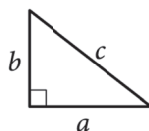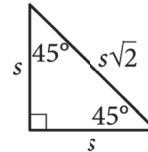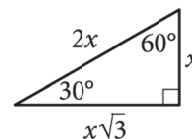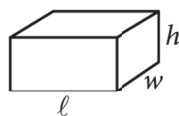
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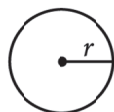
$A = \pi r^2$
$C = 2\pi r$

$A = \ell w$

$A = \frac{1}{2} bh$
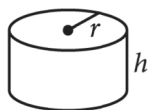
$c^2 = a^2 + b^2$

Special Right Triangles

$V = \ell wh$

$V = \pi r^2 h$

$V = \frac{4}{3}\pi r^3$

$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3}\ell wh$

The number of degrees of arc in a circle is 360.

The number of radians of arc in a circle is 2π.

The sum of the measures in degrees of the angles of a triangle is 180.

1

If a car depreciates by 20% in the first year, and then by an additional 10% in the second year, what percentage of its original value does it retain after the two years?

A) 70%

B) 72%

C)75%

D) 76.5%

2

$x^2 + 6x + 3 = 0$

Which of the following quadratic equations has the same solutions as the given equation?

A) $(x+3)^2 = 9$

B) $(x - 3)^2 = 12$

C) $(x + 3)^2 = 6$

D) $(x - 6)^2 = 9$

3

A company offers a subscription plan for their streaming service. The plan includes a $20 monthly fee and an additional charge of $0.75 for every hour of premium content watched. A subscriber intends limit his budget with $50 for h hours on the service per month. Which inequality represents this situation?

A) $20 + 0.75h \le 50$

B) $20h + 0.75 \le 50$

C) $20h \le 50$

D) $0.75h \le 50$

4

The function f is defined by

$f(x) = x^2 + 3x.$

For which value of a is $f(a) = 18$?

A) 6

B) -2

C) 3

D) 4

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20

$$2x + 3y = 7$$

$$4x^2 - 9y^2 = 35$$

The ordered pair (a, b) is a solution to the given system of equations. What is the value of $4a - 6b$?

A) 5

B) -5

C) 10

D) -10

21

Line k intersects the y-axis at the point (0, -6) and passes through the point (2, 2). If the point (20, w) lies on line k, what is the value of w?

22

In the given system of equations,

$$y = x^2 + 3x - 8$$

$$y = x - k$$

where k is a constant. If the system has real solution(s), what is the largest possible integer value of k?

23

Line h is perpendicular to line g, which is defined by $(\ ) = -\frac{1}{2}\ + 5$, and it has an x-intercept at (-8, 0). What is the y-intercept of line h?

A) (0, -32)

B) (0, -16)

C) (0, 16)

D) (0, 32)

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24

In the xy-plane, the graph of the equation $y = -2x^2 + 20x - k$, where k is a constant, intersects the line $y = 15$ at exactly one point. What is the value of k?

A) 35

B) 25

C) 15

D) 5

25

A rectangle is inscribed in a circle, such that each vertex of the rectangle lies on the circumference of the circle. The diagonal of the rectangle is twice the length of the shortest side of the rectangle. The area of the rectangle is $1,089\sqrt{3}$ square units. What is the length, in units, of the diameter of the circle?

26

For an electric field passing through a flat surface perpendicular to it, the electric flux of the electric field through the surface is the product of the electric field's strength and the area of the surface. A certain flat surface consists of two adjacent squares, where the side length, in meters, of the larger square is 3 times the side length, in meters, of the smaller square. An electric field with strength 29.00 volts per meter passes uniformly through this surface, which is perpendicular to the electric field. If the total electric flux of the electric field through this surface is 4,640 voltsmeters, what is the electric flux, in voltsmeters, of the electric field through the larger square?

27

$$\frac{6^2 - + 10}{} = 3x - 2$$

In the equation above, a, b, and k are constants. If the equation is true for all values of x, what is the value of k?