

SECTION 3

Time — 25 minutes

18 Questions

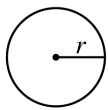
Turn to Section 3 (page 4) of your answer sheet to answer the questions in this section.

Directions: This section contains two types of questions. You have 25 minutes to complete both types. For questions 1-8, solve each problem and decide which is the best of the choices given. Fill in the corresponding circle on the answer sheet. You may use any available space for scratchwork.

Notes

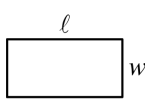
1. The use of a calculator is permitted.
2. All numbers used are real numbers.
3. Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.
4. Unless otherwise specified, the domain of any function f is assumed to be the set of all real numbers x for which $f(x)$ is a real number.

Reference Information

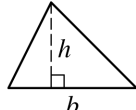


$$A = \pi r^2$$

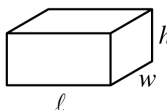
$$C = 2\pi r$$



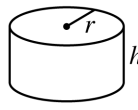
$$A = \ell w$$



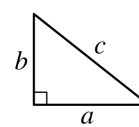
$$A = \frac{1}{2}bh$$



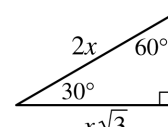
$$V = \ell wh$$



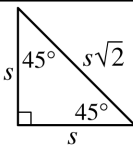
$$V = \pi r^2 h$$



$$c^2 = a^2 + b^2$$



Special Right Triangles



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

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

1. Which of the following is NOT a factor of $10^2 - 10$?
- (A) 10
(B) 15
(C) 30
(D) 45
(E) 50

2. Ms. Stevens will purchase 2 pens and 1 notebook for each of her 6 children. If the cost of each pen is p dollars and the cost of each notebook is n dollars, which of the following represents the total cost, in dollars, of the pens and notebooks Ms. Stevens will purchase?
- (A) $6p + n$
(B) $12p + n$
(C) $6(p + n)$
(D) $6(p + 2n)$
(E) $6(2p + n)$

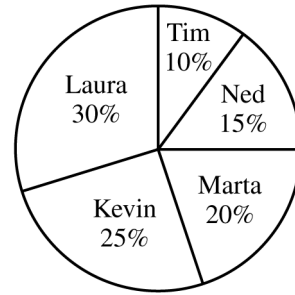
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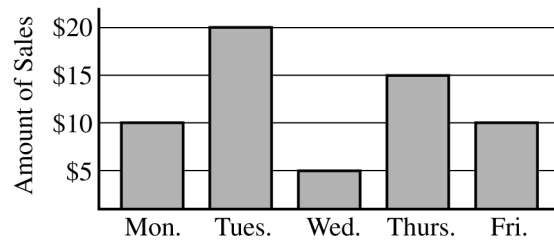
3. In the figure above, $ABDE$ is a parallelogram and $BCEF$ is a rectangle. If $BD = 14$, $BF = 6$, and $AF = 2$, what is the area of rectangle $BCEF$?

(A) 72
(B) 81
(C) 84
(D) 90
(E) 96

TOTAL DOLLAR SALES



ONE STUDENT'S SALES



4. Five students sold candy bars for a total of \$400 over a 5-day period to raise money for their debate team. The circle graph above shows each student's sales as a percent of the total dollar sales. The bar graph shows the sales of one student over the five days. The sales of which student are represented by the bar graph?
- (A) Tim
(B) Ned
(C) Marta
(D) Kevin
(E) Laura

5. If $\frac{x}{y} = 2$ and $\frac{z}{x} = 4$, what is the value

of $\frac{x + y + z}{x}$?

- (A) $4\frac{1}{2}$
(B) 5
(C) $5\frac{1}{2}$
(D) 6
(E) 7

1, -2, 3, -4, 5, -6, ...

6. The first six terms of a sequence are shown above. The odd-numbered terms are increasing consecutive positive odd integers starting with 1. The even-numbered terms are decreasing consecutive negative even integers starting with -2. What is the sum of the 50th and 51st terms of the sequence?

- (A) -101
(B) -1
(C) 0
(D) 1
(E) 101

7. In the xy -plane, a line contains the points (4, 2), (-2, -1), and $(k, 5)$. What is the value of k ?

- (A) 6
(B) 7
(C) 8
(D) 9
(E) 10

8. If $x^{\frac{2}{3}} = y$, what does x^4 equal in terms of y ?

- (A) y^2
(B) $y^{\frac{8}{3}}$
(C) y^3
(D) y^5
(E) y^6

Directions: For Student-Produced Response questions 9-18, use the grids at the bottom of the answer sheet page on which you have answered questions 1-8.

Each of the remaining 10 questions requires you to solve the problem and enter your answer by marking the circles in the special grid, as shown in the examples below. You may use any available space for scratchwork.

Write answer in boxes. →

Grid in result. →

Answer: $\frac{7}{12}$

Fraction line

Answer: 2.5

Decimal point

Answer: 201

Either position is correct.

Note: You may start your answers in any column, space permitting. Columns not needed should be left blank.

- Mark no more than one circle in any column.
- Because the answer sheet will be machine-scored, **you will receive credit only if the circles are filled in correctly.**
- Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the circles accurately.
- Some problems may have more than one correct answer. In such cases, grid only one answer.
- No question has a negative answer.
- **Mixed numbers** such as $3\frac{1}{2}$ must be gridded as 3.5 or $7/2$. (If $\boxed{3|\frac{1}{2}|}$ is gridded, it will be interpreted as $\frac{31}{2}$, not $3\frac{1}{2}$.)

- **Decimal Answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid. For example, if you obtain an answer such as 0.6666..., you should record your result as .666 or .667. **A less accurate value such as .66 or .67 will be scored as incorrect.**

Acceptable ways to grid $\frac{2}{3}$ are:

Three grids showing acceptable ways to grid $\frac{2}{3}$:

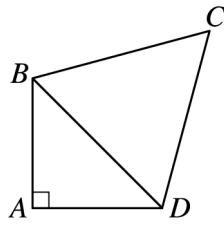
- Grid 1: $\frac{2}{3}$ (2 over 3)
- Grid 2: .666 (decimal point followed by three 6s)
- Grid 3: .667 (decimal point followed by three 6s and a 7)

342,198.75

9. If the digit 2 in the number above is replaced by the digit 6, by how much will the number increase?

10. In the xy -coordinate plane, point (1, 4) is on the line whose equation is $y = 3x + b$. What is the value of b ?

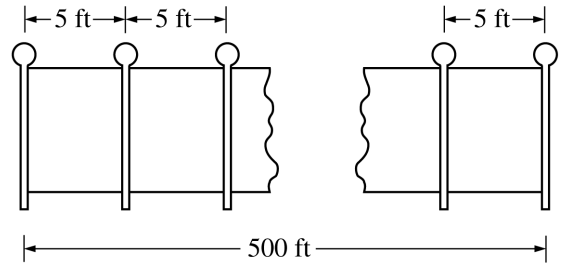
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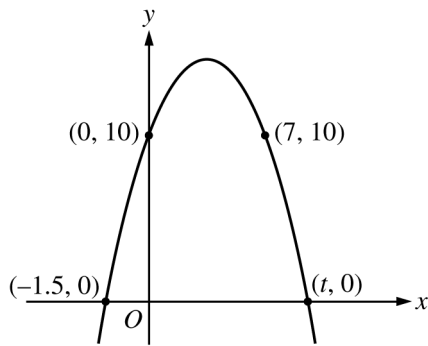
11. In the figure above, $\triangle ABD$ is isosceles, and $\triangle BCD$ is equilateral. What is the degree measure of $\angle ADC$? (Disregard the degree symbol when gridding your answer.)

12. If $0 < 3x - 2 < 1$, what is one possible value for x ?

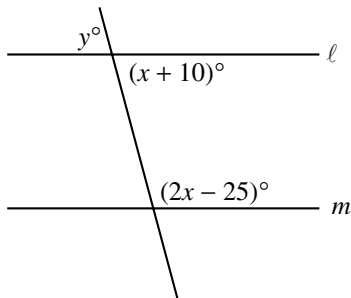
13. In the xy -plane, a circle has its center at the origin and a radius of 5. What is the length of the shortest line segment that has one endpoint on the circle and the other at $(13, 0)$?



14. The figure above represents a stretch of fencing that is 500 feet long. If fence posts are placed at each end and also placed every 5 feet along the fence for support, how many fence posts in all are there in this stretch of fencing?



15. The figure above shows the graph of a quadratic function. What is the value of t ?



16. In the figure above, $\ell \parallel m$. What is the value of y ?

17. A fitness center purchased a number of exercise machines: 4 costing \$1,700 each, 8 costing \$1,300 each, and x costing \$1,200 each, where x is a positive odd integer. If the median price for all the exercise machines purchased by the fitness center was \$1,300, what is the greatest possible value of x ?

18. A car traveled 10 miles at an average speed of 20 miles per hour and then traveled the next 10 miles at an average speed of 40 miles per hour. What was the average speed, in miles per hour, of the car for the 20 miles?

STOP

If you finish before time is called, you may check your work on this section only.
Do not turn to any other section in the test.