

Section 6

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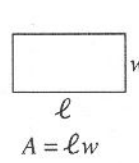
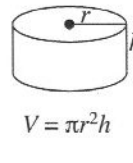
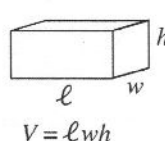
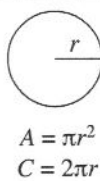
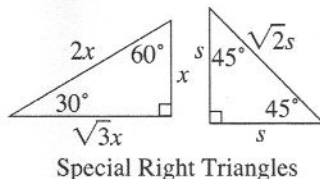
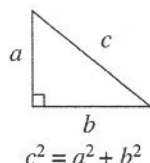
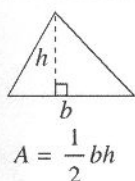
Time—25 Minutes
18 Questions

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 oval on the answer sheet. You may use any available space for scratchwork.

Notes

1. Calculator use is permitted.
2. All numbers used are real numbers.
3. Figures are provided for some problems. All figures are drawn to scale and 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



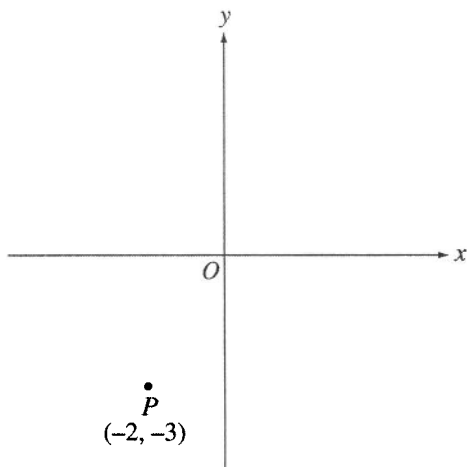
The sum of the measures in degrees of the angles of a triangle is 180.
The number of degrees of arc in a circle is 360.
A straight angle has a degree measure of 180.

- 1** $3a + b = 10$ and $b = 2a$, then what is the value of a ?

- (A) 10
(B) 2
(C) 1
(D) $\frac{1}{2}$
(E) $\frac{1}{5}$

- 2** If it takes Kate 8 hours working at a constant rate to write a term paper, what portion of the paper is written in 3 hours?

- (A) $\frac{1}{24}$
(B) $\frac{1}{8}$
(C) $\frac{2}{11}$
(D) $\frac{3}{8}$
(E) $\frac{5}{8}$



- 3** In the figure above, a line is to be drawn through point P so that it never crosses the y -axis. Through which of the following points must the line pass?

(A) (3, 2)
 (B) (3, -2)
 (C) (2, 3)
 (D) (2, -3)
 (E) (-2, 3)



- 4** The ratio of 12 to 5 is equal to the ratio of 60 to what number?

(A) 1
 (B) 5
 (C) 10
 (D) 25
 (E) 144

- 5** The distance from Fultontown to Waterton is 11 miles and the distance from Waterton to Bingham is 7 miles. Assuming that Fultontown, Waterton, and Bingham do not lie in a straight line, which of the following could be the distance, in miles, from Bingham to Fultontown?

(A) 17
 (B) 18
 (C) 19
 (D) 20
 (E) 21

- 6** Each of the following is within both the domain and the range of $f(x) = \frac{1}{1-x^2}$ EXCEPT

(A) 5
 (B) 4
 (C) 3
 (D) 2
 (E) 1

- 7** Set P contains only the integers 51 through 90. If a number is selected at random from P , what is the probability that the number selected will be greater than 80?

(A) $\frac{1}{4}$

(B) $\frac{1}{3}$

(C) $\frac{1}{2}$

(D) $\frac{2}{3}$

(E) $\frac{3}{4}$

- 8** If an integer n is divisible by 3, 4, 9, and 12, what is the next larger integer divisible by these numbers?

(A) $n + 6$

(B) $n + 12$

(C) $n + 24$

(D) $n + 36$

(E) $n + 72$

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 ovals in the special grid, as shown in the examples below. You may use any available space for scratchwork.

Answer: 1.25 or $\frac{5}{4}$ or $5/4$

Write answer in boxes.

Grid in result.

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Fraction line

Decimal point

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

Either position is correct.

- It is recommended, though not required, that you write your answer in the boxes at the top of the columns. However, **you will receive credit only for darkening the ovals correctly.**
- Grid only one answer to a question, even though some problems have more than one correct answer.
- Darken no more than one oval in a column.
- No answers are negative.
- Mixed numbers** cannot be gridded. For example: the number $1\frac{1}{4}$ must be gridded as 1.25 or $5/4$.

(If

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 is gridded, it will be interpreted as, $\frac{11}{4}$ not $1\frac{1}{4}$.)

- Decimal Accuracy:** Decimal answers must be entered as accurately as possible. For example, if you obtain an answer such as 0.1666... , you should record the result as .166 or .167. **Less accurate values such as .16 or .17 are not acceptable.**

Acceptable ways to grid $\frac{1}{6} = .1666...$

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- 9** If $a + 3 = 7 - b$, what is the value of $5(a + b)$?

20

- 10** In isosceles triangle XYZ, $XY = YZ$ and $XZ = 10$. If the sum of XY and YZ is less than 18, what is one possible value of XY?

$5 < XY < 9$

GO ON TO THE NEXT PAGE

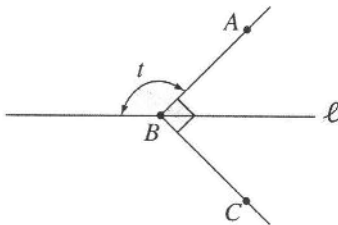
9	5	6	v
2	7	x	11
w	4	6	2
v	y	8	z

- 11** In the grid above, the sum of the values in each row is 21, and the sum of the values in each column is also 21. What is the value of z ?

$$z = 7$$

- 13** When the water in a certain tank is poured into containers that hold 5 ounces of water each, the water fills 120 containers. If instead the water had been poured into containers that hold 3 ounces each, how many such containers would be filled?

200 Containers



- 12** In the figure above, point B lies on line ℓ and right angle ABC is bisected by line ℓ . What is the value of t ?

$$t = 135^\circ$$

- 14** If $x = -1$ satisfies the equation $x^2 - 4x - c = 0$, where c is a constant, what is another value of x that satisfies the equation?

$$\underline{x = 5}$$

Section 6

6 6 6 6 6 6

- 15** The sum of three consecutive odd integers is 3,045. What is the greatest integer of the three?

1017

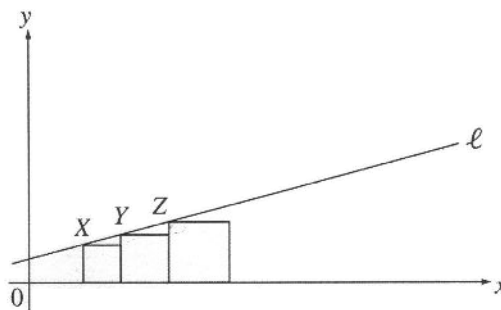
- 17** Ambrose, working alone, can paint a certain room in 8 hours. Either one of Benedict or Charles, working alone, can paint the room in 4 hours. If all three people, working at these rates, work together to paint the room, what fraction of the room is painted by Ambrose?

$\frac{1}{5}$

= 1/5
= 20% of the room

- 16** During a tournament, each of the 10 members of a certain chess club plays every other member exactly three times. How many games occur during the tournament?

$$\frac{10 \times 9 \times 3}{2} = \frac{270}{2} = 135$$



Note: Figure not drawn to scale.

- 18** In the figure above, three adjacent squares each have one side on the x -axis. The squares with vertices X , Y , and Z have areas r^2 , 16, and 25, respectively, and vertices X , Y , and Z lie on line ℓ . What is the value of r ?

$$r = \frac{16}{5}$$

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.

STOP