Entry-Level Assessment

Multiple Choice

Read each question. Then write the letter of the correct answer on your paper.

1. What is the solution to $5a - 15 + 9a = 3a + 29$?
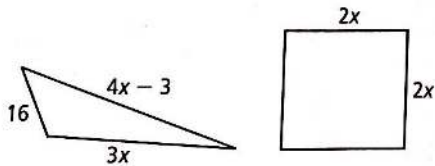
- (A) $a = \frac{14}{11}$
- (B) $a = 4$
- (C) $a = 7$
- (D) $a = 44$

2. What is the simplified form of $4x - (2 - 3x) + 5$?

- (F) $x + 3$
- (G) $x + 7$
- (H) $7x - 7$
- (I) $7x + 3$

3. What is the simplified form of $\sqrt{45a^5}$?

- (A) $3a^2\sqrt{5a}$
- (B) $a^2\sqrt{45a}$
- (C) $5a\sqrt{3a^2}$
- (D) $9a^2\sqrt{5a}$

4. In the diagram below, the perimeter of the triangle is equal to the perimeter of the square. What is the length of a side of the square?

- (F) 7
- (G) 13
- (H) 26
- (I) 52

5. What is $5\frac{3}{4}$ written as a decimal?

- (A) 3.75
- (B) 5.25
- (C) 5.75
- (D) 20.3

6. Maria gave one half of her jelly beans to Carole. Carole gave one third of those to Austin. Austin gave one fourth of those to Tony. If Tony received two jelly beans, how many did Maria start with?

- (F) 8
- (G) 24
- (H) 48
- (I) 96

7. What is the ratio $0.6 : 2.4$ written in simplest form?

- (A) $1 : 4$
- (B) $3 : 4$
- (C) $4 : 1$
- (D) $6 : 24$

8. What is the solution to $|x| - 7 = 6$?
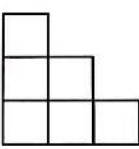
- (F) $x = \pm 1$
- (G) $x = 1$
- (H) $x = -13$
- (I) $x = \pm 13$
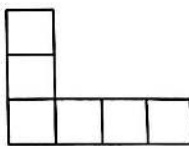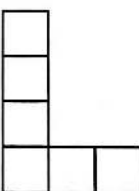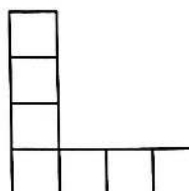
9. What is the solution to the system of equations?

$$y = x - 2$$
$$2x + 2y = 4$$

- (A) $(2, 0)$
- (B) $(0, -2)$
- (C) $(-2, 0)$
- (D) $(0, 2)$

10. What is the next figure in the sequence?
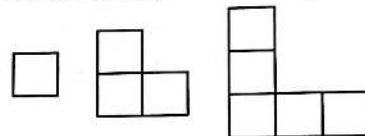
11. Which of the following is equivalent to $(-21)^2$?

- (A) -441
- (B) -42
- (C) 42
- (D) 441

12. How many feet are in 180 in.?
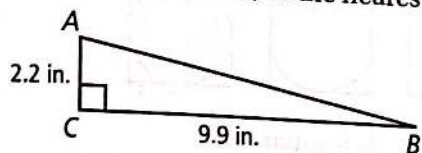
- (F) 15 ft
- (G) 30 ft
- (H) 1080 ft
- (I) 2160 ft

13. What is the next term in the pattern?

$$\frac{1}{2}, \frac{1}{4}, \frac{1}{16}, \cdots$$

(A) $\frac{1}{20}$

(C) $\frac{1}{64}$

(B) $\frac{1}{32}$

(D) $\frac{1}{256}$

14. What is the area of $\triangle ABC$, to the nearest tenth?

(F) 10.1 in.^{2}

(H) 21.8 in.^{2}

(G) 10.9 in.^{2}

(I) 217.8 in.^{2}

15. What is the value of the expression $-x(y-8)^2$ for $x = -2$ and $y = 5$?

(A) -18
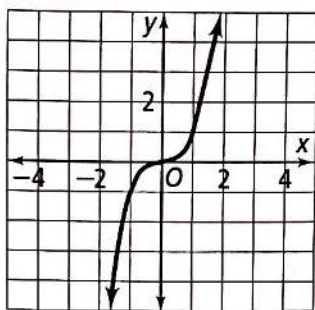
(C) 6

(B) -6

(D) 18

16. You and some friends go out for dinner. The bill is $68.50. You want to tip the waiter 18%. What is the total amount you and your friends should pay?

(F) $3.79

(H) $80.83

(G) $12.33

(I) $122.40

17. What is the solution to $y - 7 > 3 + 2y$?

(A) $y < -10$

(C) $y > -\frac{10}{3}$

(B) $y > 4$

(D) $y < -4$

18. Through which quadrants does the graph pass?

(F) I and II

(H) II and III

(G) I and III

(I) II and IV

19. What is the ratio $18b^2$ to $45b$ written in simplest form?

(A) 18 to 45

(C) b to 2.5

(B) $2b^2$ to $5b$

(D) $2b$ to 5

20. A farmer leans a 12-ft ladder against a barn. The base of the ladder is 3 ft from the barn. To the nearest tenth, how high on the barn does the ladder reach?
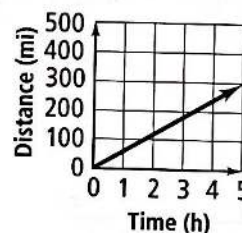
(F) 9.2 ft

(H) 11.6 ft

(G) 10.8 ft

(I) 13.4 ft

21. A map has a scale of 1 in. : 25 mi. Two cities are 175 mi apart. How far apart are they on the map?

(A) 3 in.

(C) 6 in.

(B) 5 in.

(D) 7 in.

22. What is the equation of the line that is parallel to the line $y = 5x + 2$ and passes through the point $(1, -3)$?

(F) $y = -5x + 2$

(H) $y = \frac{1}{5}x - 8$

(G) $y = 5x + 8$

(I) $y = 5x - 8$

23. The graph below shows the distance and time of your car trip. What does the slope of the line mean?

(A) You traveled 0.017 mi/h.

(B) You traveled for 5 h.

(C) You traveled 60 mi/h.

(D) You traveled 300 mi.

24. You are building a rectangular dog pen with an area of 90 ft^2. You want the length of the pen to be 3 ft longer than twice its width. Which equation can you use to find the width w of the pen?

(F) $90 = w(w + 3)$

(H) $90 = 2w(w + 3)$

(G) $90 = w(2w + 3)$

(I) $90 = (2 + w)(w + 3)$

25. The formula for the surface area of a sphere is $A = 4\pi r^2$. What is the formula solved for r?

(A) $r = \frac{A}{2\sqrt{\pi}}$

(C) $r = \frac{1}{2}\sqrt{\frac{A}{\pi}}$

(B) $r = \frac{A}{2\pi}$

(D) $r = 2\sqrt{\frac{A}{\pi}}$

26. A square has an area of 25 cm^2. If its perimeter increases by 4 cm, what is its area?

- **F** 26 cm^2
- **H** 36 cm^2
- **G** 29 cm^2
- **I** 41 cm^2

27. A bag contains 4 blue marbles, 6 green marbles, and 2 red marbles. You select one ball at random from the bag. What is $P(\text{red})$?

- **A** $\frac{1}{6}$
- **C** $\frac{1}{2}$
- **B** $\frac{1}{5}$
- **D** $\frac{5}{6}$

28. You select one green marble from the full bag in Exercise 27. What is the probability that the next marble you select will be blue?

- **F** $\frac{1}{3}$
- **H** $\frac{4}{7}$
- **G** $\frac{1}{5}$
- **I** $\frac{4}{11}$

29. What are the coordinates of points A, B, and C in the coordinate plane below?
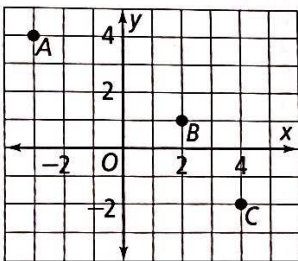
- **A** $A(3, -4), B(-2, -1), C(-4, 2)$
- **B** $A(4, -3), B(1, 2), C(-2, 4)$
- **C** $A(-3, 4), B(2, 1), C(4, -2)$
- **D** $A(-4, 3), B(-1, -2), C(2, -4)$

30. What is $3\sqrt{20} + 2\sqrt{5}$ in simplest form?

- **F** $5\sqrt{5}$
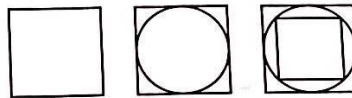- **H** $14\sqrt{5}$
- **G** $5\sqrt{25}$
- **I** $8\sqrt{5}$

31. An athletic club has 248 members. Of these, 164 lift weights and 208 perform cardiovascular exercises regularly. All members do at least one of these activities. How many members do both?

- **A** 40
- **C** 84
- **B** 44
- **D** 124

32. What is the slope of the line through $(-4, 2)$ and $(5, 8)$?

- **F** $\frac{1}{6}$
- **H** $\frac{3}{2}$
- **G** $\frac{2}{3}$
- **I** 6

33. What is the next figure in the sequence below?

- **A** a circle inside a square
- **B** a square inside a circle inside a square
- **C** a circle inside a square inside a circle inside a square
- **D** a square inside a circle inside a square inside a circle

34. What is an equation of the line that passes through the point $(1, 3)$ with slope -2?

- **F** $y = 2x - 5$
- **H** $y = -2x + 5$
- **G** $y = -2x + 2$
- **I** $y = 2x + 1$

35. Which is the graph of a line with a slope of 3 and a y-intercept of -2?
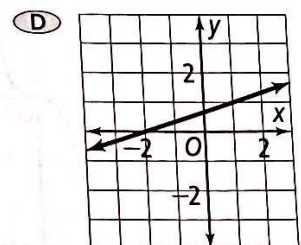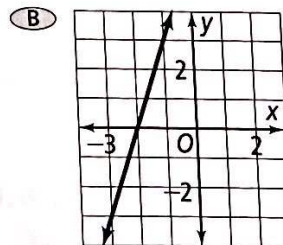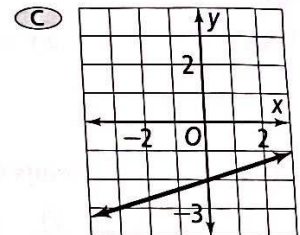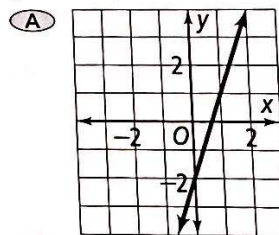
36. A circular pond has a radius of $2x - 3$. Which expression describes the area of the pond?

- **F** $(4x - 6)\pi$
- **H** $(4x^2 + 12x - 9)\pi$
- **G** $(4x + 9)\pi$
- **I** $(4x^2 - 12x + 9)\pi$