

# Placement Test

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Select the best answer.

1. Evaluate  $d - c$  for  $c = 12$  and  $d = 8$ .

A  $-4$                       C  $20$

B  $\frac{8}{12}$                       D  $96$

2. Subtract  $\frac{3}{4} - \frac{2}{5}$ .

F  $-1$                       H  $\frac{1}{10}$

G  $\frac{1}{20}$                       J  $\frac{7}{20}$

3. A school purchased 888 pencils in boxes containing 12 pencils each. How many boxes of pencils were purchased?

A  $74$                       C  $89$

B  $86$                       D  $876$

4. Which is NOT an integer?

F  $-\frac{12}{3}$                       H  $\frac{9}{9}$

G  $0$                       J  $\frac{20}{6}$

5. Find  $\sqrt{64}$ .

A  $8$                       C  $32$

B  $16$                       D  $56$

6. Simplify  $\frac{30 - 4 \cdot 2}{2 \cdot 2^2}$ .

F  $3$                       H  $6$

G  $4$                       J  $8$

7. Solve  $11 = x + 19$ .

A  $-8$                       C  $8$

B  $\frac{11}{19}$                       D  $30$

8. Solve  $-3x = -27$ .

F  $-30$                       H  $9$

G  $-9$                       J  $81$

9. Enrique is trying to save \$672 for a new guitar. He earned \$420 in March by working in a bookstore for a total of 56 hours. How much does Enrique earn per hour?

A  $\$1.60$                       C  $\$12.00$

B  $\$7.50$                       D  $\$75.00$

10. There were 1200 boys at a school assembly. The ratio of boys to girls at the assembly was 20:23. How many girls were at the assembly?

F  $1043$                       H  $1220$

G  $1177$                       J  $1380$

11. 40% of what number is 24?

A  $0.6$                       C  $60$

B  $9.6$                       D  $960$

12. What is the simple interest earned on \$300 over 6 years at 4% interest?

F  $\$72.00$                       H  $\$379.60$

G  $\$79.60$                       J  $\$1872.00$

13. A shoe factory produced 900 shoes on Monday. The factory produced 20% more shoes on Tuesday. How many shoes did the factory produce on Tuesday?

A  $180$                       C  $1080$

B  $920$                       D  $1800$

14. Students at a university need at least 32 credits to earn a degree. Which inequality represents this situation?

F  $c = 32$                       H  $c > 32$

G  $c \leq 32$                       J  $c \geq 32$

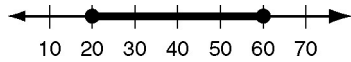
15. Solve  $2x - 16 > 40$ .

A  $x < 12$                       C  $x < 28$

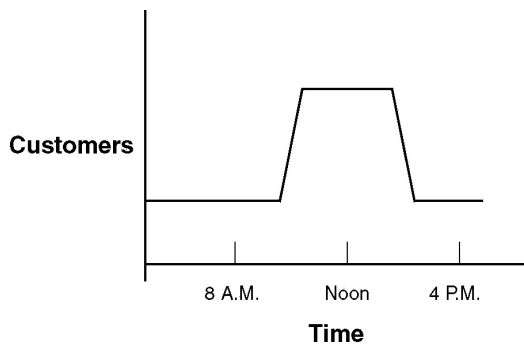
B  $x > 12$                       D  $x > 28$

# Placement Test

16. Which situation matches the graph below?



- F The game will be played outdoors if the temperature is below  $20^\circ$  or above  $60^\circ$ .
- G The game will be played outdoors if the temperature is between  $20^\circ$  and  $60^\circ$  inclusive.
- H The game will be played outdoors if the temperature is greater than or equal to  $20^\circ$ .
- J The game will be played outdoors if the temperature is less than or equal to  $60^\circ$ .
17. Which situation could the graph below represent?

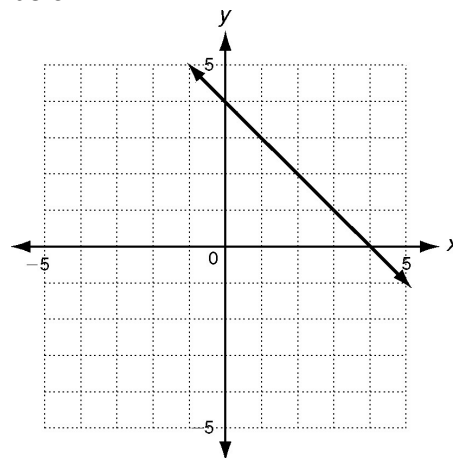


- A A restaurant had the fewest customers during lunch.
- B A restaurant had the most customers during dinner.
- C A restaurant had the most customers during lunch.
- D A restaurant had the same number of customers during breakfast and lunch.
18. What is the domain of the relation  $\{(1, 2), (1, 6), (3, 2), (3, 6), (9, 2)\}$ ?
- F  $\{1, 2, 3, 6, 9\}$       H  $\{1, 3, 9\}$
- G  $\{1, 3\}$                   J  $\{2, 6\}$

19. Which is the dependent variable in the following situation?

*The daily cost of a rental car is \$40 plus 15 cents for each mile.*

- A cost per mile
- B daily cost of a rental car
- C number of days
- D number of miles
20. Which ordered pair is on the graph of  $y = 5x + 7$ ?
- F (1, 5)                      H (5, 1)
- G (1, 12)                    J (12, 1)
21. Which function is shown in the graph below?



- A  $f(x) = -4x - 1$       C  $f(x) = -x + 4$
- B  $f(x) = -x - 4$       D  $f(x) = 4x + 1$
22. Find the common difference in the arithmetic sequence below.  
78, 72, 66, 60, 54, . . .
- F  $\frac{78}{72}$                       H -24
- G -6                          J 150
23. What is the  $y$ -intercept of  $3x + 5y = 15$ ?
- A -5                          C 3
- B -3                          D 5
24. Which slope is steepest?
- F -9                          H  $\frac{1}{10}$

G -7

J  $\frac{10}{9}$ 

## Placement Test

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25. Find the slope of the line that contains (6, 3) and (11, 12).

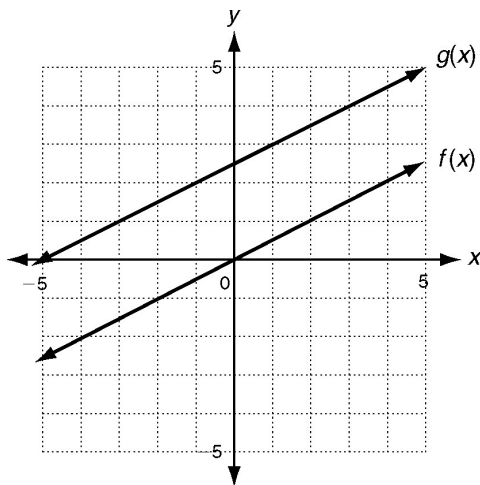
A -3

C  $\frac{3}{4}$ B  $\frac{5}{9}$ D  $\frac{9}{5}$ 

26. Which function has a  $y$ -intercept of 4?

F  $y = -4x + 1$ H  $y = 4x + 1$ G  $y - 4 = x$ J  $4y = x + 1$ 

27. The graphs of  $f(x)$  and  $g(x)$  are shown below. Which describes the transformation from  $f(x)$  to  $g(x)$ ?

A reflection across the  $x$ -axis

B rotation

C translation down

D translation up

28. Which ordered pair is a solution of the

$$\text{system } \begin{cases} 2x - 3y = 17 \\ y = 2x - 11 \end{cases} ?$$

F (-3, 4)

H (4, -3)

G (0, -11)

J (10, 1)

29. Solve the system  $\begin{cases} 2x + 3y = 15 \\ 6x - 4y = 32 \end{cases}$ .

A (0, -8)

C (3, 3)

B (0, 5)

D (6, 1)

30. Which ordered pair is a solution of

$$y < 4x - 2?$$

F (2, 6)

H (5, 16)

G (2, 10)

J (5, 19)

31. What is 0.0000523 in scientific notation?

- A  $5.23 \times 10^{-5}$       C  $5.23 \times 10^5$   
 B  $523 \times 10^{-7}$       D  $523 \times 10^7$

32. Simplify  $x^5 \cdot x^2$ .

- F  $x^{2.5}$       H  $x^7$   
 G  $x^3$       J  $x^{10}$

33. Simplify  $\frac{2^8}{2^6}$

- A  $\frac{1}{4}$       C  $2^{\frac{8}{6}}$   
 B 1      D 4

34. Classify  $x^3 - 3x^2 + 12$  according to its degree and number of terms.

- F cubic binomial  
 G cubic trinomial  
 H quadratic binomial  
 J quadratic trinomial

35. Multiply  $(r - 8)(r + 3)$ .

- A  $2r - 24$       C  $r^2 - 5r - 24$

- B  $r^2 - 24$       D  $r^2 + 11r + 24$

36. What is the prime factorization of 162?

- F  $2 \cdot 3 \cdot 4$       H  $2 \cdot 81$   
 G  $2 \cdot 3^4$       J  $9 \cdot 9 \cdot 2$

37. Which is the complete factorization of  $8x^3 - 24x$ ?

- A  $x(8x^2 - 24)$       C  $8x(x^2 - 3)$   
 B  $4x(2x^2 - 6)$       D  $24x(3x^2 - 1)$

38. The area of a square is  $16x^2 + 24x + 9$ . Which is an equivalent expression for the area of the square?

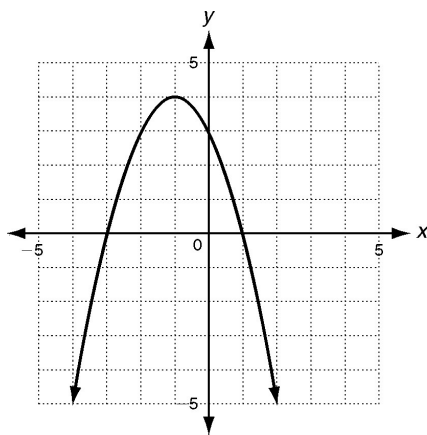
- F  $(4x - 3)^2$       H  $(4x - 9x + 3)^2$   
 G  $(4x + 3)^2$       J  $(4x + 9x + 3)^2$

39. Which is a quadratic function?

- A  $y = \sqrt{10x + 21}$   
 B  $y = 10x + 21$   
 C  $y = x^2 + 10x + 21$   
 D  $y = x^3 + 10x^2 + 6x + 21$

## Placement Test

40. How many roots does the function graphed below have?

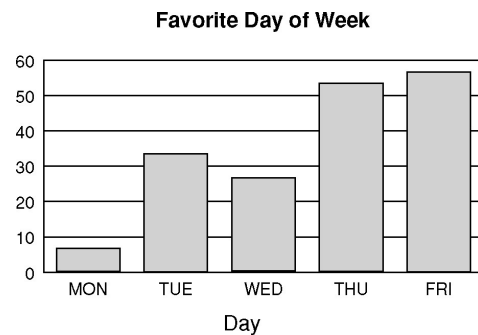


- F exactly 1      H infinitely many  
 G exactly 2      J none

41. Solve  $x^2 = 144$ .

- A -72 and 72      C 12  
 B -12 and 12      D 72

42. Students at a high school were asked "What is your favorite day of the school week?" According to the chart below, which day was the third most popular choice?



- F Monday      H Tuesday  
 G Thursday      J Wednesday

43. Jake's parents measure his height every year on his birthday. Which type of graph would be best to display the data?

- A bar      C line  
 B circle      D stem-and-leaf

44. How many different ways can 3 people sit at a table with 5 seats?

- F 15                      H 125  
G 60                        J 243

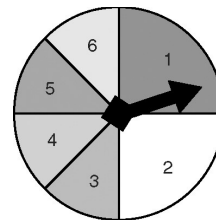
45. Seven students took a quiz. The number of correct responses from each is recorded below.

Al	Ben	Carl	Dana	Ed	Fay	Gil
13	18	11	12	15	14	15

What is the mean number of correct responses?

- A 7                              C 14  
B 12                             D 15

46. The spinner is spun once. What is  $P(\text{number} \geq 5)$ ?



- F  $\frac{1}{8}$                               H  $\frac{3}{4}$   
G  $\frac{1}{4}$                               J  $\frac{7}{8}$

47. What is the next number in the sequence 2, 8, 32, 128, . . . ?

- A 134                            C 512  
B 160                            D 640

48. An old coin increases in value by 4% each year. In 2005 it was worth \$12. About how much is it worth in 2009?

- F \$13.17                        H \$14.04  
G \$13.60                        J \$15.32

49. Simplify  $\sqrt{90}$ .

- A  $3\sqrt{10}$                         C  $9\sqrt{10}$   
B 12                                D 45

50.  $y$  varies inversely as  $x$ .  $x_1 = 3$ ,  $y_1 = 40$ , and  $y_2 = 24$ . Find  $x_2$ .

- F 1.8                              H 21  
G 5                                 J 320

51. Simplify  $\frac{y^2 - 25}{y - 5}$ .

- A  $\frac{1}{y - 5}$                         C  $y - 5$   
B  $\frac{1}{y + 5}$                         D  $y + 5$

