Circle the best answer.

1. Which is the decimal form of $\frac{5}{11}$?

 A. 0.45
 B. $0.\overline{45}$
 C. 0.7
 D. 0.711

2. Simplify: $6^2 \cdot 6^3 \cdot 6^{-4}$

 F. 6^1 **G.** 6^2
 H. 6^5 **J.** 6^9

3. Simplify: $(d^{-2})^0$

 A. d^{-2} **B.** 1
 C. d^2 **D.** d^{-3}

4. Show that the number 3.25 is rational by writing it in the form $\frac{a}{b}$, where a and b are integers and $b \neq 0$.

 F. $\frac{25}{3}$ **G.** $\frac{3}{4}$
 H. $\frac{3}{25}$ **J.** $\frac{13}{4}$

5. Simplify: $\frac{2^5}{2^8}$

 A. 2^{-3} **B.** 2^{-5}
 C. 2^3 **D.** 2^{13}

6. Simplify: $\frac{t^4}{t^0}$

 F. t^4 **G.** t^{-4}
 H. t **J.** 1

7. Which is a natural number?

 A. -5
 B. 0
 C. $\frac{1}{2}$
 D. 435

8. Which of the following describes 6?

 I. Natural number
 II. Integer
 III. Rational number

 F. I only
 G. I and II only
 H. II and III only
 J. I, II, and III

9. Simplify: $[(-4)^3]^4$

 A. $(-4)^1$ **B.** $(-4)^7$
 C. $(-4)^{12}$ **D.** $(-4)^{81}$

10. Simplify: $\frac{(x^3y)^3}{(xy^2)^4}$

 F. x^5y^5 **G.** x^5y^{-5}
 H. x^2y^{-3} **J.** $x^{13}y^{11}$

11. Which is the decimal form of $\frac{1}{12}$?

 A. $0.08\overline{3}$ **B.** 0.1
 C. 0.12   **D.** 12

12. Simplify: $\frac{z^6}{z^{-3}}$

 F. z^{-3} **G.** z^{-2}
 H. z^3 **J.** z^9

13. What is the decimal form of $\frac{7}{32}$?

 A. 0.1875   **B.** 0.21875
 C. 0.2375   **D.** $4.\overline{571428}$

14. Simplify: $\frac{(5e^{-2}f)^{-2}}{5e^2f}$

 F. $5^{-3}e^2f^{-3}$
 G. f
 H. e^{-4}
 J. $5e^2f$

15. Simplify: $(x^4y^2)^3$

    A. $x^{64}y^9$ **B.** x^7y^5

    C. $3x^4y^2$ **D.** $x^{12}y^6$

16. Show that the number -2.36 is rational by writing it in the form $\frac{a}{b}$, where a and b are integers and $b \neq 0$.

    F. $-\frac{1}{18}$ **G.** $-\frac{9}{25}$

    H. $-\frac{59}{25}$ **J.** $-\frac{18}{25}$

17. Simplify: $(2^2x)^2 \cdot (2x^2)^1 \cdot (2^3x^2)^0$

    A. 2^5x^4 **B.** 2^4x^2

    C. 2^8x^6 **D.** 0

18. Which of the following describes -2.2?

    I. Natural number
    II. Integer
    III. Rational number

        F. II only
        G. III only
        H. I and II only
        J. I, II, and III

19. Simplify: 3^{-2}

    A. -9 **B.** -6

    C. $\frac{1}{9}$ **D.** $\frac{1}{6}$

20. Simplify: $\frac{5^2(a^7b^{13})^0}{5a^3a^2}$

    F. $\frac{5}{a^5}$ **G.** $\frac{5}{a^6}$

    H. $5a^2b^{13}$ **J.** 1

21. Simplify: $(3n^{-1}p^2)^{-3} \cdot 3(n^3p)^2$

    A. $3^{-1}n^6p^{-4}$

    B. $3^{-2}p^{-5}$

    C. $3^4n^9p^8$

    D. $3^{-2}n^9p^{-4}$

22. Which of the following has the least value?

    F. $(-2)^4$

    G. -2^4

    H. $(-2)^{-4}$

    J. -2^{-4}

Tell About It

Explain how you solve each problem. Show all your work.

23. Paul, Quinn, Ryan, and Sami live on the same street. Paul and Quinn live 2.4 miles apart. Ryan lives halfway between Paul and Quinn. Sami lives halfway between Ryan and Quinn. How far is it from Paul's house to Sami's house?

24. Jon is fencing in two congruent plots of land to use as gardens. The plots are squares that share a fence one side. If Jon has 455 feet of fencing, how much area can be contained in this way?

7A18

Circle the best answer.

1. Simplify: $\dfrac{m^3 \cdot m^{-4}}{m^3}$

    A. m^7 **B.** m^5

    C. m^1 **D.** m^{-4}

2. Which is equivalent to $0.\overline{7}$?

    F. $\dfrac{7}{11}$ **G.** $\dfrac{7}{8}$

    H. $\dfrac{7}{9}$ **J.** $\dfrac{7}{10}$

3. Write 0.000000605 in scientific notation.

    A. 6.05×10^{-7} **B.** 6.05×10^{-6}

    C. 6.05×10^6 **D.** 6.05×10^7

4. The square of a number is 0.64. What is the number?

    F. 0.08   **G.** 0.8

    H. 8   **J.** 16

5. How many solutions does the following equation have?
$6(x + 2) - x = 5(x + 3) - 5$

    A. 1   **B.** 2

    C. Infinitely many   **D.** None

6. Which of the following is a rational number and an integer but not a natural number?

    F. $\dfrac{7}{4}$ **G.** 14

    H. -6 **J.** $-\dfrac{2}{3}$

7. Which of the following is a rational number?

    A. $\sqrt{150}$ **B.** $\sqrt{160}$

    C. $\sqrt{200}$ **D.** $\sqrt{225}$

8. $\sqrt{200}$ is between which two whole numbers?

    F. 14 and 15
    G. 13 and 14
    H. 12 and 13
    J. 10 and 11

9. Solve: $0.125z + 4.75 = 1.05 - 0.8z$

    A. $z = -5.5$ **B.** $z = -4$

    C. $z = 28.3$ **D.** $z = 277.5$

10. Simplify: $(3m^2)^4$

    F. $12m^2$ **G.** $81m^6$

    H. $12m^8$ **J.** $81m^8$

11. What is the distance, rounded to the nearest tenth, between $\sqrt{30}$ and $-\sqrt{6}$?

    A. 7.9   **B.** 3.0

    C. 24.0   **D.** 36.0

12. If $x - 11 = 14$, what is the value of x?

    F. 25
    G. -25
    H. 3
    J. -3

13. Which set of measures could be the side lengths of a right triangle?

    A. 0.9 cm, 1.2 cm, 1.5 cm
    B. 4 in., 4 in., 4 in.
    C. 7 m, 8 m, 9 m
    D. 2 ft, 3 ft, 4 ft

14. Simplify: $\dfrac{(x^2y)^5}{(xy^3)^4}$

    F. $\dfrac{x^6}{y^7}$ **G.** $\dfrac{x^3}{y^2}$

    H. $\dfrac{x^2}{y}$ **J.** 1

15. Solve. $-4.2g = -26.25$

    A. -22.05 **B.** 6.25
    C. 110.25   **D.** -30.45

18. Solve the equation $\dfrac{3x-2}{4}+5=15$ to find the value of x.

    F. $22\frac{1}{3}$ **G.** 14

    H. $13\frac{1}{3}$ **J.** 12

17. Divide. $\dfrac{1.8 \times 10^8}{3 \times 10^3}$

    A. 5.4×10^{11} **B.** -1.2×10^5
    C. 6×10^5 **D.** 6×10^4

18. Which of the following describes $-\frac{7}{12}$?
    I. Natural number
    II. Negative integer
    III. Rational number

    F. I only
    G. III only
    H. II and III only
    J. None of these

19. What is the length of the diagonal of a square whose sides are 3 inches long?

    A. 9 inches
    B. $3\sqrt{2}$ inches
    C. 6 inches
    D. 18 inches

20. How much greater than 2.4 is $2.\overline{4}$?

    F. $\dfrac{4}{100}$ **G.** $\dfrac{4}{90}$

    H. $\dfrac{4}{99}$ **J.** $\dfrac{4}{1000}$

21. Which is the side length of a square with an area of 144 ft²?

    A. 36 ft   **B.** 12 ft
    C. 72 ft   **D.** 18 ft

22. Solve the equation $\dfrac{3r+5}{2}+2=12-2r$ to find the value of r.

    F. $2\frac{1}{7}$ **G.** 15

    H. $3\frac{2}{3}$ **J.** 10

Tell About It

Explain how you solve each problem. Show all your work.

23. The product of a number, nine plus the number, and one half the number is 1512. What is the number?

24. A cab ride costs $5 for the first mile and $3 for each additional mile. If a cab ride costs $23, how many miles was the ride?

• Name _____

Choose the correct answer.

1. Determine the number of solutions for the equation. If the equation has only one solution, give the value of that solution.
$3 - 2x = 4x - 9$

   A. 0

   B. $1, x = -3$

   C. $1, x = 2$

   D. infinitely many

2. What is the solution to the system?
$$\begin{cases} y - x = 5 \\ y = 3x + 3? \end{cases}$$

   E. $(5, 0)$

   G. $(6, 1)$

   H. $(1, 6)$

   J. $(0, 5)$

3. Which ordered pair satisfies the equation $y = x + (-5)$?

   A. $(-6, 1)$

   B. $(-2, 7)$

   C. $(2, -7)$

   D. $(-1, -6)$

4. Which equation is equivalent to
$y - 2x = 13$?

   E. $y = 13 - 2x$

   G. $y = 2x - 13$

   H. $y = 13 + 2x$

   J. $2x = 13 - y$

5. Paulette has to graph the equation $1 - 3x = y$. Which ordered pair is on the graph?

   A. $(5, -2)$

   B. $(2, 5)$

   C. $(-2, -5)$

   D. $(2, -5)$

6. Determine the number of solutions for the equation. $3x + 5 = 3(x + 5)$

   F. 0

   G. 1

   H. 2

   J. infinitely many

7. For each ride, a taxi company charges a flat fee of $2.50 plus $1.25 per mile. Which of the following equations gives the total cost in dollars, y, for a ride of x miles?

   A. $y = x + 1.25$

   B. $y = 1.25x + 2.50$

   C. $y = 2.50x + 1.25$

   D. $x = 1.25y + 2.50$

8. Which equation has a solution of 5?

   F. $n + 4 = -9$

   G. $4n = 20$

   H. $\frac{n}{4} = 5$

   J. $n - 4 = 3$

9. Eileen runs at a pace of 6 minutes per mile. When she is one mile away, Peter begins running at a pace of 5 minutes per mile. How long would Peter have to run to catch up with Eileen?

   A. 36 minutes

   B. 30 minutes

   C. 25 minutes

   D. 20 minutes

10. Express 26,345,000 in scientific notation.

   F. 2.6345×10^7

   G. 2.6345×10^8

   H. 26.345×10^3

   J. none of these

11. Each set of numbers below shows the side lengths of a triangle in inches. Which triangle is a right triangle?
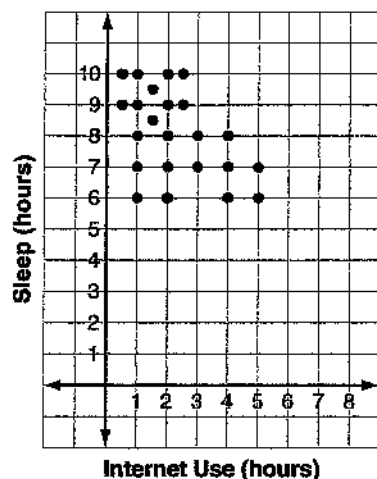
   A. 8, 9, 12

   B. 7, 11, 13

   C. 8, 15, 17

   D. 10, 16, 19

12. What is the name for a triangle with side lengths of 9 cm, 12 cm, and 15 cm?

   F. isosceles

   G. acute

   H. right

   J. obtuse

Use the scatter plot to answer 13–15.

Sleep (hours) vs Internet Use (hours)

13. Describe the correlation of the points in the scatter plot.

   A. weak positive   **B.** strong positive

   C. weak negative   **D.** strong negative

14. What does the correlation between Internet use and sleep mean in terms of this situation?

   F. The more Internet use, the more sleep a person gets

   G. The less Internet use, the more sleep a person gets

   H. The less Internet use, the less sleep a person gets

   J. There is no correlation

15. Which equation best describes a line of best fit for the scatter plot?

   A. $y = 8$ **B.** $y = 9$

   C. $y = -\frac{1}{2}x + 9$ **D.** $y = -\frac{1}{2}x + 8$

16. Which data point in the table below represents an outlier on a scatter plot?

0	5	6	7	8
1	7	8	9	11

   F. $(0, 1)$ **G.** $(5, 7)$

   H. $(7, 9)$ **J.** $(8, 11)$

17. The sum of two numbers is 47. The greater number is 2 more than 4 times the smaller number. What are the two numbers?

   A. 9 and 38
   B. 10 and 37
   C. 11 and 36
   D. 12 and 35

18. If $r + 24 = 37$, then $r =$ _____?

   F. 61   **G.** 13

   H. 12   **J.** 1.69

19. If $\frac{s}{8} + 4 = 6$, then $s =$ _____.

   A. $\frac{1}{2}$ **B.** 16

   C. 20   **D.** 4

20. $5 \times 10^6 =$ _____?

   F. 500,000
   G. 5,000,000
   H. 50,000
   J. 50,000,000

Tell About It

Explain how you solve each problem. Show all your work.

21. A party mix is made from pretzels that cost $2 a pound and cereal that costs $2.40 a pound. If a total of 4 pounds is made and the cost for the mix is $2.15 a pound, how many pounds of each ingredient are used?

22. When the tens digit of a two-digit number is added to three times the ones digit, the sum is 31. If the digits are added, the sum is 15. What is the original number?