Multiple Choice

Indicate the answer choice that best completes the statement or answers the question.

1. In an orchestra, there are 42 woodwind players to 56 brass players. What is the ratio of woodwinds to brass written as a fraction in simplest form?
   a. \( \frac{3}{4} \)  
   b. \( \frac{7}{8} \)
   c. \( \frac{6}{8} \)  
   d. \( \frac{3}{4} \)

2. The table shows the number of trees at Citrus Orchards. What is the ratio of orange trees to the total number of trees?

<table>
<thead>
<tr>
<th>Citrus Orchard</th>
<th>Trees</th>
<th>Amount of Trees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lemon</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Lime</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Orange</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

   a. \( \frac{14}{3} \)  
   b. \( \frac{3}{14} \)
   c. \( \frac{12}{44} \)  
   d. \( \frac{3}{11} \)

3. What is each rate written as a unit rate?
   350 kilometers in 5 hours

   a. \( \frac{70 \text{ km}}{1 \text{ hr}} \)  
   b. \( \frac{50 \text{ km}}{1 \text{ hr}} \)
   c. \( \frac{1 \text{ km}}{5 \text{ hr}} \)  
   d. \( \frac{1 \text{ km}}{7 \text{ hr}} \)

4. $80 for 16 tickets

   a. \( \frac{\$16}{1 \text{ ticket}} \)  
   b. \( \frac{\$16}{1 \text{ ticket}} \)
   c. \( \frac{\$5}{1 \text{ ticket}} \)  
   d. \( \frac{\$5}{1 \text{ ticket}} \)

5. It took Jaivin 18 minutes to jog 4 laps. How many minutes did it take to jog each lap at this rate?
   a. 2.2 min  
   b. 4.5 min
   c. 5.4 min  
   d. 9 min

6. Kelly can type 120 words in 3 minutes. How many words can she type in 1 minute at this rate?
   a. 30 words  
   b. 40 words
   c. 50 words  
   d. 60 words
Use the ratio table given to solve each problem.

7. The jumping team can jump 36 times in 9 seconds. At this rate, how many jumps can they make in 27 seconds?

<table>
<thead>
<tr>
<th>Jumps</th>
<th>36</th>
<th>□</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (s)</td>
<td>9</td>
<td>27</td>
</tr>
</tbody>
</table>

a. 12 jumps  
b. 36 jumps  
c. 108 jumps  
d. 144 jumps

8. A customer at a raceway can drive around the track 54 times for $12. At this rate, how many times can the customer drive around the track for $8?

<table>
<thead>
<tr>
<th>Number of Times Around Track</th>
<th>54</th>
<th>□</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost ($)</td>
<td>12</td>
<td>8</td>
</tr>
</tbody>
</table>

a. 36 times  
b. 21 times  
c. 9 times  
d. 6 times

Which is the best estimate of each percent?

9. 32% of 19

a. 0.6  
b. 6  
c. 60  
d. 600

10. The library surveyed 240 people about their favorite type of movie. If 15% of the people chose documentaries, how many people chose documentaries?

a. 12 people  
b. 36 people  
c. 60 people  
d. 1600 people

Numeric Response

Enter the appropriate value to answer the question or solve the problem.

11. A china shop receives a shipment of 125 dishes in 5 boxes. At this rate, how many dishes will it receive in 15 boxes?

12. There are 207 students in the 9 classes at East Middle School. At this rate, how many students are in 6 classes?

13. A sewing club used 48 feet of fabric to make 8 blankets. At this rate, how many blankets can be made from 12 yards of fabric?
14. George found that he blinked 85 times in 15 minutes. At this rate, how many seconds passed during 51 blinks?

Find the percent of each number.
15. 20% of 140

16. 60% of 250

Subjective Short Answer
17. Liam practiced piano 24 times in 4 weeks. His brother practiced piano 12 times in 14 days. Are the rates at which each brother practiced equivalent? Explain your reasoning.

18. Nick can read 3 pages in 1 minute. Write the ordered pairs (number of minutes, number of pages read) for Nick reading 0, 1, 2, and 3 minutes.
Multiple Choice

Indicate the answer choice that best completes the statement or answers the question.

D 1. In an orchestra, there are 42 woodwind players to 56 brass players. What is the ratio of woodwinds to brass written as a fraction in simplest form?
   a. $\frac{4}{3}$  
b. $\frac{7}{8}$  
c. $\frac{6}{8}$  
d. $\frac{3}{4}$

B 2. The table shows the number of trees at Citrus Orchards. What is the ratio of orange trees to the total number of trees?

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<td></td>
</tr>
<tr>
<td>Orange</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

a. $\frac{14}{3}$  
b. $\frac{3}{14}$  
c. $\frac{12}{44}$  
d. $\frac{3}{11}$

A 3. 350 kilometers in 5 hours
   a. $\frac{70 \text{ km}}{1 \text{ hr}}$  
b. $\frac{50 \text{ km}}{1 \text{ hr}}$  
c. $\frac{1 \text{ km}}{5 \text{ hr}}$  
d. $\frac{1 \text{ km}}{7 \text{ hr}}$

C 4. $80$ for 16 tickets
   a. $\frac{$16}{1 \text{ ticket}}$  
b. $\frac{1 \text{ ticket}{$16}}{}$  
c. $\frac{$5}{1 \text{ ticket}}$  
d. $\frac{1 \text{ ticket}{$5}}{}$

B 5. It took Javin 18 minutes to jog 4 laps. How many minutes did it take to jog each lap at this rate?
   a. 2.2 min  
b. 4.5 min  
c. 5.4 min  
d. 9 min

B 6. Kelly can type 120 words in 3 minutes. How many words can she type in 1 minute at this rate?
   a. 30 words  
b. 40 words  
c. 50 words  
d. 60 words
Test 2A

Use the ratio table given to solve each problem.

7. The jumping team can jump 36 times in 9 seconds. At this rate, how many jumps can they make in 27 seconds?

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</thead>
<tbody>
<tr>
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</tbody>
</table>

a. 12 jumps   b. 36 jumps
c. 108 jumps   d. 144 jumps

8. A customer at a racetrack can drive around the track 54 times for $12. At this rate, how many times can the customer drive around the track for $8?

<table>
<thead>
<tr>
<th>Number of Times Around Track</th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost ($)</td>
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<td>8</td>
</tr>
</tbody>
</table>

a. 36 times   b. 21 times
c. 9 times     d. 6 times

Which is the best estimate of each percent?

9. 32% of 19

<table>
<thead>
<tr>
<th></th>
<th>a. 0.6</th>
<th>b. 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>c. 60</td>
<td>d. 600</td>
</tr>
</tbody>
</table>

10. The library surveyed 240 people about their favorite type of movie. If 15% of the people chose documentaries, how many people chose documentaries?

<table>
<thead>
<tr>
<th>a. 12 people</th>
<th>b. 36 people</th>
</tr>
</thead>
<tbody>
<tr>
<td>c. 60 people</td>
<td>d. 1600 people</td>
</tr>
</tbody>
</table>

Numeric Response

Enter the appropriate value to answer the question or solve the problem.

11. A china shop receives a shipment of 125 dishes in 5 boxes. At this rate, how many dishes will it receive in 15 boxes?

\[
\text{Dishes} = \frac{125 \times 15}{5} = 375 \text{ dishes}
\]

12. There are 207 students in the 9 classes at East Middle School. At this rate, how many students are in 6 classes?

\[
\text{Students} = \frac{207 \times 6}{9} = 138 \text{ students}
\]

13. A sewing club used 48 feet of fabric to make 8 blankets. At this rate, how many blankets can be made from 12 yards of fabric?

\[
3 \text{ feet} = 1 \text{ yard}
\]

\[
\frac{48 \text{ ft}}{8 \text{ blankets}} = \frac{36 \text{ yd}}{6 \text{ blankets}}
\]

\[
12 \text{ yds} \times 3 = 36 \text{ ft}
\]
14. George found that he blinked 85 times in 15 minutes. At this rate, how many seconds passed during 51 blinks?

\[
\text{By} \quad \frac{85}{51} \quad \text{sec.} \quad \frac{51 \text{sec.}}{15 \text{min.}} \quad 540 \text{ seconds}
\]

**Find the percent of each number.**

15. 20% of 140

\[
\frac{20}{100} = \frac{14}{7} = 28
\]

16. 60% of 250

\[
\frac{60}{100} = \frac{250}{150}
\]

**Subjective Short Answer**

17. Liam practiced piano 24 times in 4 weeks. His brother practiced piano 12 times in 14 days. Are the rates at which each brother practiced equivalent? Explain your reasoning.

\[
\text{Yes; } \quad \frac{24}{4} = \frac{12}{3} = 3 = 3
\]

18. Nick can read 3 pages in 1 minute. Write the ordered pairs (number of minutes, number of pages read) for Nick reading 0, 1, 2, and 3 minutes.

\[
(0,0), (1,3), (2,6), (3,9)
\]

<table>
<thead>
<tr>
<th>Pages</th>
<th>Min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>3</td>
</tr>
</tbody>
</table>
Answer Key

1. d
2. b
3. a
4. c
5. b
6. b
7. c
8. a
9. b
10. b
11. 375
12. 138
13. 6
14. 540
15. 28
16. 150
17. yes; \( \frac{24}{4} = \frac{12}{2} \)
18. (0, 0), (1, 3), (2, 6), (3, 9)
Indicate the answer choice that best completes the statement or answers the question.

**Which is the best estimate for each product?**

1. $9.2 \times 6.8$
   a. 60         b. 63
   c. 68         d. 630

2. $11.2 \times 1.73$
   a. 15         b. 22
   c. 24         d. 34

3. Kevin bought 4.6 pounds of pecans for $50.89. About how much was the cost per pound?
   a. $5        b. $8
   c. $10       d. $20

4. Mrs. Garcia bought 9.1 yards of fabric for $18.79. About how much was the cost per yard?
   a. $1        b. $2
   c. $3        d. $4

5. A sea horse travels an average of 0.01 mile per hour. At that rate, how far can a sea horse travel in 2.4 hours?
   a. 0.024 mi   b. 2.4 mi
   c. 24 mi      d. 240 mi

6. What is the value of $5 \times 108$?
   a. 113        b. 432
   c. 535        d. 540

7. What is the value of $3.6 \times 4.2$?
   a. 0.01512    b. 0.1512
   c. 1.512      d. 15.12

8. What is the value of $7.24 \times 0.6$?
   a. 0.4344     b. 4.344
   c. 43.44      d. 434.4

9. The dance committee has 1,120 flowers. They want to divide the flowers evenly among 32 centerpieces. How many flowers will be in each centerpiece?
   a. 20 flowers b. 25 flowers
   c. 30 flowers d. 35 flowers

10. The student council sold 286 roles of wrapping paper for a fundraiser. If they raised $3,146, what was the cost of one role of wrapping paper?
    a. $9        b. $11
    c. $13       d. $14
11. What is the next term in the pattern shown below?

10, 8.9, 7.8, 6.7, ...
  a. 6.6   b. 5.6
  c. 5.5   d. 1.1

12. What is the value of 56.99 \times 0.01 ?
  a. 569.9   b. 56.99
  c. 5.699   d. 0.5699

**Find each quotient.**

13. 12.8 ÷ 4
  a. 32     b. 3.2
  c. 0.32   d. 0.032

14. \[
\begin{array}{c}
23 \\
667
\end{array}
\]
  a. 32     b. 31
  c. 29     d. 28

15. One meter is approximately equal to 39.39 inches. About how many inches are in 5 meters?
  a. 80     b. 120
  c. 150    d. 200

16. What is the value of the expression 75.42 \times 0.1 ?
  a. 754.2   b. 75.42
  c. 7.542   d. 0.7542

17. The sixth-grade class is going to the local art museum's dinosaur exhibit. There are 52 students in the class. The total cost of the tickets for all the students is $364. What is the cost of one student ticket?
  a. $6     b. $7
  c. $7.50  d. $8

18. Wesley bought one T-shirt for $7.90 and another T-shirt for $12.40. What is the total amount he spent?
  a. $20.30  b. $20
  c. $4.50   d. $4

19. A city had 9.2 inches of rain in April and 4.3 inches of rain in May. What is the difference in rainfall between the two months?
  a. 5      b. 4.9
  c. 3.9    d. 3

20. Juanita had a board that was 54 inches long. She cut off 22.5 inches for a project. How many inches of the board remain?
  a. 30 in.  b. 31.5 in.
  c. 32.5 in. d. 40 in.
21. What is the greatest common factor of 36 and 42?
   a. 12    b. 8
   c. 6     d. 2

22. Use the draw a diagram strategy to solve. Gino used $\frac{3}{4}$ of the nails in a box. He has 16 nails left. How many did he use?

   ____________ ? ____________ 16

   a. 64    b. 48
   c. 32    d. 19

What is the value of each expression in simplest form?

23. $\frac{1}{2} + \frac{1}{3}$
   a. $\frac{1}{6}$    b. $\frac{1}{2}$
   c. 3     d. $1\frac{1}{2}$

24. $2 - 1\frac{2}{3}$
   a. $\frac{5}{6}$    b. $1\frac{1}{5}$
   c. $1\frac{1}{3}$    d. $3\frac{1}{3}$
Indicate the answer choice that best completes the statement or answers the question.

Which is the best estimate for each product?

1. $9.2 \times 6.8$
   - a. 60
   - b. 63
   - c. 68
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2. $11.2 \times 1.73$
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   - a. 113
   - b. 432
   - c. 535
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   - b. 0.1512
   - c. 1.512
   - d. 15.12

8. What is the value of $7.24 \times 0.6$?
   - a. 4.344
   - b. 4.344
   - c. 43.44
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9. The dance committee has 1,120 flowers. They want to divide the flowers evenly among 32 centerpieces. How many flowers will be in each centerpiece?
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   - c. 30 flowers
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10. The student council sold 286 roles of wrapping paper for a fundraiser. If they raised $3,146, what was the cost of one role of wrapping paper?
    - a. $9
    - b. $11
    - c. $13
    - d. $14
Test 1B

11. What is the next term in the pattern shown below?
   10, 8.9, 7.8, 6.7, ...
   a. 6.6  b. 5.6  
   c. 5.5  d. 1.1

12. What is the value of $56.99 \times 0.01$?
   a. 569.9  b. 56.99  
   c. 5.699  d. 0.5699

Find each quotient.

13. $12.8 \div 4$
   a. 32  b. 3.2  
   c. 0.32  d. 0.032

14. $23 \overline{667}$
   a. 32  b. 31  
   c. 29  d. 28

15. One meter is approximately equal to 39.39 inches. About how many inches are in 5 meters?
   a. 80  b. 120  
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16. What is the value of the expression $75.42 \times 0.1$?
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17. The sixth-grade class is going to the local art museum’s dinosaur exhibit. There are 52 students in the class. The total cost of the tickets for all the students is $364. What is the cost of one student ticket?
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   a. $20.30  b. $20  
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19. A city had 9.2 inches of rain in April and 4.3 inches of rain in May. What is the difference in rainfall between the two months?
   a. 5  b. 4.9  
   c. 3.9  d. 3

20. Juanna had a board that was 54 inches long. She cut off 22.5 inches for a project. How many inches of the board remain?
   a. 30 in.  b. 31.5 in.  
   c. 32.5 in.  d. 40 in.
21. What is the greatest common factor of 36 and 42?
   a. 12     b. 8
   c. 6      d. 2

22. Use the *draw a diagram* strategy to solve. Gino used \( \frac{3}{4} \) of the nails in a box. He has 16 nails left. How many did he use?

```
[--------?--------] 16
```
   a. 64     b. 48
   c. 32     d. 19

23. What is the value of each expression in simplest form?

   \[ \frac{1}{2} + \frac{1}{3} \]
   a. \( \frac{1}{6} \)     b. \( \frac{1}{2} \)
   c. 3      d. \( 1 \frac{1}{2} \)

24. \( 2 - 1 \frac{2}{3} \)
   a. \( \frac{5}{6} \)     b. \( 1 \frac{1}{6} \)
   c. \( 1 \frac{1}{3} \)    d. \( 3 \frac{1}{3} \)
Answer Key

1. b
2. b
3. c
4. b
5. a
6. d
7. d
8. b
9. d
10. b
11. b
12. d
13. b
14. c
15. d
16. a
17. b
18. a
19. b
20. b
21. c
22. b
23. d
24. b
Write the letter for the correct answer in the blank at the right of each question.

1. Which of the following statements is true?
   A. $4 < -8$   B. $-1 < -4$   C. $-9 > 0$   D. $-2 > -7$
   1. ________

2. Which set of integers is graphed on the number line?
   \[ -5-4-3-2-1 0 1 2 3 \]
   F. $\{1, -1, -5\}$   G. $\{-5, -3, 0\}$   H. $\{3, -5, 0\}$   I. $\{-1, -5, -3\}$
   2. ________

3. Which expression has the greatest value?
   A. $-|13|$   B. $|1|$   C. $-|22|$   D. $|20|$  
   3. ________

4. What is the value of the expression $|-31| + |-9|$?  
   F. $-40$   G. $-22$   H. $29$   I. $40$
   4. ________

5. Which integer best represents a deposit of $37$?
   A. $37$   B. $-37$   C. $-|37|$   D. $-|37|$  
   5. ________

6. Write $\frac{-2}{9}$ as a decimal.  
   F. $-0.2$   G. $-0.2\overline{3}$   H. $-0.22$   I. $-2.2$
   6. ________

7. Order $-2.96, 2\frac{1}{9}, -2\frac{11}{12}$, and $2.95$ from least to greatest.  
   A. $-2.96, 2.95, -2\frac{11}{12}, 2\frac{1}{9}$
   B. $2.95, -2.96, -2\frac{11}{12}, 2\frac{1}{9}$
   C. $-2.96, -2\frac{11}{12}, 2\frac{1}{9}, 2.95$
   D. $-2.96, -2\frac{1}{9}, -2\frac{11}{12}, 2.95$
   7. ________

8. What is the opposite of $89$?  
   F. $-89$   G. $89$   H. $0$   I. $98$
   8. ________

9. Which integer represents a decrease of five degrees?  
   A. $+7$   B. $+5$   C. $-5$   D. $-7$
   9. ________

10. Which situation is not best described by a negative integer?  
    F. a height of 75 yards   H. a loss of 9 pounds  
    G. a decrease of 4 points   I. 3 degrees below zero
   10. ________

11. Which of the following correctly identifies the quadrant where the point named by $(2, 2)$ is located?
    A. Quadrant I   C. Quadrant III  
    B. Quadrant II   D. Quadrant IV
   11. ________
For Exercises 12 and 13, use the coordinate plane below.

12. Which of the following correctly identifies the point for the ordered pair (4, −3)?
   F. point A, H. point C
   G. point B, I. point D

13. Which of the following ordered pairs correctly names point D?
   A. (−3, 4) C. (−3, −4)
   B. (3, −4) D. (3, 4)

14. Which of the following correctly identifies the quadrant where the point named by (−3, 7) is located?
   F. Quadrant I
   G. Quadrant II
   H. Quadrant III
   I. Quadrant IV

Graph each point on a coordinate plane.

15. M(0, 3)

16. R(−3, 3)

17. S(−2, −4)

18. T(4, −1)

Replace each ◯ with <, >, or = to make a true sentence.

19. 0 ◯ −1

20. −7 ◯ −9

For Exercises 21–24, use the coordinate plane below.

21. Identify the point for the ordered pair (−4, 3).

22. Write the ordered pair that names point A.

23. Write the ordered pair that names point D.

24. Write the ordered pair that represents the reflection of point D across the y-axis.
Write the letter for the correct answer in the blank at the right of each question.

1. Which of the following statements is true?
   A. \( 4 < -8 \)    B. \( -1 < -4 \)    C. \( -9 > 0 \)    D. \( -2 > -7 \)  1. D

2. Which set of integers is graphed on the number line?
   -5–4–3–2–1 0 1 2 3
   F. \{1, -1, -5\}   G. \{-5, -3, 0\}   H. \{3, -5, 0\}   I. \{-1, -5, -3\}  2. G

3. Which expression has the greatest value?
   A. \(-|-13|\)    B. \(|-1|\)    C. \(-|-22|\)    D. \(|20|\)  3. D

4. What is the value of the expression \(|-31| + |-9|\)?
   F. \(-40\)    G. \(-22\)    H. \(29\)    I. \(40\)  4. I

5. Which integer best represents a deposit of $37?
   A. 37    B. -37    C. \(-|37|\)    D. \(-|-37|\)  5. A

6. Write \(-\frac{2}{9}\) as a decimal.
   F. \(-0.2\)    G. \(-0.2\overline{3}\)    H. \(-0.22\)    I. \(-2.2\)  6. F

7. Order \(-2.96, \frac{21}{9}, -2\frac{11}{12}, 2.95\) from least to greatest.
   A. \(-2.96, 2.95, -2\frac{11}{12}, 2\frac{1}{9}\)    B. \(2.95, -2.96, -2\frac{11}{12}, 2\frac{1}{9}\)  7. C

8. What is the opposite of 89?
   F. \(-89\)    G. 89    H. 0    I. 98  8. F

9. Which integer represents a decrease of five degrees?
   A. +7    B. +5    C. -5    D. -7  9. C

10. Which situation is not best described by a negative integer?
    F. a height of 75 yards    H. a loss of 9 pounds
    G. a decrease of 4 points   I. 3 degrees below zero  10. F

11. Which of the following correctly identifies the quadrant where the point named by (2, 2) is located?
    A. Quadrant I    C. Quadrant III
    B. Quadrant II    D. Quadrant IV  11. A
For Exercises 12 and 13, use the coordinate plane below.

12. Which of the following correctly identifies the point for the ordered pair (4, –3)?
   F. point A  
   G. point B  
   H. point C  
   I. point D

13. Which of the following ordered pairs correctly names point D?
   A. (–3, 4)  
   B. (3, –4)  
   C. (–3, –4)  
   D. (3, 4)

14. Which of the following correctly identifies the quadrant where the point named by (–3, 7) is located?
   F. Quadrant I  
   G. Quadrant II  
   H. Quadrant III  
   I. Quadrant IV

Graph each point on a coordinate plane.

15. M(0, 3)

16. R(–3, 3)

17. S(–2, –4)

18. T(4, –1)

Replace each • with <, >, or = to make a true sentence.

19. 0 • 1

20. –7 • –9

For Exercises 21–24, use the coordinate plane below.

21. Identify the point for the ordered pair (–4, 3).

22. Write the ordered pair that names point A.

23. Write the ordered pair that names point D.

24. Write the ordered pair that represents the reflection of point D across the y-axis.
Write the letter for the correct answer in the blank at the right of each question.

1. The volume of a certain cube can be found using the expression $5^3$. What is $5^3$ written as a product of the same factor?
   A. $5 \times 3$  
   B. $3 \times 3 \times 3 \times 3$  
   C. $3 \times 5$  
   D. $5 \times 5 \times 5$  
   1. ________

2. What is $8 \times 8 \times 8 \times 8$ written using an exponent?
   F. $8^4$  
   G. $4^8$  
   H. $8 \times 4$  
   I. 4,096  
   2. ________

What is the value of each expression?

3. $5^2 + 7$
   A. 12  
   B. 32  
   C. 33  
   D. 42  
   3. ________

4. $21 - 3^2 + 2$
   F. 14  
   G. 16  
   H. 20  
   I. 24  
   4. ________

5. $58 - 2 \times 3 + 1$
   A. 50  
   B. 53  
   C. 169  
   D. 224  
   5. ________

6. $4 \times 3 + 9 \times 8$
   F. 59  
   G. 84  
   H. 168  
   I. 384  
   6. ________

7. What is the value of $cd$ if $c = 9$ and $d = 8$?
   A. 98  
   B. 89  
   C. 72  
   D. 17  
   7. ________

8. What is the value of $2 + 3n$ if $n = \frac{1}{2}$?
   F. $1\frac{1}{2}$  
   G. $3\frac{1}{2}$  
   H. $5\frac{1}{2}$  
   I. 8  
   8. ________

9. What is the value of $s + t - u$ if $s = 12$, $t = 8$, and $u = 20$?
   A. 0  
   B. 10  
   C. 15  
   D. 18  
   9. ________

Which is the correct algebraic expression for each phrase?

10. 10 dollars less than Caitlin
    F. $c + 10$  
    G. $c - 10$  
    H. $10 - c$  
    I. $10c$  
    10. ________

11. 13 times the cost of one ticket
    A. $t \div 13$  
    B. $t - 13$  
    C. $13 + t$  
    D. $13t$  
    11. ________

12. twelve inches longer than the width
    F. $12w$  
    G. $12 - w$  
    H. $w + 12$  
    I. $12 \div w$  
    12. ________

Expressions
13. Which property is illustrated by the statement $3 + 0 = 3$?
   A. Associative         C. Distributive
   B. Commutative         D. Identity

14. Which property is illustrated by the statement $6 \cdot 4 = 4 \cdot 6$?
   F. Associative         H. Distributive
   G. Commutative         I. Identity

15. Which of the following is equivalent to $2 \cdot (4 \cdot 3)$?
   A. $2 + (4 + 3)$       B. $2 \cdot (6 \cdot 4)$   C. $(2 \cdot 4) \cdot 3$   D. 8

16. Which of the following is the factored form of the expression $18 + 12$?
   F. $2(9 + 6)$         G. $3(6 + 4)$      H. $6(3 + 2)$    I. $9(2 + 3)$

17. Which shows how to find $5 \times 83$ mentally by using the Distributive Property?
   A. $3(5 + 80)$       B. $5(80) + 3$     C. $3(80) + 5(3)$   D. $5(80) + 5(3)$

Which expression results from using the Distributive Property?
18. $6(x + 4)$
   F. $6x + 10$         G. $6x + 4$      H. $24x$     I. $6x + 24$

19. $2(5 + r)$
   A. $7 + r$           B. $10 + 2r$     C. $12r$       D. $7 + 2r$

20. $11(n + 3)$
   F. $14n$            G. $n + 33$     H. $33n$       I. $11n + 33$

What is the simplified form of each expression?
21. $2x + 5x + 4x$
   A. $11 + 3x$       B. $7x$        C. $11x$       D. $7x + 4x$

22. $5(4x)$
   F. $9x$             G. $5(4) + 5(x)$   H. $9 + x$   I. $20x$

23. $7(2x + 6y)$
   A. $14x + 42y$     B. $56x$       C. $56xy$     D. $14x + 42$

What is the factored form of each expression?
24. $20x + 35y$
   F. $4x + 7y$       G. $5xy(4 + 7)$    H. $5(4x + 7y)$   I. $(20 + 35) \cdot (x + y)$

25. $24x + 64y$
   A. $4(6x + 16y)$   B. $8(3x + 8y)$   C. $8xy(3 + 8)$   D. $3x + 8y$
Write the letter for the correct answer in the blank at the right of each question.

1. The volume of a certain cube can be found using the expression $5^3$. What is $5^3$ written as a product of the same factor?
   A. $5 \times 3$  
   B. $3 \times 3 \times 3 \times 3$  
   C. $3 \times 5$  
   D. $5 \times 5 \times 5$  
   1. D

2. What is $8 \times 8 \times 8 \times 8$ written using an exponent?
   F. $8^4$  
   G. $4^8$  
   H. $8 \times 4$  
   I. 4,096  
   2. F

What is the value of each expression?

3. $5^2 + 7$
   A. 12  
   B. 32  
   C. 33  
   D. 42  
   3. B

4. $21 - 3^2 + 2$
   F. 14  
   G. 16  
   H. 20  
   I. 24  
   4. F

5. $58 - 2 \times 3 + 1$
   A. 50  
   B. 53  
   C. 169  
   D. 224  
   5. B

6. $4 \times 3 + 9 \times 8$
   F. 59  
   G. 84  
   H. 168  
   I. 384  
   6. G

7. What is the value of $cd$ if $c = 9$ and $d = 8$?
   A. 98  
   B. 89  
   C. 72  
   D. 17  
   7. C

8. What is the value of $2 + 3n$ if $n = \frac{1}{2}$?
   F. $1 \frac{1}{2}$  
   G. $3 \frac{1}{2}$  
   H. $5 \frac{1}{2}$  
   I. 8  
   8. G

9. What is the value of $s + t - u$ if $s = 12$, $t = 8$, and $u = 20$?
   A. 0  
   B. 10  
   C. 15  
   D. 18  
   9. A

Which is the correct algebraic expression for each phrase?

10. 10 dollars less than Caitlin
    F. $c + 10$  
    G. $c - 10$  
    H. $10 - c$  
    I. 10c  
    10. G

11. 13 times the cost of one ticket
    A. $t ÷ 13$  
    B. $t - 13$  
    C. $13 + t$  
    D. $13t$  
    11. D

12. twelve inches longer than the width
    F. $12w$  
    G. $12 - w$  
    H. $w + 12$  
    I. $12 ÷ w$  
    12. H

Expressions
13. Which property is illustrated by the statement \(3 + 0 = 3\)?
   A. Associative
   B. Commutative
   C. Distributive
   D. Identity
   13. D

14. Which property is illustrated by the statement \(6 \cdot 4 = 4 \cdot 6\)?
   F. Associative
   G. Commutative
   H. Distributive
   I. Identity
   14. G

15. Which of the following is equivalent to \(2 \cdot (4 \cdot 3)\)?
   A. 2 + (4 + 3)
   B. 2 \cdot (6 \cdot 4)
   C. (2 \cdot 4) \cdot 3
   D. 8
   15. C

16. Which of the following is the factored form of the expression \(18 + 12\)?
   A. \(2(9 + 6)\)
   B. \(3(6 + 4)\)
   C. \(6(3 + 2)\)
   D. \(9(2 + 3)\)
   16. H

17. Which shows how to find \(5 \times 83\) mentally by using the Distributive Property?
   A. \(3(5 + 80)\)
   B. \(5(80) + 3\)
   C. \(3(80) + 5(3)\)
   D. \(5(80) + 5(3)\)
   17. D

Which expression results from using the Distributive Property?

18. \(6(x + 4)\)
   A. \(6x + 10\)
   B. \(6x + 4\)
   C. \(24x\)
   D. \(6x + 24\)
   18. I

19. \(2(5 + r)\)
   A. \(7 + r\)
   B. \(10 + 2r\)
   C. \(12r\)
   D. \(7 + 2r\)
   19. B

20. \(11(n + 3)\)
   A. \(14n\)
   B. \(n + 33\)
   C. \(33n\)
   D. \(11n + 33\)
   20. I

What is the simplified form of each expression?

21. \(2x + 5x + 4x\)
   A. \(11 + 3x\)
   B. \(7x\)
   C. \(11x\)
   D. \(7x + 4x\)
   21. C

22. \(5(4x)\)
   A. \(9x\)
   B. \(5(4) + 5(x)\)
   C. \(9 + x\)
   D. \(20x\)
   22. I

23. \(7(2x + 6y)\)
   A. \(14x + 42y\)
   B. \(56x\)
   C. \(56xy\)
   D. \(14x + 42\)
   23. A

What is the factored form of each expression?

24. \(20x + 35y\)
   A. \(4x + 7y\)
   B. \(5xy(4 + 7)\)
   C. \(5(4x + 7y)\)
   D. \(20 + 35) \cdot (x + y)\)
   24. H

25. \(24x + 64y\)
   A. \(4(6x + 16y)\)
   B. \(8(3x + 8y)\)
   C. \(8xy(3 + 8)\)
   D. \(3x + 8y\)
   25. B
Write the letter for the correct answer in the blank at the right of each question.

What is the solution of each equation?

1. \(18 + g = 38\)
   - A. 56
   - B. 30
   - C. 20
   - D. 12
   1. __________

2. \(p - 16 = 24\)
   - F. 40
   - G. 34
   - H. 30
   - I. 8
   2. __________

3. \(\frac{d}{75} = 25\)
   - A. \(\frac{1}{3}\)
   - B. 3
   - C. 500
   - D. 1,875
   3. __________

4. \(13 = t + 2.1\)
   - F. 15.9
   - G. 15.1
   - H. 11.9
   - I. 10.9
   4. __________

5. \(y + 174 = 200\)
   - A. 374
   - B. 126
   - C. 36
   - D. 26
   5. __________

6. \(y + \frac{1}{2} = \frac{3}{4}\)
   - F. 1 \(\frac{1}{2}\)
   - G. 1 \(\frac{1}{4}\)
   - H. \(\frac{1}{2}\)
   - I. \(\frac{1}{4}\)
   6. __________

7. \(13.2 = t - 4.4\)
   - A. 176
   - B. 88
   - C. 17.6
   - D. 8.8
   7. __________

8. Seema runs 5 miles more per week than her sister Padma. If Seema runs 17 miles per week, which equation could be used to find the number of miles Padma runs each week?
   - F. \(p + 17 = 5\)
   - H. \(p + 5 = 17\)
   - G. \(p - 17 = 5\)
   - I. \(p - 5 = 17\)
   8. __________

9. Hugh bought 2 bottles of water. If the total cost of the water was $4.50, which equation could be used to find the cost of each bottle of water?
   - A. \(\$4.50x = 2\)
   - C. \(\frac{x}{\$4.50} = 2\)
   - B. \(\$4.50 - x = 2\)
   - D. \(2x = \$4.50\)
   9. __________
10. One third of the tomatoes in a garden are ripe. If 6 tomatoes are ripe, which equation can be used to find the total number of tomatoes in the garden?

F. $\frac{t}{3} = 6$  G. $t - 6 = 3$  H. $3t = 6$  I. $6t = 3$

10. ____________

What is the solution of each equation?

11. $18 = \frac{2}{5}f$

A. $7 \frac{1}{5}$  B. $7 \frac{1}{2}$  C. 40  D. 45

11. ____________

12. $27 = \frac{z}{0.3}$

F. 0.81  G. 8.1  H. 81  I. 90

12. ____________

13. $5x = 15$

A. 108  B. 72  C. 3  D. 2

13. ____________

14. $2s = 34$

F. 7  G. 17  H. 20  I. 60

14. ____________

15. Mercedes is 132 centimeters tall. This is twice the height of her younger brother. How tall is her younger brother?

A. 27 cm  B. 66 cm  C. 71 cm  D. 140 cm

15. ____________

16. Solve $a - 152 = 90$.

16. ____________

17. Solve $4.8d = 2.4$.

17. ____________

18. Solve $\frac{b}{14} = 21$.

18. ____________

19. For every quarter spent, Reggie receives 50 food pebbles to feed the fish at a hatchery. Reggie has thrown 350 food pebbles into the fish pools. Write and solve an equation to find the number of quarters Reggie spent at the hatchery.

19. ____________

20. An exterminator charges $80 to visit a home and $35 to spray each room. If the total bill was $395, how many rooms were sprayed?

20. ____________
Write the letter for the correct answer in the blank at the right of each question.

What is the solution of each equation?

1. \(24 + p = 54\)
   - A. 78
   - B. 30
   - C. 20
   - D. 14
   \[\text{1. } \boxed{\text{B}}\]

2. \(w - 16 = 28\)
   - F. 12
   - G. 18
   - H. 34
   - I. 44
   \[\text{2. } \boxed{\text{I}}\]

3. \(\frac{e}{120} = 30\)
   - A. 3,600
   - B. 150
   - C. 4
   - D. \(\frac{1}{4}\)
   \[\text{3. } \boxed{\text{A}}\]

4. \(18 = t + 2.3\)
   - F. 20.3
   - G. 16.3
   - H. 15.7
   - I. 12.7
   \[\text{4. } \boxed{\text{H}}\]

5. \(q + 166 = 300\)
   - A. 134
   - B. 144
   - C. 366
   - D. 466
   \[\text{5. } \boxed{\text{A}}\]

6. \(y + \frac{1}{2} = \frac{7}{10}\)
   - F. \(\frac{1}{5}\)
   - G. \(\frac{3}{4}\)
   - H. \(1\frac{1}{5}\)
   - I. \(1\frac{1}{2}\)
   \[\text{6. } \boxed{\text{F}}\]

7. \(14.2 = t - 5.4\)
   - A. 0.88
   - B. 1.96
   - C. 8.8
   - D. 19.6
   \[\text{7. } \boxed{\text{D}}\]

8. Marco's model bridge is 9 centimeters taller than Sho's model bridge. If Sho's bridge is 31 centimeters tall, which equation could be used to find the height of Marco's bridge?
   - F. \(m + 9 = 31\)
   - H. \(m + 31 = 9\)
   - G. \(m - 9 = 31\)
   - I. \(31 - 9 = m\)
   \[\text{8. } \boxed{\text{G}}\]

9. Anne bought 3 hats for $19.50. Which equation could be used to find the cost of each hat?
   - A. \(3x = 19.50\)
   - B. \(19.50 - x = 3\)
   - C. \(19.50x = 3\)
   - D. \(\frac{x}{19.50} = 3\)
   \[\text{9. } \boxed{\text{A}}\]
10. One fifth of the plants in a vegetable garden are cucumber plants. If there are 8 cucumber plants, which equation can be used to find the total number of plants in the garden?

F. $5p = 8$  
G. $p - 5 = 8$  
H. $\frac{p}{5} = 8$  
I. $8p = 5$

10. ____________

What is the solution of each equation?

11. $16 = \frac{2}{3}f$

A. 48  
B. 32  
C. 24  
D. 10 $\frac{2}{3}$

11. ____________

12. $24 = \frac{x}{0.6}$

F. 4  
G. 14.4  
H. 24.6  
I. 40

12. ____________

13. $4x = 24$

A. 6  
B. 10  
C. 54  
D. 90

13. ____________

14. $3s = 15$

F. 27.9  
G. 9.3  
H. 6.9  
I. 5

14. ____________

15. Donte is 138 centimeters tall. This is three times the height of his dog. What is the height of his dog?

A. 46 cm  
B. 50 cm  
C. 135 cm  
D. 150 cm

15. ____________

16. Solve $r - 119 = 70$.

16. ____________

17. Solve $4.8d = 1.2$.

17. ____________

18. Solve $\frac{a}{12} = 32$.

18. ____________

19. For every dime spent, Davida receives 15 food pebbles to feed the animals in the petting zoo. Davida has fed the animals a total of 135 food pebbles. Write and solve an equation to find the number of dimes Davida spent at the petting zoo.

$15d = 135$; 9 dimes

19. ____________

20. A cleaning company charges $125 to visit a home and $40 to clean each room. If the total bill was $365, how many rooms were cleaned?

20. ____________

Equations
Skills Practice

Area of Parallelograms

Find the area of each parallelogram.

1. \[ \text{Base} = 3 \text{ units}, \text{Height} = 4 \text{ units} \]
   \[ 3 \times 4 = 12 \text{ units}^2 \]

2. \[ \text{Base} = \text{unknown}, \text{Height} = 2 \text{ cm} \]

3. \[ \text{Base} = 7 \text{ ft}, \text{Height} = 3 \text{ ft} \]

4. \[ \text{Base} = 7 \text{ yd}, \text{Height} = 9 \text{ yd} \]

5. \[ \text{Base} = 5 \text{ cm}, \text{Height} = 2 \text{ cm} \]

6. \[ \text{Base} = 9 \text{ yd}, \text{Height} = 10 \text{ yd} \]

7. \[ \text{Base} = 6 \text{ m}, \text{Height} = 14 \text{ m} \]

8. \[ \text{Base} = 10 \frac{1}{2} \text{ in.}, \text{Height} = 15 \frac{1}{2} \text{ in.} \]

9. \[ \text{Base} = 16 \text{ in.}, \text{Height} = 9 \text{ in.} \]

10. \[ \text{Base} = 12.75 \text{ cm}, \text{Height} = 5.4 \text{ cm} \]

11. \[ \text{Base} = 9 \text{ km}, \text{Height} = 11 \text{ km} \]

12. \[ \text{Base} = 15 \text{ m}, \text{Height} = 17 \text{ m} \]

13. Find the base of a parallelogram with an area of 18 square inches and a height of 2 inches.

14. Find the height of a parallelogram with an area of 63 square yards and base 9 yards.

15. Find the height of a parallelogram with an area of 41 square meters and base 8.2 meters.
Skills Practice

Area of Parallelograms

Find the area of each parallelogram.

1. 12 units²
2. 18 units²
3. 21 ft²
4. 63 yd²
5. 10 cm²
6. 90 yd²
7. 84 m²
8. 158 13/16 in²
9. 144 in²
10. 68.85 cm²
11. 99 km²
12. 255 m²

13. Find the base of a parallelogram with an area of 18 square inches and a height of 2 inches. 9 in.

14. Find the height of a parallelogram with an area of 63 square yards and base 9 yards. 7 yd

15. Find the height of a parallelogram with an area of 41 square meters and base 8.2 meters. 5 m