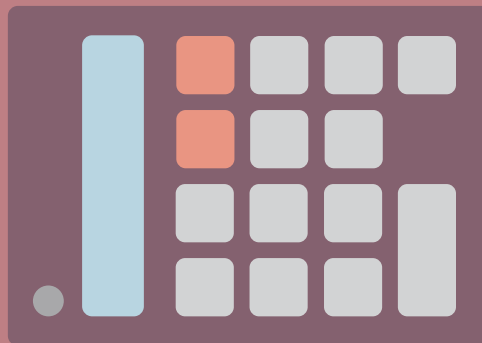




# MATH

Placement Test



▶ **100 – 800**

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# Math 100 – 800 Placement Tests

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# PLACEMENT TEST for the LIFE PAC CURRICULUM

## MATH 100 – 800

### Instructions

This test is designed to aid the parent or teacher in proper placement of the student into the LIFE PAC curriculum. It has two sections: the Student Test and the Answer Key.

This is not a timed test and the student should be given an opportunity to answer each question adequately. If the student becomes bogged down and the test seems too difficult, skip to the next section. If the test is still too difficult, this child's academic skill level has been reached and testing may stop. Each test level should take no longer than one hour. Students should not use a calculator for any of the tests.

Testing should begin approximately two grade levels below the student's current or just completed grade level. For example, a student entering fifth grade [500] should begin testing at the third grade [300] level. (Of course, a second grader could not test below the first grade level [100]). This allows for proper grade level placement as well as identification of any learning gaps that the student may have.

Once the test has been administered, it is ready to be scored. The teacher or parent does all of the scoring. Use the Answer Key to mark all incorrect answers on the Student Test. Next, record the total number of **correct** answers in the score box or on the line at the top of each unit test. **Each numbered question equals one point and always subtract from 10 even on the tests with fewer than 10 questions.** When all tests have been graded, transfer the number correct by LIFE PAC to the Student Placement Worksheet on the back page of the Answer Key. Then add the total number of points per grade level.

Test	Level	Test	Level	Test	Level	Test	Level
101 - 110	Level 1	201 - 210	Level 2	301 - 310	Level 3	401 - 410	Level 4
501 - 510	Level 5	601 - 610	Level 6	701 - 710	Level 7	801 - 810	Level 8

**FIRST GRADE TEST ADMINISTRATORS:** Test administrators may assist students in reading instructions when necessary; however, care should be taken as too much support may alter test results. First grade students may answer questions on the test pages or the right hand column. The right hand column is available for test administrators to mark whether the response was correct or incorrect. Each question equals one point. There are ten possible points per section. Put all answers on the blanks to the right of the questions unless instructed to do otherwise.





103 Circle the answer.

Score:

- |  |                      |          |
|--|----------------------|----------|
| 1. 3 ( + , - ) 5 = 8                                   | 2. 9 - 4 ( = , ≠ ) 6 | 1. _____ |
| 3. Nine ( plus , minus ) four equals five.             |                      | 2. _____ |
| 4. Seven minus three ( equals , is not equal to ) two. |                      | 3. _____ |

Write the missing word.

- |                                 |          |
|---------------------------------|----------|
| 5. Six plus three equals _____. | 5. _____ |
|---------------------------------|----------|

6. Circle  $\frac{1}{2}$ .



7. Write the time.

\_\_\_\_\_ : \_\_\_\_\_ o'clock



- |  |   |           |
|--|---|-----------|
| 8. How many days in a week? _____            | 9. $\begin{array}{r} 5 \\ +5 \end{array}$ $\begin{array}{r} 3 \\ +6 \end{array}$ $\begin{array}{r} 10 \\ -3 \end{array}$ $\begin{array}{r} 8 \\ -5 \end{array}$ | 8. _____  |
| 10. Write in number order.<br>69 68 71 67 70 | _____   | 9. _____  |
|  | _____   | 10. _____ |

104 Write the missing numbers.

Score:

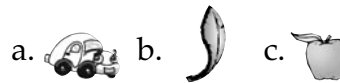
- |                                  |                                    |          |
|----------------------------------|------------------------------------|----------|
| 1. 2, _____, 6, _____, _____, 12 | 2. 10, _____, 30, 40, _____, _____ | 1. _____ |
|----------------------------------|------------------------------------|----------|

- |  |          |
|--|----------|
| 3. Circle the even numbers. 1 2 3 4 5 6 7 8 9 10 | 2. _____ |
|--|----------|

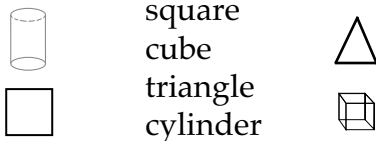
- |  |          |
|--|----------|
| 4. Write the number. $10 + 3 =$ _____ $80 + 4 =$ _____ | 3. _____ |
|--|----------|

- |  |  |          |
|--|--|----------|
| 5. Write the values for tens and ones. | 6. Tell the order from heaviest to lightest. | 4. _____ |
|--|--|----------|

$75 =$  \_\_\_\_\_  $+$  \_\_\_\_\_



- |           |       |          |
|-----------|-------|----------|
| 7. Match. | _____ | 5. _____ |
|-----------|-------|----------|



- |  |  |          |
|--|--|----------|
| 8. $57¢ =$ _____ dimes $+$ _____ pennies | 9. $\begin{array}{r} 8 \\ +5 \end{array}$ $\begin{array}{r} 7 \\ +6 \end{array}$ $\begin{array}{r} 2 \\ +9 \end{array}$ $\begin{array}{r} 7 \\ +8 \end{array}$ | 6. _____ |
|--|--|----------|

- |                        |          |
|------------------------|----------|
| 10. Circle the answer. | 7. _____ |
|------------------------|----------|

$8 + 6 ( = , \neq ) 14$

- |           |           |
|-----------|-----------|
| 8. _____  | 8. _____  |
| 9. _____  | 9. _____  |
| 10. _____ | 10. _____ |

105

Score:

1. 
$$\begin{array}{r} 6 \quad 5 \quad 1 \quad 2 \\ 3 \quad 2 \quad 4 \quad 5 \\ \hline +1 \quad +3 \quad +7 \quad +4 \end{array}$$

2. Match the number to the word.

1 2 3 4 5 6

third \_\_\_\_ sixth \_\_\_\_

3. Show  $\frac{1}{2}$ .



4. Circle  $\frac{1}{4}$ .



5. Draw what comes next.

6. Write the time.

\_\_\_\_\_ : \_\_\_\_\_



7. Match.

17	fifteen
19	seventeen
15	thirteen
13	nineteen

8. Mark read 2 pages in his book on Monday, 4 pages on Tuesday, and 6 pages on Wednesday. How many pages do you think he read on Thursday? \_\_\_\_\_

9.  $23¢ =$  \_\_\_\_\_ dimes + \_\_\_\_\_ pennies

10. How many in a dozen? \_\_\_\_\_

106

Score:

1. 
$$\begin{array}{r} 9 \quad 10 \quad 7 \quad 8 \\ -5 \quad -3 \quad -5 \quad -7 \\ \hline \end{array}$$

2. Add and check.

_____	_____
4	3
2	5
<u>+6</u>	<u>+2</u>

Write a number sentence.

3. 7, 5, 2 \_\_\_\_\_ 4. four, six, ten \_\_\_\_\_

Write the missing numbers. Circle the answer.

5. 5, \_\_\_\_\_, 15, \_\_\_\_\_, \_\_\_\_\_, 30 6.  $19 (>, <) 24$   $72 (>, <) 69$

7.  $69¢ =$  \_\_\_\_\_ dimes + \_\_\_\_\_ nickels + \_\_\_\_\_ pennies

8. Write the time.

\_\_\_\_\_ : \_\_\_\_\_

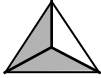


9. 
$$\begin{array}{r} 22 \quad 60 \quad 73 \\ +41 \quad +35 \quad +14 \end{array}$$

10. Ben has 4 nickels, Corey has 2 nickels, and Jason has 5 nickels. How many nickels do they have altogether? \_\_\_\_\_

107

Score:


- Circle the numbers.**
1. **greater than 132.** 143 115 192
2. **less than 176.** 104 185 160
3. **Write AM or PM.** I go to bed at night. \_\_\_\_\_.
4. **Write the fraction.**  \_\_\_\_\_
5. **Use both 7 and 2 to write a big \_\_\_\_ and a little \_\_\_\_ number.**

- Circle the answer.**
6.  $3 + 5$  ( $>$ ,  $<$ )  $2 + 4$       7.  $\begin{array}{r} 12 \\ - 7 \\ \hline \end{array}$   $\begin{array}{r} 11 \\ - 8 \\ \hline \end{array}$   $\begin{array}{r} 11 \\ - 3 \\ \hline \end{array}$   $\begin{array}{r} 11 \\ - 4 \\ \hline \end{array}$
8. Four plus three ( $=$ ,  $\neq$ ) eight.
9. **Write 100's, 10's, 1's.**  $138 =$  \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_





10. **Write how many.**      ① \_\_\_\_\_      ② \_\_\_\_\_
- |   |  |  |  |  |  |  |
|---|--|--|--|--|--|--|
| ① |  |  |  |  |  |  |
| ② |  |  |  |  |  |  |
- 0    5    10    15    20    25

108

Score:

1.  $\begin{array}{r} 13 \\ - 5 \\ \hline \end{array}$      $\begin{array}{r} 17 \\ - 8 \\ \hline \end{array}$      $\begin{array}{r} 14 \\ - 6 \\ \hline \end{array}$      $\begin{array}{r} 16 \\ - 7 \\ \hline \end{array}$       2. **Write the time.**  \_\_\_\_\_
3. **Measure.** \_\_\_\_\_ inches.

**Write the number word.**

4. 56 \_\_\_\_\_
5.  $\frac{3}{4}$  \_\_\_\_\_
6. **Circle the closest 10's number to 26.**      20    26    30
7. **Write the number.**  $100 + 60 + 5 =$  \_\_\_\_\_
8. **Match.**      9. **Write the missing numbers.**
- |   |          |   |
|---|----------|---|
|  | pyramid  |  |
|   | square   |   |
|   | cone     |   |
|  | triangle |  |
- 153, \_\_\_\_\_, \_\_\_\_\_, 156, \_\_\_\_\_

10. **Write what comes next.** Monday, Tuesday, Wednesday, \_\_\_\_\_

109

Write the family of facts for 4, 8, 12.

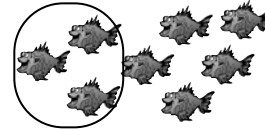
Score:

1. \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_      \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_  
 2. \_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_      \_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

3. 
$$\begin{array}{r} 15 \\ - 8 \\ \hline \end{array}$$
      
$$\begin{array}{r} 13 \\ - 5 \\ \hline \end{array}$$
      
$$\begin{array}{r} 49 \\ - 24 \\ \hline \end{array}$$
      
$$\begin{array}{r} 86 \\ - 5 \\ \hline \end{array}$$
      4. 
$$\begin{array}{r} 5 \\ 3 \\ + 6 \\ \hline \end{array}$$
      
$$\begin{array}{r} 51 \\ 22 \\ + 16 \\ \hline \end{array}$$

5. Is 46 closer to 40 or 50? \_\_\_\_\_  
 6. 175 has a \_\_\_\_\_ in the 10's place.

7. Write the circled part of the set as a fraction. \_\_\_\_\_



8. Circle (T) for true or (F) for false.  
 James has a dozen eggs. He fell and broke 15 of them. ( T , F )

9. Write what comes next. April, May, June, \_\_\_\_\_

10. Jamie has three dimes, two nickels, and four pennies.  
 How much money does Jamie have? \_\_\_\_\_ cents

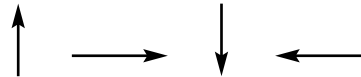
1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

110

Score:

1. Even numbers end in \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_.

2. Circle the arrow for south.



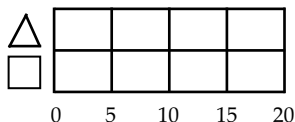
3. 
$$\begin{array}{r} 23 \\ 51 \\ + 15 \\ \hline \end{array}$$
      
$$\begin{array}{r} 12 \\ 5 \\ + 20 \\ \hline \end{array}$$
      4. 
$$\begin{array}{r} 16 \\ - 8 \\ \hline \end{array}$$
      
$$\begin{array}{r} 79 \\ - 5 \\ \hline \end{array}$$
      
$$\begin{array}{r} 68 \\ - 24 \\ \hline \end{array}$$
      
$$\begin{array}{r} 93 \\ - 51 \\ \hline \end{array}$$

5. Write what comes next.  
 $7 + 8 = 15$ ,       $8 + 7 = 15$ ,       $15 - 7 = 8$

Write in columns. Add or subtract.

6.  $15 + 3 =$       7.  $18 - 6 =$   
 $35 + 14 =$        $57 - 24 =$

8. Color 15 squares green.      9. Draw a set of 4 triangles.



Circle  $\frac{3}{4}$  of the set.

10. Write the missing word. Fourteen minus nine equals \_\_\_\_\_.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

201

Score:

1. Write in words. 13 45

2.  $\begin{array}{r} 6 \\ +7 \\ \hline \end{array}$     $\begin{array}{r} 9 \\ +5 \\ \hline \end{array}$     $\begin{array}{r} 5 \\ -0 \\ \hline \end{array}$     $\begin{array}{r} 17 \\ -8 \\ \hline \end{array}$    3.  $\begin{array}{r} 52 \\ +46 \\ \hline \end{array}$     $\begin{array}{r} 41 \\ 23 \\ +13 \\ \hline \end{array}$     $\begin{array}{r} 67 \\ -25 \\ \hline \end{array}$     $\begin{array}{r} 85 \\ -32 \\ \hline \end{array}$

4. Write the number in the ten's place. 36 95

5. Write the number before and after.

a. \_\_\_\_ 17 \_\_\_\_      b. \_\_\_\_ 59 \_\_\_\_

6. Write a fact family. 4, 7, 11

\_\_ + \_\_ = \_\_   \_\_ + \_\_ = \_\_   \_\_ - \_\_ = \_\_   \_\_ - \_\_ = \_\_

7. Write the symbol.

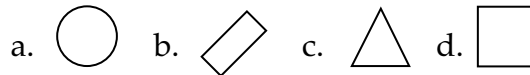
- a. 9 (+, -) 5 = 4      b. 10 (+, -) 8 = 2  
 c. 6 + 5 (=, ≠) 12      d. 12 (>, <) 19

8. Kevin has 4 dimes. Lisa has 3 dimes. How many dimes do they have altogether?

9. Write in symbols.

Fifteen minus six is not equal to eight.  
Seventy-four is greater than sixty-two.

10. Find the square.



1. \_\_\_\_\_

2.       /        
      /      

3.       /        
      /      

4.       /      

5.       /        
      /      

6. \_\_\_\_\_

\_\_\_\_\_

7. a.        b.         
c.        d.       

8. \_\_\_\_\_

9. \_\_\_\_\_

\_\_\_\_\_

10. \_\_\_\_\_

202

Score:

1. Write missing numbers. 137, \_\_, 139, \_\_, 141, \_\_, \_\_

2.  $3 + 5 + 11 = \underline{\quad}$     $32 + 4 + 21 = \underline{\quad}$     $13 - 5 = \underline{\quad}$     $7 - 0 = \underline{\quad}$

3. Write even or odd. 32 is \_\_.

4. When counting by 5's, the numbers always end in \_\_ or \_\_.

5. How many minutes in an hour?


6. Write the time.



7.  $\begin{array}{r} 39 \\ -6 \\ \hline \end{array}$        $\begin{array}{r} 89 \\ -30 \\ \hline \end{array}$

8. Katie had eight cookies. She gave four to Jodie. How many cookies does Katie have now?

9. Write how many.

 = \_\_ dimes + \_\_ nickels + \_\_ pennies

10. Write the little hearts as a fraction.



1.       /        
      /      

2.       /        
      /      

3. \_\_\_\_\_

4.       /      

5. \_\_\_\_\_

6. \_\_\_\_\_

7.       /      

8. \_\_\_\_\_

9.       /        
      /      

10. \_\_\_\_\_



205

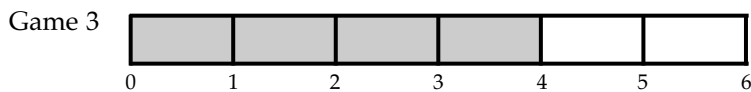
Score:

1. Write the symbols.  $7 + 9 (>, <)$   $6 + 8$      $12 - 7 (=, \neq)$   $13 - 8$

1. \_\_\_\_\_ / \_\_\_\_\_

2. The graph tells the number of matches in the game.  
How many matches in Game 3?

2. \_\_\_\_\_



3. \_\_\_\_\_

3. Count by 3's. Write the numbers.

1   2   3   4   5   6   7   8   9   10   11   12

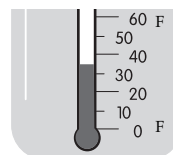
4. a. \_\_\_\_\_ b. \_\_\_\_\_

4. Use all of the numbers 5, 3, and 9 to write the  
(a.) largest and (b.) the smallest number.

5. \_\_\_\_\_ / \_\_\_\_\_

$$\begin{array}{r} \frac{1}{5} \\ + \frac{2}{5} \\ \hline \end{array} \quad \begin{array}{r} \frac{3}{8} \\ + \frac{4}{8} \\ \hline \end{array}$$

6. Write the temperature.



6. \_\_\_\_\_

$$\begin{array}{r} 258 \\ + 307 \\ \hline \end{array} \quad \begin{array}{r} 429 \\ + 143 \\ \hline \end{array}$$

$$\begin{array}{r} 36 \\ - 6 \\ \hline \end{array} \quad \begin{array}{r} 584 \\ - 253 \\ \hline \end{array}$$

7. \_\_\_\_\_ / \_\_\_\_\_

8. \_\_\_\_\_ / \_\_\_\_\_

9. How many in a dozen? \_\_\_\_\_

9. \_\_\_\_\_

10. Write the ordinal number word for fifteen.

10. \_\_\_\_\_

206

Score:

1. Write the time.



$$\begin{array}{r} \frac{2}{7} \\ + \frac{3}{7} \\ \hline \end{array} \quad \begin{array}{r} \frac{7}{12} \\ - \frac{5}{12} \\ \hline \end{array}$$

1. \_\_\_\_\_

2. \_\_\_\_\_ / \_\_\_\_\_

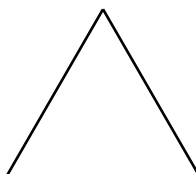
$$\begin{array}{r} 237 \\ + 349 \\ \hline \end{array} \quad \begin{array}{r} 356 \\ + 206 \\ \hline \end{array}$$

$$\begin{array}{r} 62 \\ - 28 \\ \hline \end{array} \quad \begin{array}{r} 71 \\ - 46 \\ \hline \end{array}$$

3. \_\_\_\_\_ / \_\_\_\_\_

4. \_\_\_\_\_ / \_\_\_\_\_

5. Measure the sides.  
Write the perimeter.



5. \_\_\_\_\_

6. a. Write how many.  $932 =$  \_\_\_\_\_ hundreds + \_\_\_\_\_ tens + \_\_\_\_\_ ones.

6. a. \_\_\_\_\_ / \_\_\_\_\_

b. Write the value.  $932 =$  \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_.

b. \_\_\_\_\_ / \_\_\_\_\_

7. Write in dollars and cents.      2 dollars, five quarters, 2 dimes

7. \_\_\_\_\_

8. Write how many. \_\_\_\_\_ inches = 1 yard    \_\_\_\_\_ ounces = 1 pound

8. \_\_\_\_\_ / \_\_\_\_\_

9. Write in number order.    356    563    365    536

9. \_\_\_\_\_ / \_\_\_\_\_

10. Name the shape  
that does not belong.



9. \_\_\_\_\_ / \_\_\_\_\_

10. \_\_\_\_\_

207

Score:

- Write in words.  $\frac{2}{7}$
- $$\begin{array}{r} 40 \\ 24 \\ + 12 \\ \hline \end{array}$$

$$\begin{array}{r} 146 \\ + 352 \\ \hline \end{array}$$

$$\begin{array}{r} 636 \\ + 249 \\ \hline \end{array}$$

$$\begin{array}{r} 270 \\ + 345 \\ \hline \end{array}$$
- $$\begin{array}{r} 87 \\ - 46 \\ \hline \end{array}$$

$$\begin{array}{r} 849 \\ - 527 \\ \hline \end{array}$$

$$\begin{array}{r} 63 \\ - 25 \\ \hline \end{array}$$

$$\begin{array}{r} 86 \\ - 27 \\ \hline \end{array}$$
- Tell the pattern. 48, 46, 44, ...
- Write the months in order.  
 \_\_\_ June    \_\_\_ May    \_\_\_ August    \_\_\_ July
- Round. Write the answer.  
If you have 58 pennies, you have close to \_\_\_ pennies.
- Write how many. \_\_\_ hours = 1 day    \_\_\_ days = 1 week
- $$\begin{array}{r} \frac{2}{4} \\ + \frac{1}{4} \\ \hline \end{array}$$

$$\begin{array}{r} \frac{6}{12} \\ - \frac{2}{12} \\ \hline \end{array}$$
- When we count by 2's, the numbers end in \_\_\_ , \_\_\_ , \_\_\_ , \_\_\_ , or \_\_\_ .
- Read the graph. Write the temperature for Friday.



- \_\_\_\_\_
- \_\_\_\_/\_\_\_\_
- \_\_\_\_/\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_/\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_/\_\_\_\_
- \_\_\_\_/\_\_\_\_
- \_\_\_\_/\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

208

Score:

- Write the next problem in the pattern.  
 $3 + 0 = 3$ ,     $3 + 1 = 4$ ,     $3 + 2 = 5$ , ...
- $5 + 7 - 2 = \underline{\quad}$      $15 - 9 + 8 = \underline{\quad}$
- Complete the number sentences.  
 $15 (+, -) 8 = 2 + 5$      $14 - 6 > 5 (+, -) 3$
- Write the fewest number of coins possible.  
 $87\text{¢} = \underline{\quad}$  quarters +  $\underline{\quad}$  dimes +  $\underline{\quad}$  nickels +  $\underline{\quad}$  pennies
- Tell the order.  
 The triangle is the \_\_\_ shape.
- Write the perimeter measurement.
- $\frac{3}{5}$  of a set of five apples is \_\_\_ apples.
- Tell the direction of the arrow.  $\longrightarrow$  north, south, east, west
- Write how many. \_\_\_ cups = 1 pint    \_\_\_ quarts = 1 gallon
- $$\begin{array}{r} \$4.36 \\ + \$2.48 \\ \hline \end{array}$$

$$\begin{array}{r} 365 \\ + 547 \\ \hline \end{array}$$

$$\begin{array}{r} 452 \\ + 368 \\ \hline \end{array}$$

$$\begin{array}{r} 53 \\ - 29 \\ \hline \end{array}$$

- \_\_\_\_\_
- \_\_\_\_/\_\_\_\_
- \_\_\_\_/\_\_\_\_
- \_\_\_\_/\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_/\_\_\_\_
- \_\_\_\_/\_\_\_\_
- \_\_\_\_/\_\_\_\_



209

Score:

Measure the rectangle.



- a. length = \_\_\_\_ b. width = \_\_\_\_
- a. perimeter = \_\_\_\_ b. area = \_\_\_\_
- Write the numbers in the hundreds' place. 307 609
- Measure. \_\_\_\_\_
- Write in numbers. a. five-sevenths nine hundred four  
Write in words. b.  $\frac{4}{9}$  378
- Write the answer.  $53 + 6 - 7 =$  \_\_\_\_
- Write the operation symbol.  
 $6 + 8$  ( $>$ ,  $<$ ) 15  $14 - 6$  ( $=$ ,  $\neq$ ) 8
- Is the answer to the problem an even or odd number?  
 $15 + 6 =$  \_\_\_\_

- \_\_\_\_\_ / \_\_\_\_\_
- \_\_\_\_\_ / \_\_\_\_\_
- \_\_\_\_\_ / \_\_\_\_\_
- \_\_\_\_\_
- a. \_\_\_\_\_ / \_\_\_\_\_  
b. \_\_\_\_\_  
\_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_ / \_\_\_\_\_
- \_\_\_\_\_

- |      |       |       |                 |
|------|-------|-------|-----------------|
| 46   | 386   | 473   | $\frac{2}{7}$   |
| 34   | + 239 | + 187 | + $\frac{3}{7}$ |
| + 27 |       |       |                 |
- |      |       |       |                  |
|------|-------|-------|------------------|
| 65   | 573   | 732   | $\frac{6}{15}$   |
| - 28 | - 367 | - 509 | - $\frac{4}{15}$ |

- \_\_\_\_\_ / \_\_\_\_\_
- \_\_\_\_\_ / \_\_\_\_\_
- \_\_\_\_\_ / \_\_\_\_\_

210

Score:



- Round to the nearest 100. 637 750
- Jenny poured 3 quarts of water into a gallon container. How many more quarts did she need to pour to fill the container?
- Is the answer even or odd? odd + even = \_\_\_\_
- a. Write in numbers. five dollars and thirteen cents  
b. Write in words. \$8.06
- Write the values.  $754 =$  \_\_\_\_ + \_\_\_\_ + \_\_\_\_
- Write the time on the digital clock. 8:16 <sup>AM</sup>  
• PM
- Add the fractions. + \_\_\_\_\_ = \_\_\_\_\_
- Write the symbols to make the number sentences true. +, -, =  
a.  $47$  \_\_\_\_  $41$  \_\_\_\_  $6$       b.  $83$  \_\_\_\_  $5$  \_\_\_\_  $88$
- Write what comes next.  $\frac{1}{7}$ ,  $\frac{2}{7}$ ,  $\frac{3}{7}$ , ...
- |   |   |   |   |
|---|---|---|---|
| $\begin{array}{r} 368 \\ + 448 \end{array}$ | $\begin{array}{r} \$4.59 \\ + \$3.16 \end{array}$ | $\begin{array}{r} 854 \\ - 619 \end{array}$ | $\begin{array}{r} \$9.52 \\ - \$7.39 \end{array}$ |
|---|---|---|---|

- \_\_\_\_\_ / \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- a. \_\_\_\_\_  
b. \_\_\_\_\_  
\_\_\_\_\_
- \_\_\_\_\_ / \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- a. \_\_\_\_\_ / \_\_\_\_\_  
b. \_\_\_\_\_ / \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_ / \_\_\_\_\_  
\_\_\_\_\_ / \_\_\_\_\_



303


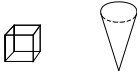
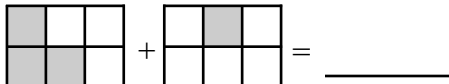
Score:

1. Write the fact family for 6, 0, 6. \_\_\_\_\_
2. Write the number in words. 709
3. 
$$\begin{array}{r} 389 \\ + 490 \\ \hline \end{array}$$
       $457 + 386 = \underline{\quad}$       
$$\begin{array}{r} 932 \\ - 471 \\ \hline \end{array}$$
       $625 - 308 = \underline{\quad}$
4. \_\_\_\_\_ ounces = 1 pound      \_\_\_\_\_ pounds = 1 ton  
 \_\_\_\_\_ pints = 1 quart      \_\_\_\_\_ quarts = 1 gallon
5. Use all of the digits 6, 3, and 8 to write the largest number and to write the smallest number.
6. Write a number sentence.  
 Joseph read 8 pages in his book. Katie read 7 pages in her book. Together, they read 15 pages.
7. Write fractions in digits. three-fifths      eight-ninths
8. Write the fraction that represents . . .  
 the shaded part of the set.  the whole set of wagons.
9. What time of day does it change from Monday to Tuesday?
10. Measure line segment AB. 

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

304

Score:

1. Write the place of the underlined digit.      6,352
2. 
$$\begin{array}{r} 275 \\ 364 \\ + 186 \\ \hline \end{array}$$
      
$$\begin{array}{r} 87 \\ - 29 \\ \hline \end{array}$$
      
$$\begin{array}{r} 832 \\ - 546 \\ \hline \end{array}$$
      
$$\begin{array}{r} 954 \\ - 287 \\ \hline \end{array}$$
3. Add the rounded numbers.      48 rounds to \_\_\_\_\_  
 23 rounds to + \_\_\_\_\_
4. Measure line segment CD. 
5. \_\_\_\_\_ cups = 1 pint      \_\_\_\_\_ months = 1 year  
 \_\_\_\_\_ ounces = 1 pint      \_\_\_\_\_ inches = 1 yard
6. Write the number word. 5,806
7. Write the money in dollars and coins. \$4.73  
 Choose from dollars, quarters, dimes, nickels, pennies.
8. Write Roman numerals in Arabic numerals. XXVI
9. Name the solid shapes. 
10. Add the fractions.  
 Write the answer in words.  = \_\_\_\_\_

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

305

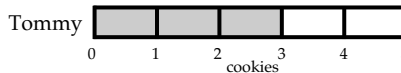
Score:

1.  $\frac{3}{8} + \frac{4}{8}$        $\frac{5}{12} + \frac{4}{12}$        $\frac{8}{9} - \frac{2}{9}$        $\frac{4}{5} - \frac{1}{5}$

2. Write the temperature.

ice = \_\_\_ degrees F.      steam = \_\_\_ degrees F.

3. Write the number of cookies that Tommy ate.

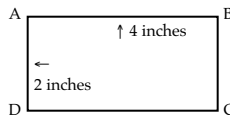


4. Add the rounded numbers.

232 rounds to \_\_\_\_\_

486 rounds to + \_\_\_\_\_

5. Suppose Line AB is 4 inches.  
Suppose Line AD is 2 inches.  
What is the perimeter?



6. Write the names of the plane shapes.

Draw a line of symmetry through each plane shape.



7. When adding an even and odd number together, the answer is always ( a. even b. odd ).

8. Write Roman numerals in Arabic numerals. XIV

9. Find the pattern. Write what comes next. 3, 6, 9, 12, ...

10. Lisa said that vacation will begin in two months and 5 days. If it is April 9 today, what day will vacation begin?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

306

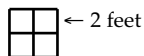
Score:

1.  $5,386 + 2,437$        $4,093 + 3,549$        $836 - 467$        $9,658 - 7,542$

2. Write the multiples of 2 from 2 to 20.

3. \_\_\_\_\_ seconds = 1 minute      \_\_\_\_\_ square inches = 1 square foot  
\_\_\_\_\_ days = 1 year      \_\_\_\_\_ square feet = 1 square yard

4. Measure the perimeter.  
Measure the area.



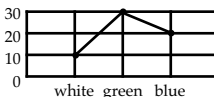
5.  $\frac{3}{7} + \frac{2}{7} =$  \_\_\_\_\_       $\frac{6}{9} - \frac{2}{9} =$  \_\_\_\_\_

6.  $\$2.36 + \$ .41$        $\$5.67 + \$1.38$

7. Write in digits and operation signs.

Eight plus six is not equal to five plus seven.

8. Tell how many cars are blue.



9. Tell which drawing illustrates ...

a line segment.      an angle.      a.      b.      c.

10. Melinda had \$5.34 to spend. She spent \$2.63 on a drawing book and 85¢ on pencils. What was her change?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

307

Score:

1. Write multiples.

$6 \times 2 = \underline{\quad}$        $3 \times 5 = \underline{\quad}$        $9 \times 2 = \underline{\quad}$        $5 \times 5 = \underline{\quad}$

2. Write in words.

$\frac{4}{7}$

$3\frac{2}{8}$

3. 
$$\begin{array}{r} 4,672 \\ -1,936 \\ \hline \end{array}$$

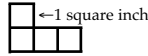
$$\begin{array}{r} 5,013 \\ -2,395 \\ \hline \end{array}$$

$$\begin{array}{r} 8,708 \\ -4,279 \\ \hline \end{array}$$

$$\begin{array}{r} 7,540 \\ -2,857 \\ \hline \end{array}$$

4. Measure the perimeter.

Measure the area.



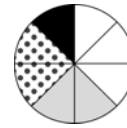
5. 
$$\begin{array}{r} 5\frac{3}{7} \\ +2\frac{2}{7} \\ \hline \end{array}$$

$$\begin{array}{r} 9\frac{5}{6} \\ -3\frac{1}{6} \\ \hline \end{array}$$

6. Write in Roman numerals.

59

7. The spinner is divided into sections that are white, gray, black, and dotted. If the spinner is turned, what is the probability it will stop on white?



8.  $67 + \underline{\quad} = 152$  because  $152 - \underline{\quad} = 67$

9. Write the number of cents.

1 quarter + 2 dimes - 3 nickels + 2 pennies

10. In which number does the digit 4 have the greatest value?

3,460

9,004

4,132

6,348

308

Score:

1. Choose from faces, angles, closed lines, squares, rectangles.

The sides of solid shapes are named     .

     are formed when two lines meet at an end point.

2. 4 yards =      feet

2 gallons =      quarts

3. Find the missing numbers.

18

253

??

437

45

??

97

864

4. Write the fraction for the decimal. .4

5. Write numbers for number words.

four thousand, seven hundred six

two thousand, eight

6. 
$$\begin{array}{r} 3\frac{2}{9} \\ +4\frac{5}{9} \\ \hline \end{array}$$

$$\begin{array}{r} 2\frac{3}{4} \\ +5\frac{1}{4} \\ \hline \end{array}$$

7. 
$$\begin{array}{r} 8,000 \\ -4,638 \\ \hline \end{array}$$

$$\begin{array}{r} 7,003 \\ -3,849 \\ \hline \end{array}$$

8. Write the multiples.

$7 \times 2 = \underline{\quad}$

$6 \times 5 = \underline{\quad}$

$8 \times 3 = \underline{\quad}$

$4 \times 10 = \underline{\quad}$

9. Circle two thirds of the set of balls.

How many balls is that?



10. Mary, Jo, and Ashlee had completed their math tests. Mary had a score of 87. Jo scored 5 points less than Mary. Ashlee scored 3 points more than Jo. What was Ashlee's score?

1.      /     

     /     

2.     

3.      /     

     /     

4.     

5.     

6.     

7. out of

8.      /     

     /     

9.     

10.     

1.     

2.      /     

     /     

3.      /     

     /     

4.     

5.     

6.      /     

     /     

7.     

8.      /     

     /     

9.     

10.     

     /     

     /     



9.     

10.

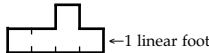
309

Score:

- Write in digits. two-ninths      seven and three-eighths
- Shade the part that shows the fraction.  
Write yes or no to tell if they are equal.  $\frac{3}{4}$   $\frac{6}{8}$
- $6,351 + 93 + 578 = \underline{\hspace{2cm}}$        $4,301 - 632 = \underline{\hspace{2cm}}$
- Write the correct symbol.  
 $7 + 6 - 4$  ( $=, \neq$ )  $15 - 8 + 2$        $80 - 50$  ( $>, <$ )  $40 + 20$
- Write the temperatures. Choose from 0, 32, 100, 212.  
freezing =  $\underline{\hspace{1cm}}$  degrees Fahrenheit      =  $\underline{\hspace{1cm}}$  degrees Celsius
- Write the name of the shape.      a.       b. 
- Write answers to multiplication facts.  
 $6 \times 3 = \underline{\hspace{1cm}}$        $8 \times 4 = \underline{\hspace{1cm}}$        $10 \times 5 = \underline{\hspace{1cm}}$        $9 \times 2 = \underline{\hspace{1cm}}$
- Round to thousands' place.      7,326      8,540
- Write in Roman numerals.      537
- Jody had planned one hour and twenty minutes to complete her reading assignment. How many minutes was that?

310

Score:

- Round the numbers. Estimate the answer.  
 $2,469 + 3,571 + 1,963 = \underline{\hspace{2cm}}$        $\underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} =$
- |  |   |   |   |
|--|---|---|---|
| $\begin{array}{r} 542 \\ 365 \\ + 409 \\ \hline \end{array}$ | $\begin{array}{r} 6,391 \\ + 2,885 \\ \hline \end{array}$ | $\begin{array}{r} 9,003 \\ - 2,541 \\ \hline \end{array}$ | $\begin{array}{r} 8,052 \\ - 4,058 \\ \hline \end{array}$ |
|--|---|---|---|
- Write the multiples for 4 from 4 to 40.  
 $\underline{\hspace{1cm}} \quad \underline{\hspace{1cm}} \quad \underline{\hspace{1cm}} \quad \underline{\hspace{1cm}} \quad \underline{\hspace{1cm}} \quad \underline{\hspace{1cm}} \quad \underline{\hspace{1cm}}$
- |   |   |   |   |
|---|---|---|---|
| $\begin{array}{r} \frac{4}{9} \\ + \frac{3}{9} \\ \hline \end{array}$ | $\begin{array}{r} 6\frac{1}{5} \\ + 2\frac{4}{5} \\ \hline \end{array}$ | $\begin{array}{r} \frac{7}{8} \\ - \frac{4}{8} \\ \hline \end{array}$ | $\begin{array}{r} 3\frac{6}{7} \\ - 1\frac{2}{7} \\ \hline \end{array}$ |
|---|---|---|---|
- Write answers to multiplication facts.  
 $\begin{array}{r} 5 \\ \times 6 \\ \hline \end{array}$        $\begin{array}{r} 3 \\ \times 4 \\ \hline \end{array}$        $\begin{array}{r} 4 \\ \times 7 \\ \hline \end{array}$        $\begin{array}{r} 10 \\ \times 3 \\ \hline \end{array}$
- Write the perimeter.  
Write the area. 
- There are 10 fish in the pond. 4 are goldfish. If you went fishing, what is the probability that you would catch a goldfish?
- Complete the two step problem.  
 $19 - (6 + 3) = \underline{\hspace{2cm}}$
- Find the pattern. Write what comes next.  
 $7 + 8 = 15$ ,     $8 + 7 = 15$ ,     $15 - 7 = 8$ ,    ...
- Jason drank  $\frac{3}{8}$  of his glass of milk.  
How much milk was there left in the glass to drink?



403

Score:

1. Round to the nearest thousand. 5,568 1. \_\_\_\_\_
2. Round the numbers to the nearest thousand.  $7,432 =$  \_\_\_\_\_ 2. \_\_\_\_\_  
Find the *estimated* answer.  $\underline{\quad 3,869 \quad} =$  \_\_\_\_\_
3. If a number is multiplied by zero the answer is always \_\_\_\_\_. 3. \_\_\_\_\_
4. Find the product of 3 and 5. 4. \_\_\_\_\_
5. Fill in the missing numbers in this sequence. 5. \_\_\_\_\_  
 $\frac{3}{8}, \frac{4}{8}, \frac{5}{8}, \frac{\quad}{8}, \frac{\quad}{8}, \frac{8}{8}$
6.  $\frac{7}{5}$  is ( $>$ ,  $<$ ) 1. 6. \_\_\_\_\_
7.  $\frac{3}{4}$  ( $=$ ,  $\neq$ )  $\frac{12}{16}$  7. \_\_\_\_\_
8. Write in digits: 8. \_\_\_\_\_  
five hundred twenty thousand, six hundred eighty-five
9. What digit is in the ten thousands' place? 856,349 9. \_\_\_\_\_
10. Solve. 10a. \_\_\_\_\_  

a.	$\begin{array}{r} 642 \\ \times 5 \\ \hline \end{array}$	b.	$\begin{array}{r} 391 \\ \times 6 \\ \hline \end{array}$
----	--	----	--

b. \_\_\_\_\_

404

Score:

1. Round to the thousands' place. 6,785 1. \_\_\_\_\_
2. Select the solid shapes. 2. \_\_\_\_\_  
a. sphere b. oval c. octagon d. cone e. diamond f. pyramid
3. How many dimensions does a plane shape have? ( 1, 2, 3, 4 ) 3. \_\_\_\_\_
4. A polygon must have at least ( 1, 2, 3, 4 ) sides. 4. \_\_\_\_\_
5. A ray has ( 1, 2, 3, 4 ) endpoints. 5. \_\_\_\_\_
6. A circle is a continuous ( a. ray b. line c. line segment ). 6. \_\_\_\_\_
7. If a rectangle has measurement of 3 feet by 2 feet, the length 7a. \_\_\_\_\_  
is a. \_\_\_\_\_ feet and the width is b. \_\_\_\_\_ feet. b. \_\_\_\_\_
8. In a class of students, twenty-six are going to camp and fourteen 8. \_\_\_\_\_  
are not. Express as a fraction the number of students from the whole class who are not going to camp.
9. Bob started a new box of cereal on Monday. By Friday, he had 9. \_\_\_\_\_  
eaten  $\frac{5}{8}$  of the box. How much of the cereal was left by Friday?
10.  $N - 184 = 359$        $N =$  \_\_\_\_\_ 10. \_\_\_\_\_



405

Score:

Write the family of facts for

1. 5, 6, and 11.
2. 7, 8, and 56.

3. Write the equivalent.

a. 1 foot = \_\_ inches    b. 1 pint = \_\_ cups    c. 1 gallon = \_\_ quarts

A rectangle has the measurement of 5 feet by 6 feet.

4. What is the perimeter?
5. What is the area?

6. Write the equivalent in Arabic or Roman numerals.

a. LVII                      b. 1,326

7.  $(8 \times 5) - 4 = N$

What does N equal?

8.  $15 + 9 + 12 + N = 45$ .

What does N equal?

9. Solve.

a. 
$$\begin{array}{r} 3,672 \\ \times 4 \\ \hline \end{array}$$

b. 
$$\begin{array}{r} 7,693 \\ \times 7 \\ \hline \end{array}$$

10. Solve.

a. 
$$7 \overline{)56}$$

b. 
$$8 \overline{)40}$$

c.  $63 \div 7 =$

d.  $48 \div 6 =$

1. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. a. \_\_\_\_\_

b. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. a. \_\_\_\_\_

b. \_\_\_\_\_

10. a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

406

Score:

1. Write the prime numbers between 0 and 10.

2. What are the factors of 8?

3. List the first 4 multiples of 5. Begin with 5.

4.  $\frac{8}{7}$  is a ( a. proper b. improper ) fraction.

5. Change  $\frac{6}{18}$  to an equivalent fraction by dividing numerator and denominator by the same number.

6. Write the missing numbers.  $2 \frac{1}{3}, \underline{\hspace{1cm}}, 3, \underline{\hspace{1cm}}, 3 \frac{2}{3}$

7. Solve.            a.  $4 \frac{2}{5}$                       b.  $11 \frac{5}{9}$

$$\begin{array}{r} + 7 \frac{1}{5} \\ \hline \end{array}$$

$$\begin{array}{r} - 6 \frac{3}{9} \\ \hline \end{array}$$

8. What is the perimeter of a triangle with sides equal to 5 inches?

9. How many angles in a square?

10. Solve with a remainder.    a.  $5 \overline{)38}$                       b.  $4 \overline{)21}$

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. a. \_\_\_\_\_

b. \_\_\_\_\_

8. \_\_\_\_\_

\_\_\_\_\_

9. \_\_\_\_\_

\_\_\_\_\_

10. a. \_\_\_\_\_

b. \_\_\_\_\_

407

Score:

Solve.

1. a.  $\begin{array}{r} 43 \\ \times 25 \\ \hline \end{array}$       b.  $\begin{array}{r} 693 \\ \times 48 \\ \hline \end{array}$

Simplify.

2. a.  $\frac{3}{12}$       b.  $\frac{24}{5}$

Add or subtract and simplify.

3. a.  $\begin{array}{r} \frac{7}{8} \\ + \frac{5}{8} \\ \hline \end{array}$       b.  $\begin{array}{r} \frac{4}{15} \\ + \frac{6}{15} \\ \hline \end{array}$       4. a.  $\begin{array}{r} \frac{11}{12} \\ - \frac{5}{12} \\ \hline \end{array}$       b.  $\begin{array}{r} \frac{20}{21} \\ - \frac{13}{21} \\ \hline \end{array}$

5. Identify as (a. line b. angle c. ray).



6. A rectangle measures: length 5 ft. width 3 ft.

Find the a. perimeter \_\_\_\_\_ b. area \_\_\_\_\_

7. Find the average of 5, 7, 9, 12, and 12.

8. Solve. What is seventy-four dollars and two cents minus thirty dollars and ten cents?

9. Find the missing number.  $N = (12 \times 6) - 42$ .10. Prove by cross multiplication that  $\frac{3}{8} = \frac{9}{24}$ .1. a. \_\_\_\_\_  
b. \_\_\_\_\_

2. a. \_\_\_\_\_ b. \_\_\_\_\_

3. a. \_\_\_\_\_ b. \_\_\_\_\_

4. a. \_\_\_\_\_ b. \_\_\_\_\_

5. \_\_\_\_\_

6. a. \_\_\_\_\_

b. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_  
\_\_\_\_\_

408

Score:

1.  $N = 369 \div (4 + 2 + 3)$        $N =$  \_\_\_\_\_

2. a.  $\begin{array}{r} 4,863 \\ \times 24 \\ \hline \end{array}$       b.  $\begin{array}{r} 2,763 \\ \times 24 \\ \hline \end{array}$       3. a. \_\_\_\_\_      b. \_\_\_\_\_  
 $4\overline{)923}$        $9\overline{)279}$

4. What is the smallest multiple that 3 and 6 have in common?

5. Find the equivalent fractions.

a.  $\frac{3}{5} = \frac{\quad}{10}$       b.  $\frac{4}{5} = \frac{\quad}{20}$

6. Solve and simplify.

a.  $\begin{array}{r} \frac{3}{5} \\ + \frac{7}{10} \\ \hline \end{array}$       b.  $\begin{array}{r} \frac{6}{16} \\ + \frac{3}{8} \\ \hline \end{array}$       7. a.  $\begin{array}{r} \frac{11}{15} \\ - \frac{2}{5} \\ \hline \end{array}$       b.  $\begin{array}{r} \frac{14}{18} \\ - \frac{1}{3} \\ \hline \end{array}$

8. What number is the metric system based on?

9. A centimeter is (&lt;, &gt;) a meter.

10. The freezing temperature is \_\_\_\_\_ degrees Fahrenheit.

1. \_\_\_\_\_

2. a. \_\_\_\_\_

b. \_\_\_\_\_

3. a. \_\_\_\_\_

b. \_\_\_\_\_

4. \_\_\_\_\_

5. a. \_\_\_\_\_ b. \_\_\_\_\_

6. a. \_\_\_\_\_ b. \_\_\_\_\_

7. a. \_\_\_\_\_ b. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

409

Score:

- |                                   |  |  |                         |
|-----------------------------------|--|--|-------------------------|
| 1. Write the equivalent fraction. | a. .04                                 | b. .903                                | 1. a. _____ b. _____    |
| 2. Write the equivalent decimal.  | a. $\frac{3}{100}$                     | b. $\frac{425}{1,000}$                 | 2. a. _____<br>b. _____ |
| 3. Write in words.                | a. .63                                 | b. 2.4                                 | 3. a. _____<br>_____    |
| 4. Find the average.              | 8, 3, 7, 6                             |  | b. _____<br>_____       |
| 5.                                | $3.7 + .42 + 8.72 =$                   |  | 4. _____                |
| 6.                                | $6.032 - .73 =$                        |  | 5. _____                |
| 7.                                | $4\frac{3}{8}$                         | 8. $9\frac{5}{12}$                     | 6. _____                |
|                                   | $+ 7\frac{2}{5}$                       | $- 2\frac{3}{8}$                       | 7. _____                |
| 9.                                | a. $\frac{3}{4} + \frac{1}{8} =$ _____ | b. $\frac{1}{2} + \frac{5}{6} =$ _____ | 8. _____                |
| 10.                               | a. $17 + 5 (=, \neq) 2 \times 11$      | b. $\frac{5}{8} (<, >) \frac{7}{10}$   | 9. a. _____ b. _____    |
|                                   |  |  | 10. a. _____ b. _____   |

410

Score:

- Match.**
- |  |                  |           |
|--|------------------|-----------|
| 1. A selection from which every member has an equal chance of being chosen | a. estimation    | 1. _____  |
| 2. Represents the whole of its parts                                       | b. circle graph  | 2. _____  |
| 3. Connects data with lines  | c. problem       | 3. _____  |
| 4. A question for which a solution must be found                           | d. random sample | 4. _____  |
| 5. An opinion of the amount or value of something                          | e. bar graph     | 5. _____  |
| 6. Illustrated data using wide lines                                       | f. prediction    | 6. _____  |
| 7. A list of facts from which a conclusion may be drawn                    | g. picture graph | 7. _____  |
| 8. Uses illustrations  | h. data          | 8. _____  |
| 9. To tell something in advance  | i. line graph    | 9. _____  |
| 10. Dividing the whole number by the number being counted                  | j. average       | 10. _____ |

# MATH 501: Place Value, Addition, and Subtraction

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. **What is the value of the bold digit?**

92,007,**6**42,188

- a. hundreds                      b. hundred thousands      c. ten thousands              d. thousands

2. **Compare the numbers using  $<$ ,  $>$ , or  $=$ .**

4,560,139 \_\_\_ 4,560,107

- a.  $<$                                   b.  $>$                                   c.  $=$

3. **Which digit is in the hundredths place?**

462.139

- a. 4                                  b. 6                                  c. 3                                  d. 9

4. **Compare the numbers using  $<$ ,  $>$ , or  $=$ .**

46.03 \_\_\_ 46.030

- a.  $<$                                   b.  $>$                                   c.  $=$

5. **Round 8.631 to the nearest hundredth.**

- a. 8.63                              b. 8.6                              c. 8.7                              d. 8.64

6. **Round to the nearest whole number and estimate the sum.**

22.34 + 3.94 + 1.8

- a. 28                                  b. 27                                  c. 26                                  d. 29

7. **Subtract.**

6,192 - 5,735

- a. 457                                  b. 1,663                              c. 1,467                              d. 1,457

8. **Add.**

3,448 + 680

- a. 4,128                              b. 3,028                              c. 4,028                              d. 3,128

9. **Find the sum.**

31.25 + 9.38

- a. 40.63                              b. 30.53                              c. 40.53                              d. 30.63

10. **In gym class, Jeremiah ran one mile in 7.2 minutes, Arianna ran one mile in 6.75 minutes, and Raven ran one mile in 7.08 minutes. How much longer did it take Jeremiah to run than Raven?**

- a. 0.12 minutes                      b. 0.45 minutes                      c. 0.33 minutes                      d. 0.6 minutes

# MATH 502: Multiplying Whole Numbers and Decimals

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Round each factor to the nearest hundred. Then, estimate the product.

$$110 \times 298$$

- a. 30,000                      b. 40,000                      c. 2,000                      d. 3,000

2. Multiply.

$$0 \times 15$$

- a. 1                      b. 15                      c. 0                      d. 150

3. Find the product.

$$32 \times 478$$

- a. 15,296                      b. 16,796                      c. 14,296                      d. 15,290

4. Write  $4 \times 4 \times 4 \times 4 \times 4$  using exponents.

- a.  $4^5$                       b.  $4^4$                       c.  $5^6$

5. Match each pair

$10^1$                       1,000

$10^2$                       10

$10^3$                       100

6. Kyra multiplied 0.27 by a power of ten and got 2.7. What power of ten did she multiply by?

- a. 10                      b. 100                      c. 1,000

7. Use rounding to estimate the product.

$$8 \times 9.82$$

- a. 72                      b. 75                      c. 88                      d. 80

8. Find the product.

$$11 \times 6.41$$

- a. 60.51                      b. 12.82                      c. 70.51                      d. 128.2

9. Paxton did the following multiplication problem. Where should he put the decimal point in his product?

$$\begin{array}{r} 9.18 \\ \times 7.3 \\ \hline 2754 \\ 64260 \\ \hline 67014 \end{array}$$

- a. 6.7014                      b. 67.014                      c. 670.14                      d. 6,701.4

10. At Greenwood Landscaping, rock costs \$47.50 per ton. How much would 2.5 tons cost?

- a. \$118.75                      b. \$332.50                      c. \$107.75                      d. \$94.25

# MATH 503: Dividing Whole Numbers and Decimals

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Find  $n$ .

$$28 \div n = 7$$

- a.  $n = 3$                       b.  $n = 4$                       c.  $n = 7$                       d.  $n = 5$

2. Divide.

$$4,000 \div 8$$

- a. 5,000                      b. 500                      c. 50                      d. 5

3. Divide.

$$2,316 \div 6 = \underline{\quad}$$

- a. 419                      b. 386                      c. 424                      d. 396

4. Use long division to find the quotient. What is the remainder?

$$49 \div 3$$

- a. 0                      b. 1                      c. 2                      d. 3

5. Find the quotient.

$$1,976 \div 38$$

- a. 52                      b. 42                      c. 48                      d. 58

6. Find the quotient.

$$3,458 \div 17$$

- a. 203 r 6                      b. 230 r 7                      c. 203 r 7                      d. 236 r 1

7. 149 cars are waiting to take a ferry across the channel. Each ferry can only hold 18 cars. How many trips will it take to get all the cars across?

- a. 6                      b. 8                      c. 9                      d. 5

8. Find the quotient.

$$64 \div 1,000$$

- a. 6.4                      b. 0.64                      c. 0.064                      d. 0.0064

9. Find  $n$ .

$$34.96 \div 8 = n$$

- a.  $n = 2.37$                       b.  $n = 4.44$                       c.  $n = 3.12$                       d.  $n = 4.37$

10. 5 pounds of apples cost \$8.20. How much is it for 1 pound?

- a. \$1.76                      b. \$2.44                      c. \$1.64                      d. \$1.56

# MATH 504: Algebra and Graphing

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Which expression has a solution of 27, if  $r = 3$ ?

- a.  $6r$                                       b.  $7r$                                       c.  $8r$                                       d.  $9r$

2. Evaluate the expression  $9 + (7 - 4)^2 \div 3$ .

- a. 3    b. 6    c. 12    d. 18

3. Find the value of  $x$  that makes the equation true.

$$17 - x = 9$$

- a.  $x = 8$                                       b.  $x = 9$                                       c.  $x = 24$                                       d.  $x = 26$

4. Find the value of  $x$  that makes the equation true.

$$11x = 143$$

- a.  $x = 9$                                       b.  $x = 10$                                       c.  $x = 13$                                       d.  $x = 20$

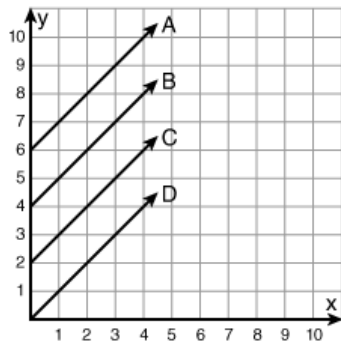
5. Which ordered pair will be the solution for the function  $y = 8 + x$ ?

- a. (4, 13)                                      b. (11, 3)                                      c. (6, 14)                                      d. (2, 16)

6. For the function  $y = 9x$ , what is the output value if 5 is the input value?

- a.  $y = 4$                                       b.  $y = 14$                                       c.  $y = 45$                                       d.  $y = 95$

7. Which line is the graph of the function  $y = x + 6$ ?



- a. line A                                      b. line B                                      c. line C                                      d. line D

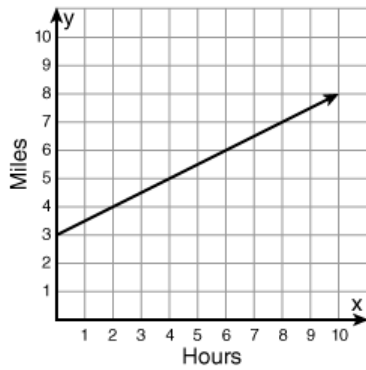
8. If Sue rides 10 miles per hour on her bike, and this relationship is graphed, which ordered pair would *not* be on the graph?

- a. (2, 20)                                      b. (5, 50)                                      c. (6, 60)                                      d. (8, 85)

9. Which group of numbers is listed from least to greatest?

- a. -2, -3, -5, 0, 4                                      b. 5, 3, 2, -6, -8                                      c. -7, -4, -2, 1, 5                                      d. -2, 3, -4, 5, -7

10. Select all that apply. What does the graph show?



- a. The graph starts at 3 miles.
- b. Every 2 hours, 1 mile is traveled.
- c. Every hour, 3 miles are traveled.
- d. After 8 hours, the distance is 7 miles.



# MATH 505: Measurement

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. **What is a hectoliter?**  
a. 1/100 of a liter      b. 100 grams      c. 100 liters      d. 1,000 liters
2. **Which measurement is *not* equivalent to the others?**  
a. 500 cm      b. 5 m      c. 0.5 km      d. 5,000 mm
3. **Convert 6.42 kilograms to grams.**  
a. 0.00642 g      b. 64.2 g      c. 642 g      d. 6,420 g
4. **Which pair of measurements is *not* equivalent?**  
a. 6,000 ml, 6 L      b. 950 ml, 0.95 L      c. 4.5 L, 450 ml      d. 0.3 L, 300 ml
5. **What is the sum of 8 yards and 5 feet?**  
a. 10 yards      b. 13 yards      c. 21 feet      d. 29 feet
6. **Subtract 6 oz. from 3 lb.**  
a. 5 lb., 7 oz.      b. 6 lb., 3 oz.      c. 2 lb., 10 oz.      d. 2 lb., 13 oz.
7. **Which measurement is *not* equivalent to the others?**  
a. 1 quart      b. 4 cups      c. 48 fl. oz.      d. 2 pints
8. **Subtract 2 hours, 20 minutes from 4 hours, 10 minutes.**  
a. 2 hours, 10 minutes      b. 1 hour, 50 minutes      c. 1 hour, 30 minutes      d. 1 hour, 10 minutes
9. **If Sarah starts her chores at 10:15 a.m. and it takes her 4 hours and 10 minutes to complete them, what time will she finish?**  
a. 2:05 p.m.      b. 2:25 a.m.      c. 6:05 p.m.      d. 2:25 p.m.
10. **Convert 132°F to Celsius.**  
a. 55°C      b. 70°C      c. 85°C      d. 100°C

# MATH 506: Factors and Fractions

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Is 9 prime, composite, or neither?

- a. prime                      b. composite                      c. neither

2. Which of the following numbers has a prime factorization of  $2 \times 3 \times 7$ ?

- a. 21                      b. 48                      c. 42                      d. 35

3. What is the GCF of 22 and 32?

- a. 1                      b. 2                      c. 4                      d. 6

4. In a fruit basket, there are six apples and three oranges. What fraction of the basket are apples?

- a.  $\frac{6}{9}$                       b.  $\frac{6}{3}$                       c.  $\frac{3}{9}$                       d.  $\frac{3}{6}$

5. Complete the statement with  $<$ ,  $>$ , or  $=$ .

$\frac{9}{7}$   $\underline{\hspace{1cm}}$  1

- a.  $<$                       b.  $>$                       c.  $=$

6. Which of the following fractions is *not* in simplest form?

- a.  $\frac{3}{4}$                       b.  $\frac{7}{10}$                       c.  $\frac{9}{12}$                       d.  $\frac{4}{15}$

7. Which of the following fractions is equivalent to  $\frac{3}{8}$ ?

- a.  $\frac{6}{14}$                       b.  $\frac{9}{24}$                       c.  $\frac{4}{9}$                       d.  $\frac{15}{35}$

8. What is the LCM of 3 and 7?

- a. 3                      b. 7                      c. 14                      d. 21

9. Compare using  $<$ ,  $>$ , or  $=$ .

$\frac{3}{6}$   $\underline{\hspace{1cm}}$   $\frac{3}{7}$

- a.  $<$                       b.  $>$                       c.  $=$

10. Which decimal number is equivalent to  $\frac{9}{1000}$ ?

- a. 0.009                      b. 0.18                      c. 0.9                      d. 0.0009

# MATH 507: Fraction Operations

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Subtract. Write your answer in simplest form.

$$\frac{5}{8} - \frac{3}{8}$$

2. Subtract. Write your answer in simplest form.

$$5\frac{2}{8} - 2\frac{3}{8}$$

3. Round the mixed number to the nearest whole or half.

$$11\frac{5}{8}$$

a. 11

b.  $11\frac{1}{2}$

c. 12

4. Find the sum. Write your answer in simplest form.

$$\frac{1}{3} + \frac{1}{4}$$

5. Find the difference. Write your answer in simplest form.

$$\frac{7}{10} - \frac{1}{2}$$

6. Find the sum. Write your answer in simplest form.

$$3\frac{8}{9} + 1\frac{5}{12}$$

7. Miranda brought 24 cookies to share with her class. Two-thirds of the cookies are chocolate chip. How many are chocolate chip?

a. 16

b. 18

c. 12

d. 20

8. Multiply. Write your answer in simplest form.

$$\frac{1}{8} \times \frac{2}{3}$$

9. Which of the following statements will be true about the product of 6 and  $1\frac{3}{4}$ ?

- a. The product will be less than 6.
- b. The product will be equal to 6.
- c. The product will be greater than 6.

10. How many  $\frac{1}{4}$  cup servings are in 8 cups of cashews?

- a. 32 servings
- b.  $\frac{1}{32}$  serving
- c. 2 servings
- d.  $\frac{1}{2}$  serving

# MATH 508: Data Analysis and Probability

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Which survey example would be likely to give a valid conclusion?

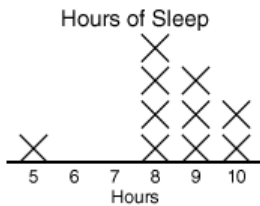
- a. Six students are surveyed about their favorite color.
- b. People are asked, "Is our lazy mayor doing a good job?"
- c. Thirty students are randomly sampled about their eye color.
- d. Four blonde students are asked about their favorite hair color.

2. What is the mean for the following set of data?

5, 7, 8, 10, 12, 12

- a. 7
- b. 9
- c. 10
- d. 12

3. What is the median of the data set?



- a. 8
- b. 9
- c. 8.5
- d. 10

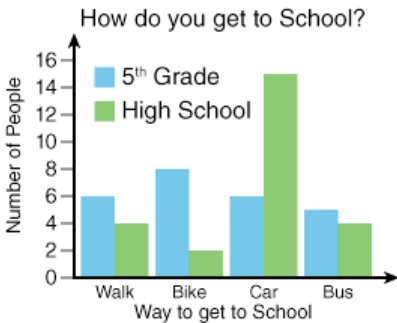
4. What is the mode of the data set?

Fifth Grade Jump Distance

2	0
3	2 4 6
4	0 0 2 4 8
5	5
6	5

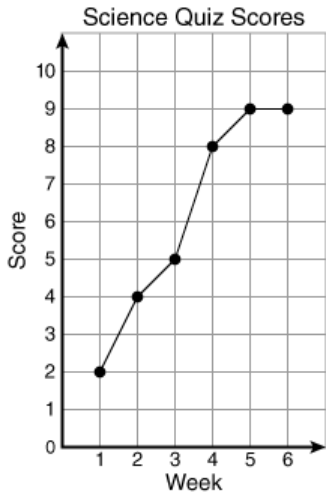
- a. 20
- b. 40
- c. 43
- d. 65

5. How many more high school students get to school by car than 5th grade students?



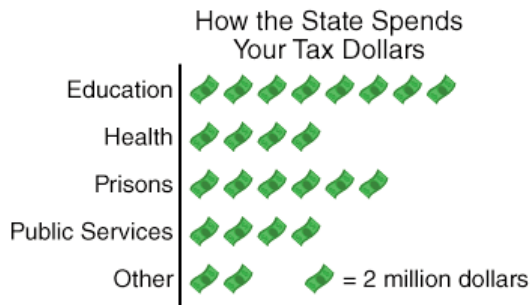
- a. 6
- b. 9
- c. 10
- d. 15

6. Where is the greatest change in the science quiz scores?



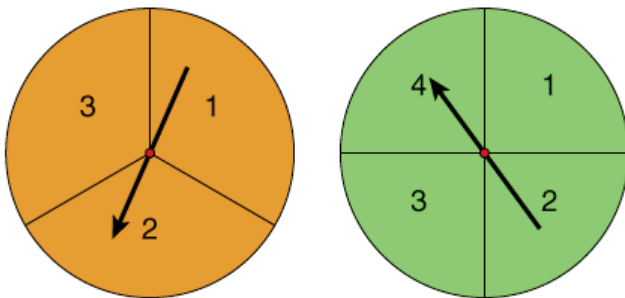
- a. from Week 1 to Week 2
- b. from Week 2 to Week 3
- c. from Week 3 to Week 4
- d. from Week 5 to Week 6

7. According to the graph, how much money is spent on education?



- a. 4 million
- b. 8 million
- c. 12 million
- d. 16 million

8. If the two spinners below are spun, what is the probability that the numbers will add to more than 4?



- a.  $\frac{1}{8}$
- b.  $\frac{1}{6}$
- c.  $\frac{1}{4}$
- d.  $\frac{1}{2}$

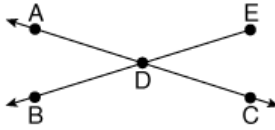
9. If a coin is tossed and a number cube is rolled, how many times would we expect to get heads and a 4 out of 600 trials?
- a. 12                      b. 50                      c. 48                      d. 150
10. A company does research on their product and finds that three-fifths of people who try the product, use it again. If 400 people try the product, how many would we expect to use it again?
- a. 30                      b. 80                      c. 120                      d. 240

# MATH 509: Geometry

Circle the correct letter for each multiple choice question.

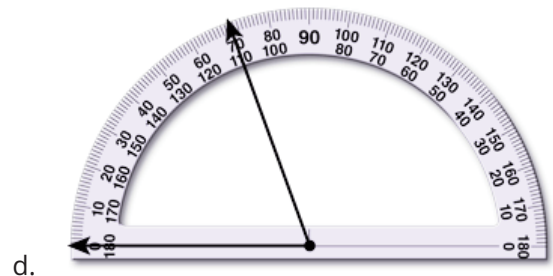
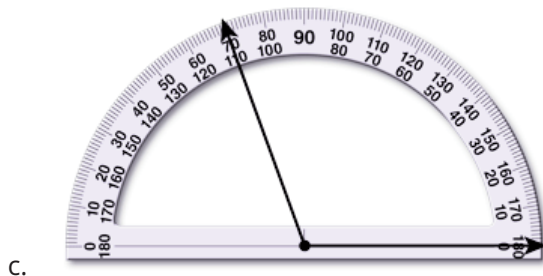
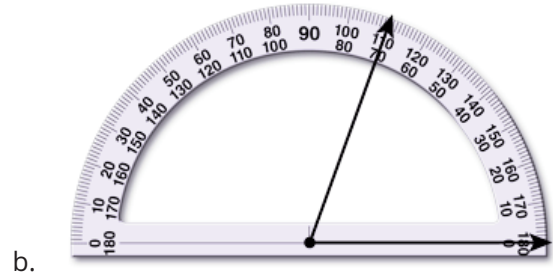
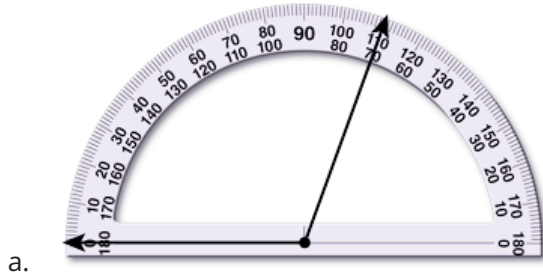
Score: \_\_\_\_\_

1. Select all that apply. Which of the following points can be used to name a line segment, a line, and a ray?

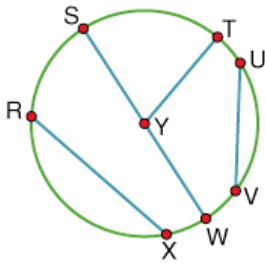


- a. point A and point C    b. point D and point A    c. point B and point D    d. point E and point B

2. Select all that apply. Which angle(s) measure  $70^\circ$ ?



3. Select all that apply. Which line segment is a radius of  $\odot Y$ ?



- a.  $\overline{RX}$     b.  $\overline{SY}$     c.  $\overline{TY}$     d.  $\overline{SW}$

4. Which polygon has the fewest sides?

- a. decagon    b. nonagon    c. octagon    d. dodecagon

5. Select all that apply. What type of triangle is shown below?



- a. equilateral triangle    b. isosceles triangle    c. right triangle    d. acute triangle



6. Select all that apply. What are all of the ways that this quadrilateral could be identified?

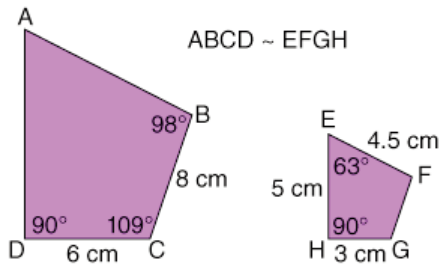


- a. trapezoid                      b. rectangle                      c. rhombus                      d. parallelogram

7. Select all that apply. What statements about prisms are always true if the top base is directly above the bottom base?

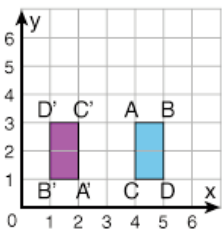
- a. The bases are congruent.                      b. The bases can be any shape.  
 c. The lateral faces are rectangles.                      d. The lateral faces are congruent.

8. In the similar quadrilaterals below, what is the length of  $\overline{AD}$ ?



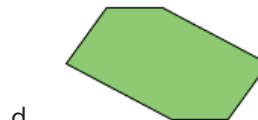
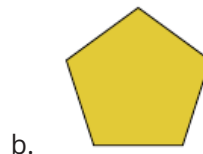
- a. 2.5 cm                      b. 5 cm                      c. 10 cm                      d. 12 cm

9. What transformation is shown below? (Look carefully at the vertices.)



- a. translation                      b. reflection  
 c. rotation                      d. can't be determined

10. Which figure does *not* have both line symmetry and point symmetry?

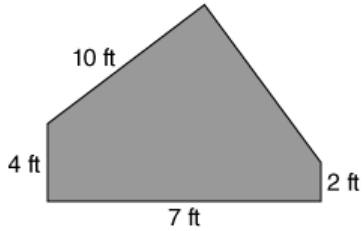


# MATH 510: Perimeter, Area, and Volume

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. The perimeter of the pentagon is 28 feet. What is the length of the unlabeled side?

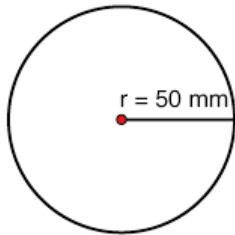


- a. 4 ft                      b. 5 ft                      c. 6 ft                      d. 23 ft

2. A rectangle is 8 feet long and 9 feet wide. What is its perimeter?

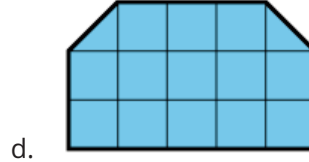
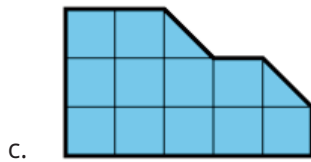
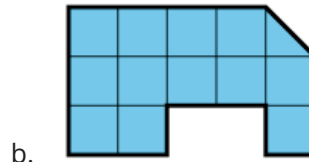
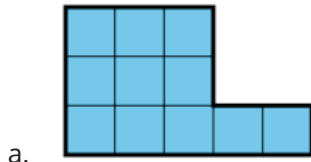
- a. 17 ft                      b. 34 ft                      c. 36 ft                      d. 72 ft

3. What is the circumference of the circle? (use 3.14 for  $\pi$ )



- a. 78.5 mm                      b. 150 mm                      c. 157 mm                      d. 314 mm

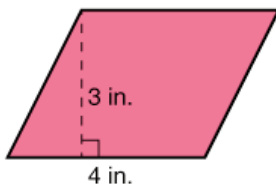
4. Which figure has an area of 12 square units?



5. What is the area of a rectangle with a length of 12.5 feet and a width of 6 feet?

- a. 37 ft<sup>2</sup>                      b. 72 ft<sup>2</sup>                      c. 72.5 ft<sup>2</sup>                      d. 75 ft<sup>2</sup>

6. What is the area of the parallelogram below?



- a. 7 in<sup>2</sup>                      b. 12 in<sup>2</sup>                      c. 14 in<sup>2</sup>                      d. 15 in<sup>2</sup>

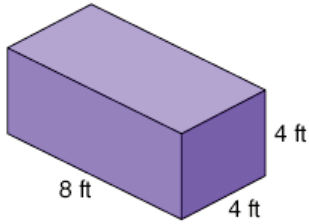
7. A triangle has the following measurements:

$$b = 12 \text{ m}, h = 6 \text{ m}$$

What is its area?

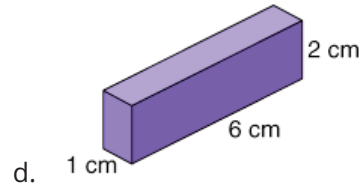
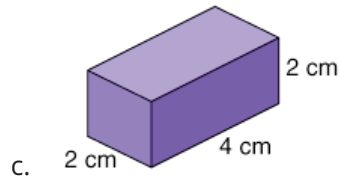
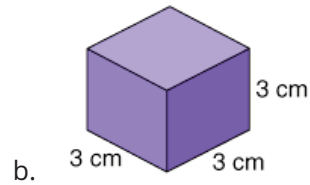
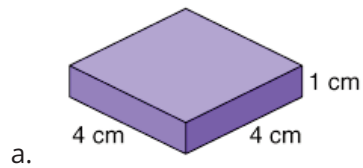
- a.  $72 \text{ m}^2$                       b.  $36 \text{ m}^2$                       c.  $30 \text{ m}^2$

8. What is the surface area of the rectangular prism below?

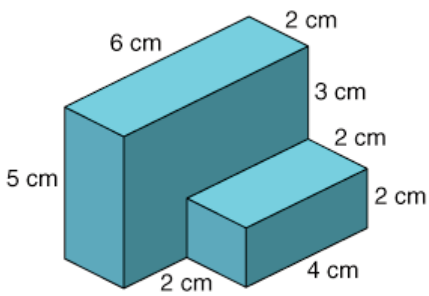


- a.  $64 \text{ ft}^2$                       b.  $128 \text{ ft}^2$                       c.  $160 \text{ ft}^2$                       d.  $256 \text{ ft}^2$

9. Which rectangular prism has the largest volume?



10. What is the volume of the solid figure below?



- a.  $38 \text{ cm}^3$                       b.  $42 \text{ cm}^3$                       c.  $76 \text{ cm}^3$                       d.  $88 \text{ cm}^3$

# MATH 601: Whole Numbers and Algebra

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

- Each month Terrance spends \$128 on his car payment, \$63 for car insurance, and \$45 on gas. What is the exact amount of money Terrance spends each month to own a vehicle?**  
a. \$236                      b. \$226                      c. \$126                      d. \$238
- The \_\_\_\_\_ of 28 and 4 is 112.**  
a. sum                      b. difference                      c. product                      d. quotient
- Which property is illustrated below?**  
 **$5 \times 11 = 11 \times 5$**   
a. associative property of multiplication                      b. identity property of multiplication  
c. distributive property                      d. commutative property of multiplication
- Find the next two terms in the sequence.**  
**176, 156, 136, 116, ...**  
a. 106, 96                      b. 106, 86                      c. 96, 76                      d. 96, 86
- Use the order of operations to find the value of the following expression.**  
 **$10^2 - 2 \times 8 + 11$**   
a. 795                      b. 155                      c. 95                      d. 15
- Rewrite  $6^4$  as a product.**  
a.  $6 \times 6 \times 6 \times 6 \times 6 \times 6$                       b.  $4 \times 4 \times 4 \times 4 \times 4 \times 4$                       c.  $4 \times 6$                       d.  $6 \times 6 \times 6 \times 6$
- Evaluate  $\sqrt{16}$ .**  
a. 4                      b. 8                      c. 2                      d. 32
- Simplify the following expression.**  
 **$(3 + 8x) + 7x$**   
a.  $3 + 15x$                       b.  $18x$                       c.  $18 + x$                       d.  $11x + 7$
- Rewrite the following phrase as a mathematical expression.**  
***three times a number added to fifteen***  
a.  $15n + 3$                       b.  $3(15n)$                       c.  $3n + 15$                       d.  $3 + 15$
- What is the value of  $a + c$ ; if  $a = 18$ ,  $b = 27$ , and  $c = 11$ ?**  
a. 45                      b. 16                      c. 29                      d. 38

# MATH 602: Data Analysis

Circle the correct letter for each multiple choice question.

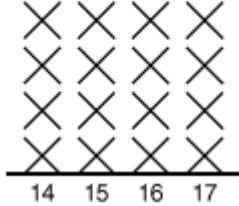
Score: \_\_\_\_\_

- What would be the best way to get an unbiased sample, that represents the population, for the following topic: What is the favorite sport in Mr. Smith's class?**

  - Ask 4 people on your soccer team.
  - Ask, "Do you like silly soccer, or exciting football?"
  - Ask people reading at recess.
  - Randomly survey at least 20 people in the class.
- Students were randomly sampled and asked their age as they left the school dance. Which line plot displays the data for this sample?**

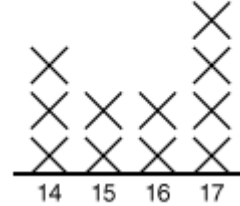
14, 15, 17, 14, 16, 17, 14, 16, 17, 17

Age of Students Attending the School Dance



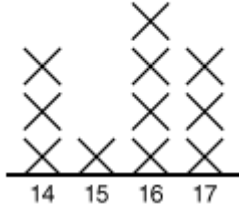
a.

Age of Students Attending the School Dance



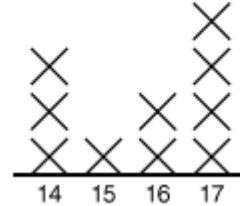
b.

Age of Students Attending the School Dance



c.

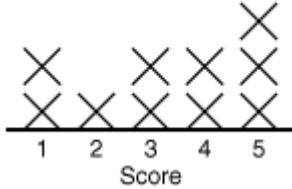
Age of Students Attending the School Dance



d.

- What is the median for the set of data?**

Rubric Test Score



a. 1

b. 3

c. 3.5

d. 4



7. **18 students are surveyed about the clothes they are wearing.**

6 students aren't wearing jeans or a t-shirt.

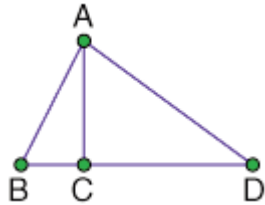
3 students are wearing jeans and a t-shirt.

4 students are wearing jeans but not a t-shirt.

**How many students are wearing a t-shirt but not jeans?**

- a. 2                                      b. 3                                      c. 4                                      d. 5

8. **What is the shortest Hamilton path for the vertex-edge graph?**



- a. A to B to C to D                      b. B to C to A to D                      c. C to A to D to C to B                      d. D to A to B to C

9. **Given the following information, which is the best description of the data?**

Range	20, from 11 to 31
Mode	26
Median	26
Mean	22
Outlier	11

- a. The data is around 26.                                      b. The data is around 22.  
c. The data is around 20.                                      d. The data is around 11.

10. **What is the mean of the data?**

**10, 25, 12, 12, 15, 5, 26, 24, 22, 18, 40**

- a. 17                                      b. 19                                      c. 19.5                                      d. 22

# MATH 603: Decimals

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Which digit is in the ones place?

114.92

- a. 4                                      b. 9                                      c. 1                                      d. 2

2. Complete the inequality statement with the symbol that makes it true.

9.134 \_\_\_ 9.125

- a. >                                      b. <                                      c. =

3. Estimate the following sum by rounding each number to the nearest ten.

129.5 + 34.62 + 19.1

- a. 160                                      b. 170                                      c. 180                                      d. 190

4. Jesse's mom spent \$37.52 at the grocery store. If she gives the clerk \$50, how much should she get back in change?

- a. \$13.48                                      b. \$37.02                                      c. \$87.52                                      d. \$12.48

5. Use the order of operations to simplify this expression.

1.2 + 3.5 × 4.1

- a. 19.27                                      b. 15.55                                      c. 14.47                                      d. 26.35

6. Mr. Lee bought rock to landscape around his house. He paid \$190.72 for eight tons of rock. How much did each ton cost?

- a. \$26.84                                      b. \$31.34                                      c. \$30.24                                      d. \$23.84

7. Which unit of measurement would be the most appropriate unit to measure the distance from the earth to the moon?

- a. kilometer                                      b. meter                                      c. centimeter                                      d. millimeter

8. The name used to represent 1,000 liters is the \_\_\_\_\_.

- a. milliliter                                      b. centiliter                                      c. kiloliter

9. The development of the metric system first began in 1960.

True                                      False

10. Convert 800 milliliters to liters.

- a. 8 L                                      b. 80 L                                      c. 0.8 L                                      d. 0.08 L



# MATH 604: Fractions

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

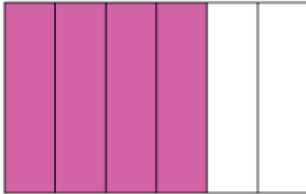
1. What is the prime factorization of 36?

- a.  $2^2 \times 9$                       b.  $2 \times 3^2$                       c.  $2^2 \times 3^2$                       d.  $3 \times 13$

2. Find the GCF of 20 and 30.

- a. 2                                      b. 5                                      c. 10                                      d. 15

3. Which fraction is modeled below?



- a.  $\frac{5}{8}$                                       b.  $\frac{4}{7}$                                       c.  $\frac{4}{8}$                                       d.  $\frac{3}{5}$

4. Which of the following fractions is equivalent to  $\frac{5}{6}$ ?

- a.  $\frac{10}{16}$                                       b.  $\frac{7}{8}$                                       c.  $\frac{2}{3}$                                       d.  $\frac{15}{18}$

5. Mrs. Cook wants to give each of her 24 students the same amount of candy. If each package of candy has 36 pieces in it, how many packages of candy should she buy so that there will be none left over?

- a. 2                                      b. 3                                      c. 4                                      d. 5

6. Complete the inequality statement.

$$\frac{1}{4} \underline{\hspace{1cm}} \frac{1}{5}$$

- a. <                                      b. >                                      c. =

7. Rewrite  $\frac{9}{4}$  as a mixed number.

- a.  $2\frac{3}{4}$                                       b.  $1\frac{5}{4}$                                       c.  $2\frac{1}{4}$                                       d.  $1\frac{2}{4}$

8. Rewrite 7.13 as a mixed number in lowest terms.

- a.  $7\frac{10}{13}$                                       b.  $7\frac{13}{100}$                                       c.  $7\frac{7}{50}$                                       d.  $7\frac{13}{10}$

9. Which of the following is  $\frac{28}{31}$  closest to?

- a. 0                                      b.  $\frac{1}{2}$                                       c. 1

10. Ralph leaves for school at 7:42 every morning. If he gets to school at 8:03, how long does it take him to drive to school?

- a. 39 minutes                                      b. 25 minutes                                      c. 21 minutes                                      d. 19 minutes

# MATH 605: Fraction Operations

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. **Add. Express your answer in lowest terms.**

$$\frac{11}{12} + \frac{11}{12}$$

- a.  $\frac{22}{12}$                       b.  $\frac{11}{12}$                       c.  $1\frac{5}{6}$                       d.  $1\frac{10}{12}$

2. **Subtract. Express your answer in lowest terms.**

$$\frac{7}{15} - \frac{4}{9}$$

- a.  $\frac{3}{6}$                       b.  $\frac{1}{2}$                       c.  $\frac{3}{135}$                       d.  $\frac{1}{45}$

3. **What is  $14\frac{5}{8} + 18\frac{2}{9}$ ? Express your answer in lowest terms.**

- a.  $32\frac{1}{18}$                       b.  $32\frac{7}{18}$                       c.  $32\frac{7}{15}$                       d.  $33\frac{1}{18}$

4. **What is  $2\frac{6}{7}$  subtracted from  $5\frac{4}{7}$ ?**

- a.  $2\frac{5}{7}$                       b.  $3\frac{5}{7}$                       c.  $2\frac{2}{7}$                       d.  $3\frac{2}{7}$

5. **Multiply. Express your answer in simplest form.**

$$9\frac{1}{8} \times 1\frac{1}{11}$$

- a.  $9\frac{1}{66}$                       b.  $10\frac{1}{17}$                       c. 10                      d.  $10\frac{5}{8}$

6. **Divide. Express your answer in simplest form.**

$$14 \div \frac{2}{7}$$

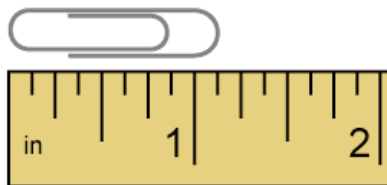
- a. 4                      b. 49                      c. 28                      d. 98

7. **Divide. Express your answer in simplest form.**

$$8\frac{5}{12} \div 1\frac{3}{4}$$

- a.  $8\frac{2}{3}$                       b.  $4\frac{6}{7}$                       c.  $14\frac{35}{48}$                       d.  $4\frac{17}{21}$

8. **Measure the length of the paper clip to the nearest eighth of an inch.**



- a.  $\frac{7}{8}$  in.                      b.  $1\frac{1}{8}$  in.                      c.  $1\frac{1}{4}$  in.                      d.  $1\frac{3}{8}$  in.



# MATH 606: Ratio, Proportion, and Percent

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Write the ratio of dogs to cats in simplest form.

12 dogs, 16 cats

- a. 4 to 3                      b. 3 to 4                      c. 6 to 8                      d. 8 to 6

2. The diameter of a circle is 8 mm. What is the circumference of the circle?

- a.  $25\frac{1}{7}$  mm                      b.  $50\frac{2}{7}$  mm                      c.  $\frac{11}{28}$  mm                      d.  $19\frac{1}{4}$  mm

3. Carly paid \$17.50 for 7 gallons of gas and Jade paid \$45 for 15 gallons of gas. Which of the following statements is true?

- a. Carly paid more per gallon than Jade.  
b. Jade paid more per gallon than Carly.  
c. Carly and Jade paid the same amount per gallon.

4. Which value for  $y$  completes the proportion?

$$\frac{18}{27} = \frac{2}{y}$$

- a. 1                      b. 2                      c. 3                      d. 9

5. Jamal bought 4 pounds of blueberries for \$12. Which of the following proportions could be used to help him figure out how much 2 pounds would cost?

- a.  $\frac{4 \text{ lb}}{\$12} = \frac{d}{\$2}$                       b.  $\frac{4 \text{ lb}}{\$12} = \frac{\$2}{d}$                       c.  $\frac{4 \text{ lb}}{\$12} = \frac{d}{2 \text{ lb}}$                       d.  $\frac{4 \text{ lb}}{\$12} = \frac{2 \text{ lb}}{d}$

6. The scale used on a map is 5 millimeters represents 32 kilometers. How many millimeters represent 160 kilometers?

- a. 160 mm                      b. 25 mm                      c. 800 mm                      d. 1 mm

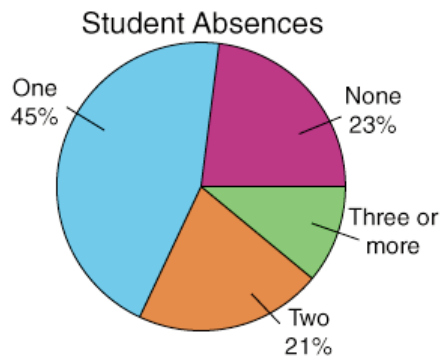
7. Express 34% as a fraction in simplest form.

- a.  $\frac{3}{4}$                       b.  $\frac{34}{100}$                       c.  $\frac{8}{25}$                       d.  $\frac{17}{50}$

8. Express 1.4 as a percent.

- a. 0.014%                      b. 1.4%                      c. 14%                      d. 140%

9. The following pie chart represents how many absences the students of Washington Middle School had during the first quarter. What percentage of the students had three or more absences during the first quarter?



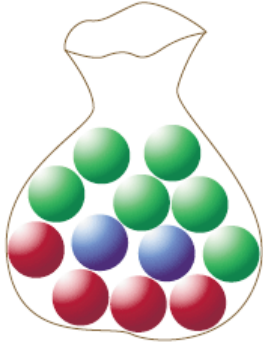
- a. 9%                      b. 89%                      c. 32%                      d. 11%
10. Find 18% of 14. Use a decimal.
- a. 25.2                      b. 2.52                      c. 0.32                      d. 14.18

# MATH 607: Probability and Geometry

Circle the correct letter for each multiple choice question.

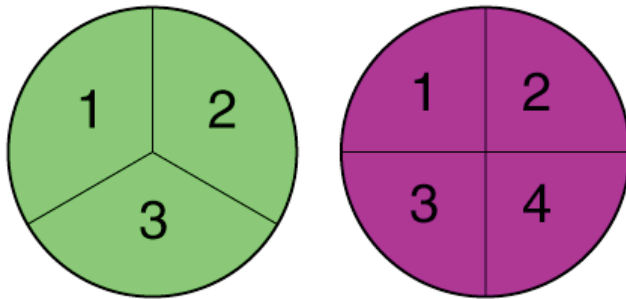
Score: \_\_\_\_\_

1. A bag contains 6 green marbles, 2 blue marbles and 4 red marbles. What is the probability of not drawing a blue marble from the bag?



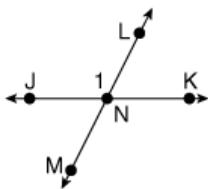
- a.  $\frac{5}{8}$                       b.  $\frac{1}{5}$                       c.  $\frac{4}{5}$                       d.  $\frac{1}{8}$

2. If the first spinner is spun and then the second spinner is spun, creating a 2-digit number, what is the probability that the resulting number will be greater than 14?



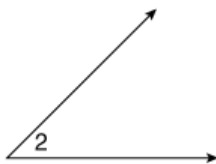
- a.  $\frac{2}{3}$                       b.  $\frac{1}{4}$                       c.  $\frac{1}{3}$                       d.  $\frac{1}{2}$

3. Select all that apply. What two rays form angle 1?



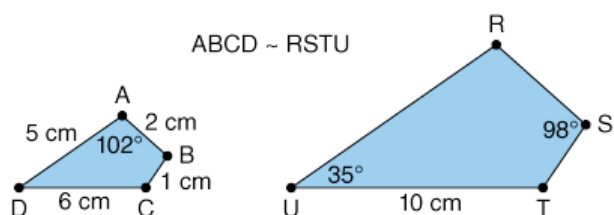
- a.  $\vec{JN}$                       b.  $\vec{NK}$                       c.  $\vec{NL}$                       d.  $\vec{NJ}$

4. Estimate the measure of angle 2.

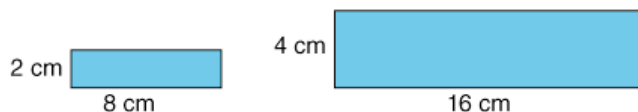


- a.  $60^\circ$                       b.  $45^\circ$                       c.  $30^\circ$                       d.  $135^\circ$

5. **Select all that apply. If two lines intersect and one angle measures  $25^\circ$ , what are the measures of the other angles?**
- a.  $25^\circ$                       b.  $75^\circ$                       c.  $155^\circ$                       d.  $125^\circ$
6. **Select all that apply. What could the measure of the acute angles in a right triangle be?**
- a.  $40^\circ$  and  $50^\circ$                       b.  $90^\circ$  and  $90^\circ$                       c.  $25^\circ$  and  $65^\circ$                       d.  $20^\circ$  and  $100^\circ$
7. **Select all that apply. What type of triangle can have 1 right angle?**
- a. scalene                      b. equilateral                      c. acute                      d. isosceles
8. **Select all that apply. A rectangle is a \_\_\_\_.**
- a. quadrilateral                      b. square                      c. parallelogram                      d. rhombus
9. **If the two quadrilaterals are similar, what is the measure of  $\angle T$ ?**



- a.  $125^\circ$                       b.  $120^\circ$                       c.  $115^\circ$                       d.  $110^\circ$
10. **The two rectangles are similar. What is the ratio of the sides of the smaller rectangle to the corresponding sides of the larger rectangle?**



- a.  $\frac{1}{2}$                       b.  $\frac{1}{4}$                       c.  $\frac{1}{8}$                       d.  $\frac{1}{16}$

# MATH 608: Geometry and Measurement

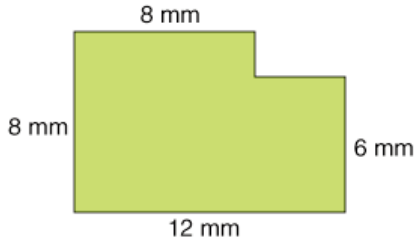
Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. What is the perimeter of a regular octagon with side length 8 cm?

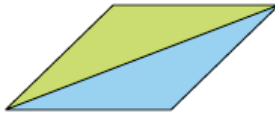
- a. 16 cm                      b. 40 cm                      c. 48 cm                      d. 64 cm

2. What is the perimeter of the figure below?



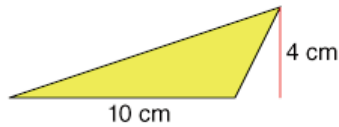
- a. 34 mm                      b. 40 mm                      c. 88 mm                      d. 96 mm

3. If the area of the yellow (lighter) triangle is  $12 \text{ cm}^2$ , what is the area of the parallelogram?



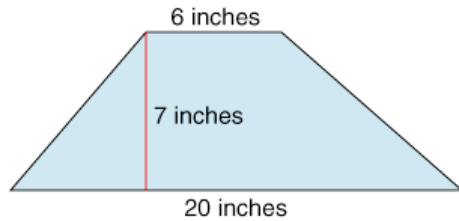
- a.  $6 \text{ cm}^2$                       b.  $12 \text{ cm}^2$                       c.  $18 \text{ cm}^2$                       d.  $24 \text{ cm}^2$

4. What is the area of the triangle?



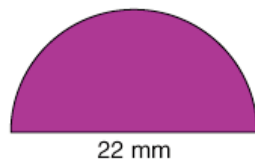
- a.  $20 \text{ cm}^2$                       b.  $40 \text{ cm}^2$                       c.  $14 \text{ cm}^2$                       d.  $24 \text{ cm}^2$

5. What is the area of the trapezoid?



- a.  $120 \text{ in.}^2$                       b.  $140 \text{ in.}^2$                       c.  $91 \text{ in.}^2$                       d.  $182 \text{ in.}^2$

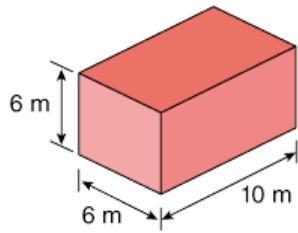
6. What is the area of the semicircle?



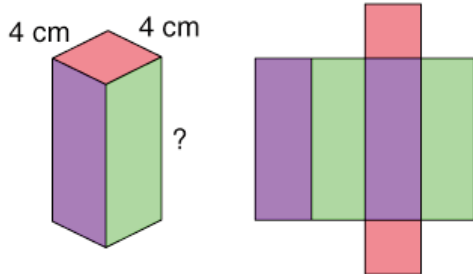
- a.  $69.08 \text{ mm}^2$                       b.  $138.16 \text{ mm}^2$                       c.  $150.72 \text{ mm}^2$                       d.  $189.97 \text{ mm}^2$



7. Which solid figure has 10 edges?  
 a. rectangular pyramid    b. pentagonal pyramid    c. pentagonal prism    d. triangular prism
8. What is the surface area of the rectangular prism?



- a.  $600 \text{ m}^2$                       b.  $360 \text{ m}^2$                       c.  $312 \text{ m}^2$                       d.  $240 \text{ m}^2$
9. A rectangular prism is 3 feet long, 8 feet wide, and has a height of 6 feet. What is its volume?  
 a.  $72 \text{ ft}^3$                       b.  $90 \text{ ft}^3$                       c.  $144 \text{ ft}^3$                       d.  $180 \text{ ft}^3$
10. If the surface area of the rectangular prism is  $224 \text{ cm}^2$ , what is the height?



- a. 6 cm                      b. 8 cm                      c. 10 cm                      d. 12 cm

# MATH 609: Integers and Transformations

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Which group of numbers is listed from least to greatest?

- a.  $-6, |-7|, |-8|, 0, 2$                       b.  $9, 7, 5, |-4|, |-3|$   
c.  $|-8|, |-6|, -1, 5, 8$                       d.  $|-4|, 5, |-6|, 7, |-8|$

2. What is the sum of  $-45$  and  $17$ ?

- a.  $-28$                       b.  $-62$                       c.  $28$                       d.  $-32$

3. Which of the following does *not* have a difference of  $4$ ?

- a.  $9 - 5$                       b.  $-5 - (-9)$                       c.  $-4 - (-8)$                       d.  $-8 - (-4)$

4. If  $6 - 7 = -1$ , which of the following is true?

- a.  $-1 + 7 = 6$                       b.  $-1 + (-7) = 6$                       c.  $7 - 6 = -1$                       d.  $7 - (-1) = 6$

5. Which number sentence has a product of  $42$ ?

- a.  $7 \times (-6)$                       b.  $-6 \times 7$                       c.  $-7 \times (-6)$                       d.  $-7 \times 6$

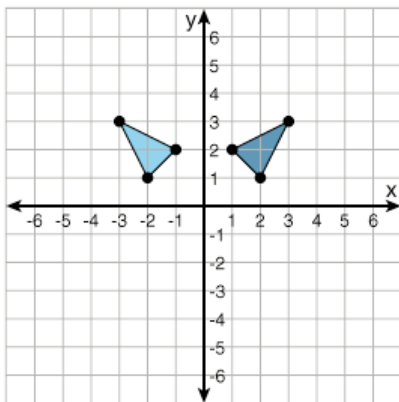
6. Two numbers are divided and the quotient is positive. If one number is negative, what is true of the other number?

- a. it is negative                      b. it is positive  
c. it is 0                      d. it could be positive or negative

7. Select all that apply. A figure is reflected in the  $x$ -axis. How will the coordinates change?

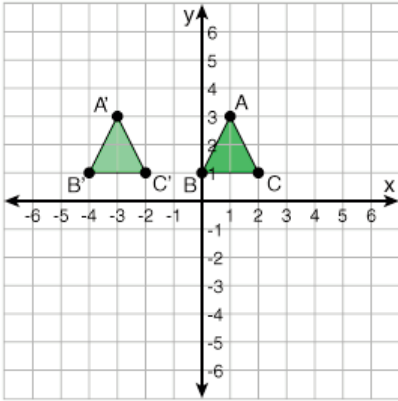
- a. The  $x$ -coordinates will change sign.                      b. The  $x$ -coordinates will stay the same.  
c. The  $y$ -coordinates will change sign.                      d. The  $y$ -coordinates will stay the same.

8. Select all that apply. What possible transforms are shown below?



- a. A rotation of  $90^\circ$                       b. A translation 4 units to the left  
c. A reflection in the  $y$ -axis                      d. A reflection in the  $x$ -axis

9. What translation is shown below?



- a. 2 units left                      b. 4 units right                      c. 2 units right                      d. 4 units left

10. Which letter does *not* have line symmetry?

- a. **Z**                                      b. **M**                                      c. **D**                                      d. **E**

# MATH 610: Equations and Functions

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Translate the following statement into a mathematical equation.

A number divided by 5, plus four, is six.

a.  $\frac{d}{5} + 4 = 6$

b.  $\frac{d}{5 + 4} = 6$

c.  $\frac{d + 4}{5} = 6$

d.  $\frac{d}{4} + 5 = 6$

2. What is the solution to the equation  $6x - 5 = 25$ ?

a.  $x = 2$

b.  $x = 3$

c.  $x = 4$

d.  $x = 5$

3. What should be done to solve the following equation?

$b - 4 = 10$

a. Add 4 to both sides.

b. Subtract 4 from both sides.

c. Add 4.

d. Subtract 10 from both sides.

4. What is the solution to the equation  $x - 4.3 = 2.1$ ?

a.  $x = 1.8$

b.  $x = 2.2$

c.  $x = 6.4$

d.  $x = 9.03$

5. What is the solution to the equation  $5x = 51$ ?

a.  $x = 1$

b.  $x = 10$

c.  $x = 10.1$

d.  $x = 10.2$

6. For which equation would  $x = 24$  not be a solution?

a.  $\frac{x}{4} = 6$

b.  $\frac{x}{6} = 5$

c.  $\frac{x}{3} = 8$

d.  $\frac{x}{12} = 2$

7. Select all that apply. What are the characteristics of the graph of the inequality  $x < 4.5$ ?

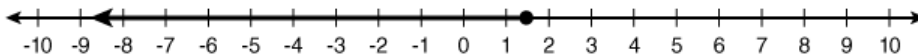
a. It will use an open circle.

b. The ray will move to the right.

c. It will use a closed circle.

d. The ray will move to the left.

8. What inequality is graphed below?



a.  $x < 1.5$

b.  $x \leq 1.5$

c.  $x > -4$

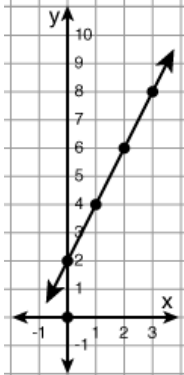
d.  $x \geq -4$

9. Which row of the input/output table is incorrect?

$y = 3x - 4$		
	$x$	$y$
A	2	2
B	5	8
C	6	14
D	8	20

- a. Row A                      b. Row B                      c. Row C                      d. Row D

10. What function is graphed below?



- a.  $y = 2x$                       b.  $y = x + 2$                       c.  $y = 4x + 2$                       d.  $y = 2x + 2$

# Math 701: Integers

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

- Which of the following can be used to describe the location that is 9 units to the right of zero on the number line?**
  - negative nine
  - positive nine
  - nine less than zero
- Which of the following lists is in the correct order from smallest to largest?**
  - 13, -19, -21, -24
  - 11, -12, 15, -19
  - 7, -3, 6, 2
  - 19, -14, 5, 11
- Add  $-13 + 5$ .**
  - 8
  - 8
  - 18
  - 18
- Which of the following is another way to express the problem  $1 - (-7)$ ?**
  - $-1 + (-7)$
  - $1 + (-7)$
  - $1 + 7$
  - $-1 + 7$
- Which of the following expressions has a product of 36?**
  - $(-3)(12)$
  - $4 \cdot 8$
  - $2(-18)$
  - $(-6)(-6)$
- Select all that apply. To which sets does  $-\frac{5}{8}$  belong.**
  - real numbers
  - rational numbers
  - irrational numbers
  - integers
  - whole numbers
  - natural numbers
- If  $a$  and  $b$  represent numbers, which of the following statements represents the commutative property of multiplication?**
  - $a + b = b + a$
  - $a \cdot b = b \cdot a$
  - $a + 0 = a$
  - $a \cdot 1 = a$
- Simplify  $5 - 2 \cdot 3 + 4$ .**
  - 13
  - 5
  - 3
  - 21
- What is the value of  $-6^2$ ?**
  - 36
  - 36
  - 12
  - 12
- Simplify  $\frac{72}{-8}$ .**
  - 12
  - 9
  - 9
  - 12

# Math 702: Fractions

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Which number is equivalent to the fraction  $\frac{15}{7}$  ?  
a.  $\frac{7}{15}$                       b.  $2\frac{1}{15}$                       c. 2                      d.  $2\frac{1}{7}$
2. Which list has three equivalent fractions for  $\frac{2}{5}$  ?  
a.  $\frac{4}{10}$ ,  $\frac{6}{20}$ ,  $\frac{10}{25}$                       b.  $\frac{4}{10}$ ,  $\frac{6}{15}$ ,  $\frac{8}{20}$                       c.  $\frac{6}{15}$ ,  $\frac{8}{16}$ ,  $\frac{10}{25}$                       d.  $\frac{6}{15}$ ,  $\frac{8}{20}$ ,  $\frac{12}{25}$
3. What is the prime factorization of 96?  
a.  $8 \cdot 12$                       b.  $2 \cdot 2 \cdot 2 \cdot 2 \cdot 3$                       c.  $2^5 \cdot 3$                       d.  $2^5 \cdot 3^2$
4. The GCF of 28 and 42 is \_\_\_\_\_.  
a. 2                      b. 4                      c. 7                      d. 14
5. Find the LCM of 9 and 15.  
a. 1                      b. 3                      c. 45                      d. 135
6. Find the sum of  $\frac{7}{13}$  and  $\frac{11}{26}$ .  
a.  $\frac{3}{26}$                       b.  $\frac{25}{26}$                       c.  $\frac{25}{39}$                       d.  $\frac{18}{39}$
7. Evaluate  $\frac{20}{6} - \frac{2}{3}$ .  
a.  $2\frac{1}{6}$                       b.  $2\frac{2}{3}$                       c.  $3\frac{1}{3}$                       d.  $3\frac{2}{3}$
8. Which list of fractions is in order from smallest to largest?  
a.  $\frac{3}{4}$ ,  $\frac{3}{5}$ ,  $\frac{3}{10}$ ,  $\frac{3}{12}$                       b.  $\frac{3}{5}$ ,  $\frac{3}{4}$ ,  $\frac{3}{12}$ ,  $\frac{3}{10}$                       c.  $\frac{3}{10}$ ,  $\frac{3}{5}$ ,  $\frac{3}{4}$ ,  $\frac{3}{12}$                       d.  $\frac{3}{12}$ ,  $\frac{3}{10}$ ,  $\frac{3}{5}$ ,  $\frac{3}{4}$
9. Multiply the following numbers. Reduce the answer to lowest terms.  
 $3\frac{1}{4} \cdot 1\frac{1}{3}$   
a.  $3\frac{1}{3}$                       b.  $3\frac{1}{12}$                       c.  $4\frac{1}{3}$                       d.  $4\frac{1}{12}$
10. Divide. Reduce the answer to lowest terms.  
 $\frac{1}{5} \div \frac{3}{4}$   
a.  $\frac{3}{16}$                       b.  $\frac{3}{20}$                       c.  $\frac{4}{15}$                       d.  $1\frac{4}{15}$

# Math 703: Decimals

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

- Which symbol makes the number sentence  $4.567$  \_\_\_  $4.576$  correct?**  
a. <                                      b. >                                      c. =
- Round 259.98991 to the nearest hundredths.**  
a. 259.99                                      b. 259.9899                                      c. 259.98991                                      d. 260.00001
- Timmy put \$0.82 in his piggy bank on Monday, \$0.70 on Tuesday and \$0.25 on Wednesday. What is the total amount he put in his piggy bank?**  
a. \$0.98                                      b. \$1.14                                      c. \$1.57                                      d. \$1.77
- The floor at a roller-skating rink is 72.25 feet long and 51.5 feet wide. How much longer is the rink than it is wide?**  
a. 671.0 ft                                      b. 67.10 ft                                      c. 21.25 ft                                      d. 20.75 ft
- Evaluate  $1.4 \cdot 0.32$ .**  
a. 0.448                                      b. 0.0448                                      c. 4.480                                      d. 44.80
- Jeremiah has a batting average of 0.312 this baseball season. Express his average as a fraction in lowest terms.**  
a.  $\frac{312}{1000}$                                       b.  $\frac{39}{125}$                                       c.  $\frac{13}{50}$                                       d.  $\frac{13}{42}$
- Which of the following is  $25\frac{9}{16}$  equal to?**  
a. 25.916                                      b. 25.25                                      c. 25.169                                      d. 25.5625
- The length of a rectangle can be found using the following formula:  $\text{length} = \frac{\text{area}}{\text{width}}$ . What is the length of a rectangle that has a width of 2.5 cm and an area of 20.5 cm<sup>2</sup>?  
\_\_\_\_\_ cm**
- In Trevor's biology class, the students tested for bacteria on a kitchen sponge. They found that there were approximately 17,000,000 bacterial colonies on a single sponge. Express their findings in scientific notation.**  
a.  $17 \cdot 10^6$                                       b.  $1.7 \cdot 10^6$                                       c.  $1.7 \cdot 10^7$                                       d.  $0.17 \cdot 10^8$
- 87.5 ml = \_\_\_ l**  
a. 87,500                                      b. 0.0875                                      c. 875                                      d. 0.875



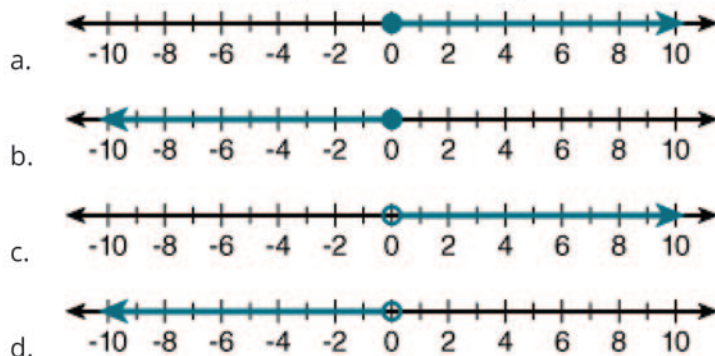
# Math 704: Patterns and Equations

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

- A number increased by negative eight is equal to fourteen. Which equation could be used to find the number?**  
a.  $n + 8 = 14$                       b.  $n - (-8) = 14$                       c.  $n + (-8) = 14$                       d.  $8 - n = 14$
- Evaluate the expression  $w^2 - v + 1$  for  $w = -2$  and  $v = -8$ .**  
a. 5                      b. 13                      c. -11                      d. -3
- Determine whether the following sequence is arithmetic, geometric, or neither.**  
**1, 4, 9, 16, ...**  
a. arithmetic                      b. geometric                      c. neither
- What are the inputs of this function?  $\{(-3, 2), (-4, 2), (8, 3), (7, 1)\}$**   
a.  $\{-4, -3, 7, 8\}$                       b.  $\{1, 2, 3\}$                       c.  $\{-4, -3, 1, 2, 3, 7, 8\}$                       d.  $\{1, 2, 3, 7, 8\}$
- Which of the following functions has the function rule  $y = x + 4$ ?**  
a.  $\{(0, 2), (-2, -6), (1, 5)\}$                       b.  $\{(2, 6), (-3, -7), (0, 4)\}$   
c.  $\{(-3, 1), (0, 4), (2, 6)\}$                       d.  $\{(-2, 2), (-1, -5), (3, 7)\}$
- What is the solution to  $w - 9\frac{1}{2} = 15$ ?**  
a.  $5\frac{1}{2}$                       b.  $6\frac{1}{2}$                       c.  $24\frac{1}{2}$                       d.  $23\frac{1}{2}$
- What is the solution to  $\frac{n}{4} = -12.4$ ?**  
a.  $n = 3.1$                       b.  $n = -3.1$                       c.  $n = 49.6$                       d.  $n = -49.6$
- What should be done to both sides of the equation in order to solve  $p - 17 = -23$ ?**  
a. The number 17 should be subtracted.                      b. The number 17 should be added.  
c. The number -23 should be subtracted.                      d. The number -23 should be added.
- The cost to rent a car is \$25 plus an additional \$0.15 for each mile the car is driven. How many miles was a car driven if it had a bill of \$71.80?**  
a. 479                      b. 312                      c. 454                      d. 645

10. Which number line represents the graph of  $x \leq 0$ ?



# Math 705: Ratios and Proportions

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Which of the following is not equivalent to the others?

- a. 0.4                      b. 40%                      c. 4%                      d.  $\frac{2}{5}$

2. What is the rate \$2.50 for 10 items, as a unit rate?

- a. \$1.25 for 5                      b. \$0.25 each                      c. \$25 each                      d. \$0.50 each

3. Which of the following is a proportion?

- a.  $\frac{3}{4} = \frac{12}{15}$                       b.  $\frac{8}{10} = \frac{6}{8}$                       c.  $\frac{6}{9} = \frac{8}{12}$                       d.  $\frac{4}{6} = \frac{9}{12}$

4. Convert 53 grams to kilograms.

- a. 530 kg                      b. 53,000 kg                      c. 0.053 kg                      d. 5.3 kg

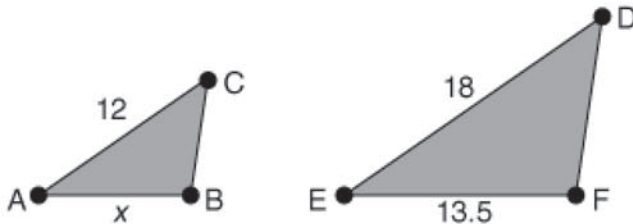
5. Find 20% of 150.

- a. 30                      b. 20                      c. 120                      d. 130

6. Twenty-one is 25% of what number?

- a. 5.25                      b. 63                      c. 10.5                      d. 84

7. Find the length of  $AB$ .



- a. 6                      b. 9                      c. 9.5                      d. 10

8. The scale on a drawing is 1 cm = 6 m. How many meters does a length of 5.5 centimeters on the drawing represent?

- a. 11.5 m                      b. 3.3 m                      c. 0.92 m                      d. 33 m

9. A \$40 backpack is on sale for \$28. What is the percent of change?

- a. 30%                      b. 12%                      c. -30%                      d. -70%

10. If there are 12 girls and 15 boys in a class, which ratio is not true?

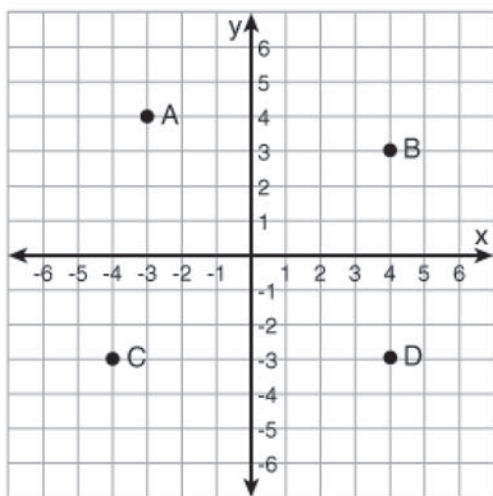
- a. 12 girls to 27 students                      b. 5 boys to 9 students  
c. 15 boys to 12 girls                      d. 3 girls to 5 boys

# Math 706: Probability and Graphing

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

- Chris has 2 pairs of black socks, 4 pairs of red socks, and 18 pairs of white socks in a dresser drawer. What is the probability that he will choose a pair of white socks, without looking in the drawer first?  
a. 75%                      b. 0.33                      c.  $\frac{1}{4}$                       d. 50%
- If you toss two coins 120 times, predict the number of times the coins will both be tails.  
a. 25                      b. 30                      c. 60                      d. 90
- A spinner is divided into 10 equal sections, numbered 1 to 10. How many outcomes are there if you spin the spinner and then roll a regular 6-sided number cube?  
a. 16                      b. 32                      c. 60                      d. 600
- To find the number of outcomes for flipping 4 coins, which expression would you use?  
a.  $2 + 2 + 2 + 2$                       b.  $2 \cdot 2 \cdot 2 \cdot 2$                       c.  $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$                       d.  $\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}$
- Which point is located at (-3, 4)?



- a. point A                      b. point B                      c. point C                      d. point D
- Which table represents a linear function?  
a. 

x	y
1	5
2	10
3	15
4	10

  
b. 

x	y
2	4
3	6
5	8
12	20

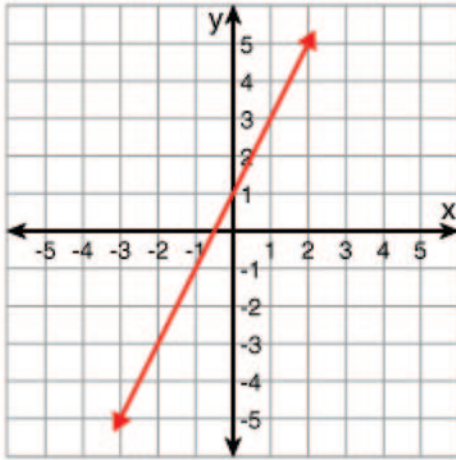
  
c. 

x	y
0	0
3	9
5	15
7	21

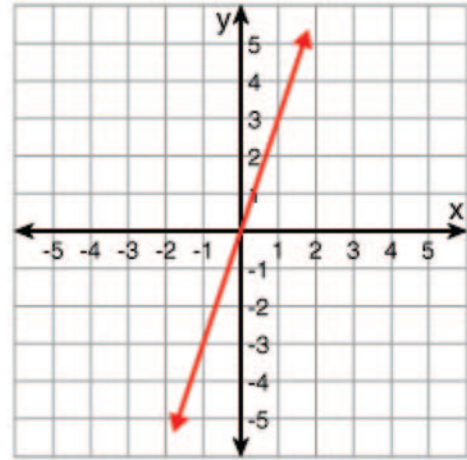
  
d. 

x	y
1	1
2	4
4	16
5	25
  - The following two points are on a line: (2, 3), (-2, 5). What is the slope of the line?  
a. 2                      b.  $-\frac{1}{2}$                       c. -2                      d.  $\frac{1}{2}$

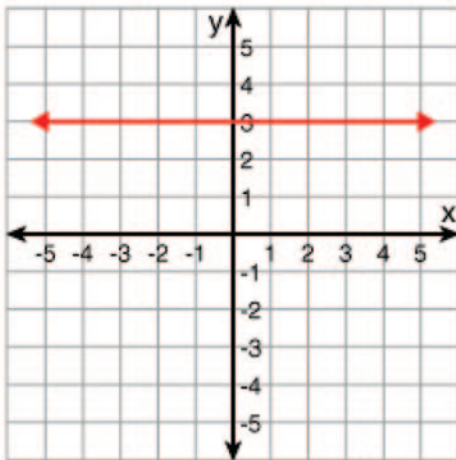
8. Which graph shows direct variation?



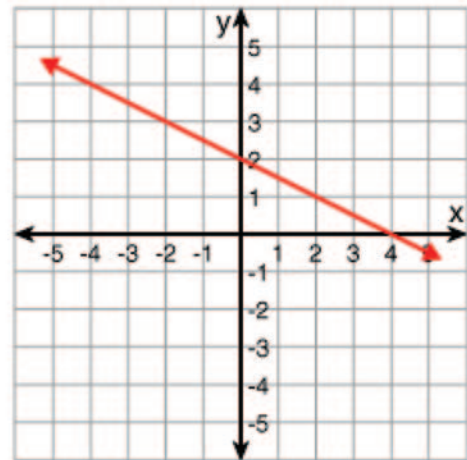
a.



b.

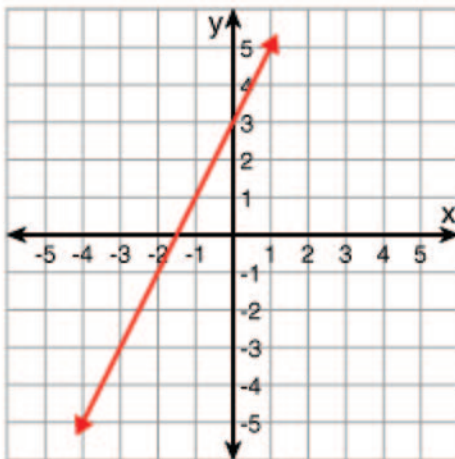


c.



d.

9. What is the slope of the line?



a.  $\frac{1}{2}$

b. 2

c. -2

d.  $-\frac{1}{2}$

10. The variables  $x$  and  $y$  vary directly. If one pair of the values is  $x = 3$  and  $y = 12$ , write an equation that shows the relationship between  $x$  and  $y$ .

a.  $x = 4y$

b.  $\frac{x}{y} = 4$

c.  $y = 4x$

d.  $y = \frac{x}{4}$



# Math 707: Data Analysis

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Select all the statements that describe the following set of numbers.

3, 9, 8, 6, 3, 4, 9, 2, 5, 10, 8, 1

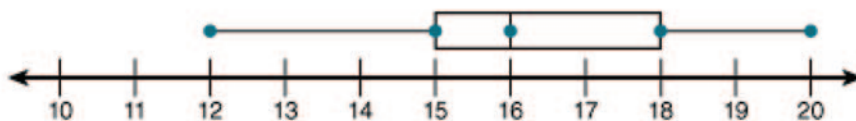
- a. This set has three modes.
- b. The median is the mean of 5 and 6.
- c. The mean is smaller than the median.
- d. The mode is 3.
- e. The mean is approximately 5.67.

2. What is the range of the following set?

28, 45, 12, 34, 36, 45, 19, 20

- a. 8
- b. 33
- c. 45
- d. 57

3. What is the interquartile range of the set of data this box-and-whisker plot represents?



- a. 3
- b. 6
- c. 8
- d. 10

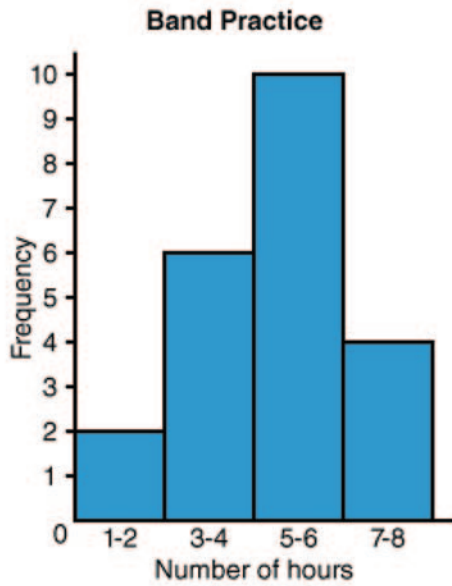
4. The following stem-and-leaf plot represents the scores earned by Mr. Roberts's class on their most recent science test. How many of the students scored less than a 75?

Stems	Leaves
6	1 7 9
7	3 7 8 8
8	0 1 1 1 6
9	1 2 2 5 9
10	0 0

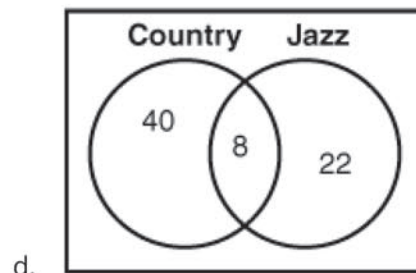
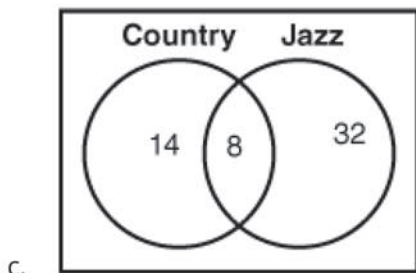
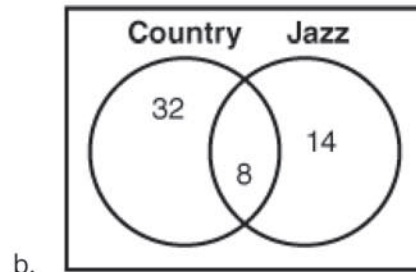
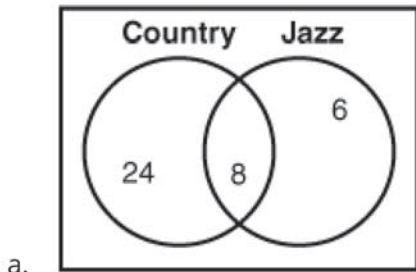
$$6|5 = 65$$

- a. 4
- b. 5
- c. 6
- d. 7

5. The following histogram represents the number of hours students practice each week for band. How many students practiced at least five hours?



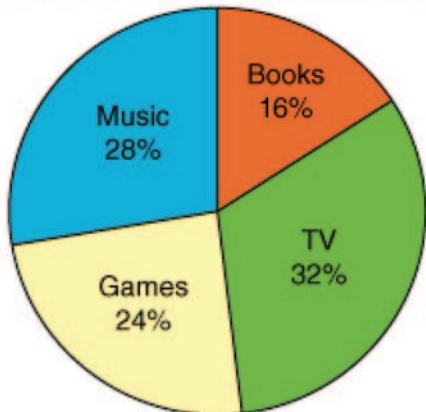
- a. 10                                      b. 4                                      c. 8                                      d. 14
6. A survey showed that a total of 32 people enjoy country music, 14 enjoy jazz, and 8 enjoy both. Which of the following Venn diagrams best represents the results of this survey?



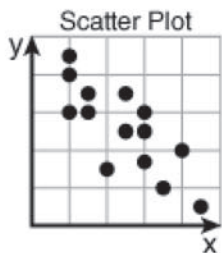


9. A group of 125 teenagers were asked which of the following activities they would most likely choose to spend their free time doing: reading a book, watching television, playing video games, or listening to music. The results are displayed in the following circle graph. What is the central angle measure of the section representing those teenagers who prefer to play video games?

Favorite Free-Time Activities



- a.  $86.4^\circ$                       b.  $100.8^\circ$                       c.  $15^\circ$                       d.  $22.5^\circ$
10. The following scatter plot demonstrates which type of correlation?



- a. positive correlation    b. negative correlation    c. no correlation

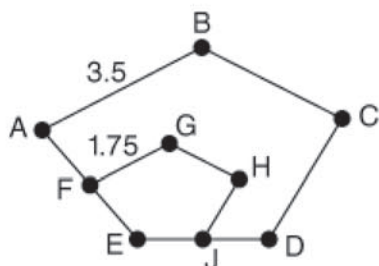


# Math 708: Geometry

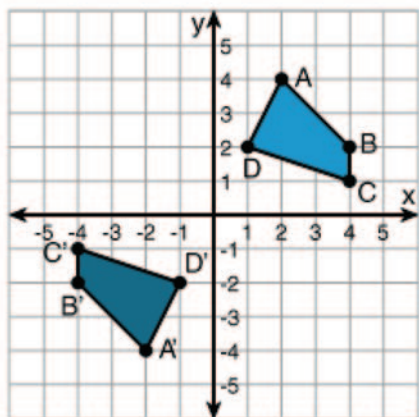
Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

- Which pair of angles contains complementary angles?**
  - $30^\circ, 30^\circ$
  - $120^\circ, 60^\circ$
  - $45^\circ, 45^\circ$
  - $90^\circ, 30^\circ$
- What is the sum of the interior angles of an octagon?**
  - $360^\circ$
  - $720^\circ$
  - $1080^\circ$
  - $1440^\circ$
- Is the statement "A scalene triangle is an acute triangle" always, sometimes, or never true:**
  - always
  - sometimes
  - never
- Which of the following is *not* an attribute of parallelograms?**
  - Opposite sides are parallel.
  - Diagonals bisect each other.
  - Consecutive angles are supplementary.
  - Diagonals are congruent.
- $ABCDE$  and  $FGHJE$  are similar pentagons. If the perimeter of  $FGHJE$  is 7.3, what is the perimeter of  $ABCDE$ ?**

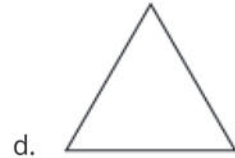
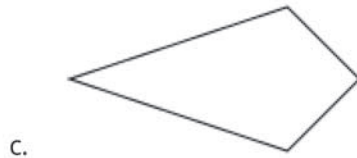
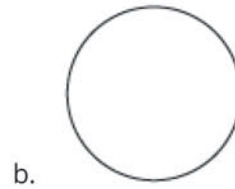


- 14
  - 14.6
  - 15
  - 14.5
- $A'B'C'D'$  is the image of  $ABCD$ . What transformation(s) would result in this image?**



- $ABCD$  is reflected across the  $x$ -axis and then the  $y$ -axis.
- $ABCD$  is reflected over the  $x$ -axis and then rotated  $180^\circ$ .
- $ABCD$  is reflected across the  $y$ -axis and then rotated  $180^\circ$ .
- $ABCD$  is rotated  $90^\circ$  around the origin and then reflected over the  $x$ -axis.

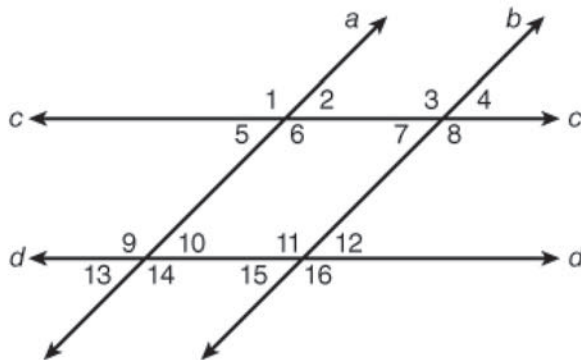
7. Which figure has one line of symmetry?



8. Which statement is true of two similar figures?

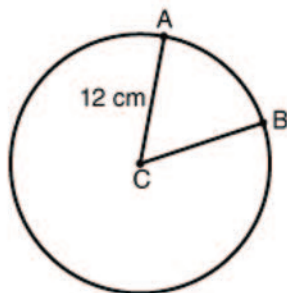
- a. Corresponding sides are always congruent.
- b. Corresponding angles are always congruent.
- c. They are always different sizes, but the same shape.
- d. The areas of the figures have the same ratio as the ratio of corresponding sides.

9. If  $a \parallel b$  and  $c \parallel d$ , which pair of angles are congruent?



- a. 1 and 4
- b. 5 and 8
- c. 4 and 9
- d. 10 and 12

10. What is the length of  $\widehat{AB}$  if  $m\angle ACB = 60^\circ$  and point C is the center of the circle? (Use 3.14 for  $\pi$ .)



- a. 6.28
- b. 12.56
- c. 37.68
- d. 75.36

## Math 709: Measurement and Area

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

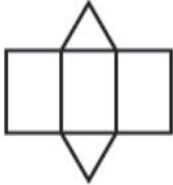
- Two sides of a triangle measure 18 m and 11 m. If the perimeter of the triangle is 37 m, what is the length of the third side?**  
a. 12 m                      b. 8 m                      c. 66 m                      d. 30 m
- What is the circumference of a circle that has a diameter of 8 inches? Use 3.14 for  $\pi$ .**  
a. 12.56 in.                      b. 25.12 in.                      c. 50.24 in.                      d. 200.96 in.
- The base of a parallelogram is 6 cm. If the area of the figure is 42 cm<sup>2</sup>, what is its height?**  
a. 7 cm                      b. 3.5 cm                      c. 36 cm                      d. 18 cm
- What is the area of a triangle that has a base of 10 ft and a height of 5 ft?**  
a. 15 ft<sup>2</sup>                      b. 7.5 ft<sup>2</sup>                      c. 50 ft<sup>2</sup>                      d. 25 ft<sup>2</sup>
- Find the area of a circle that has a radius of 9 mm. Use 3.14 for  $\pi$ .**  
a. 254.34 mm<sup>2</sup>                      b. 56.52 mm<sup>2</sup>                      c. 63.59 mm<sup>2</sup>                      d. 28.26 mm<sup>2</sup>
- A trapezoid has base lengths of 8 yards and 4 yards. If the height of the figure is 3 yards, what is the area?**  
a. 36 square yards                      b. 96 square yards                      c. 18 square yards                      d. 12 square yards
- A square has side lengths of 4 feet. If the dimensions are tripled, how much larger will the area of the new square be than the area of the original square?**  
a. three times                      b. six times                      c. nine times                      d. The area won't change.
- What is the value of  $\sqrt{64}$  ?**  
a. 4                      b. 8                      c. 16                      d. 32
- Between which two integers does  $\sqrt{50}$  lie?**  
a. 5 and 6                      b. 25 and 26                      c. 10 and 11                      d. 7 and 8
- What is the hypotenuse of a right triangle that has legs measuring 6 cm and 8 cm?**  
a. 10 cm                      b. 14 cm                      c. 50 cm                      d. 100 cm

# Math 710: Surface Area and Volume

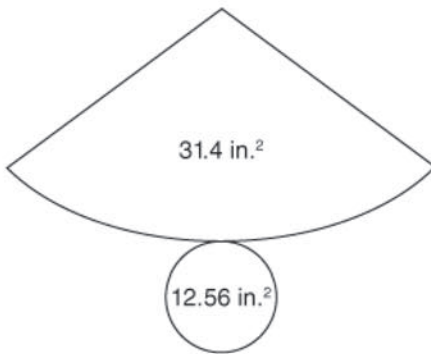
Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

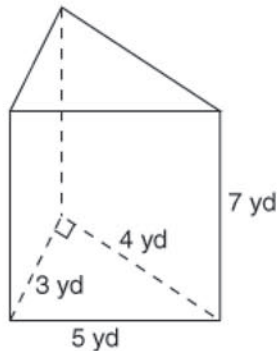
- All of the following solid figures have two congruent and parallel bases *except* the \_\_\_\_\_.
  - rectangular pyramid
  - heptagonal prism
  - cylinder
  - cube
- What shape can be created by the given net?



- wedge
  - triangular prism
  - cone
  - triangular pyramid
- Find the surface area of the cone represented by the net below.

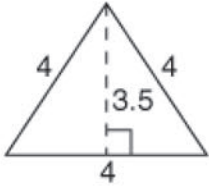


- 31.4 in.<sup>2</sup>
  - 43.96 in.<sup>2</sup>
  - 394.38 in.<sup>2</sup>
  - 56.52 in.<sup>2</sup>
- What is the surface area of a die in which each edge has a length of 15 mm? (Hint: On a cube, the length, width, and height have the same measure.)
    - 1,350 mm<sup>2</sup>
    - 450 mm<sup>2</sup>
    - 180 mm<sup>2</sup>
    - 1,687.5 mm<sup>2</sup>
  - What is the volume of a rectangular sandbox that is 3 feet by 4 feet by 1 foot?
    - 7 ft<sup>3</sup>
    - 8 ft<sup>3</sup>
    - 12 ft<sup>3</sup>
    - 13 ft<sup>3</sup>
  - What is the surface area of the following triangular prism?

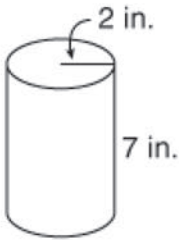


- 24 yd<sup>2</sup>
- 90 yd<sup>2</sup>
- 50 yd<sup>2</sup>
- 96 yd<sup>2</sup>

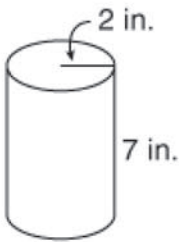
7. A triangular prism has a height of 11 meters and a base with the following measurements. All dimensions are in meters. What is the volume of the prism?



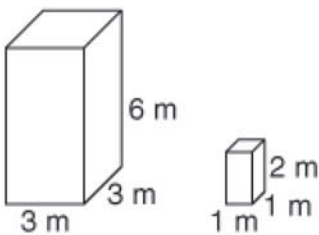
- a.  $88 \text{ m}^3$                       b.  $28 \text{ m}^3$                       c.  $77 \text{ m}^3$                       d.  $44 \text{ m}^3$
8. What is the total surface area of the following cylinder?



- a.  $113.04 \text{ in.}^2$                       b.  $100.48 \text{ in.}^2$                       c.  $131.88 \text{ in.}^2$                       d.  $69.08 \text{ in.}^2$
9. What is the volume of the following cylinder?



- a.  $43.96 \text{ in.}^3$                       b.  $12.56 \text{ in.}^3$                       c.  $21.98 \text{ in.}^3$                       d.  $87.92 \text{ in.}^3$
10. How many times larger is the surface area of the larger prism compared to the surface area of the smaller prism?



- a. 9                                      b. 6                                      c. 3                                      d. 2



# Pre-Algebra Math 801: The Real Number System

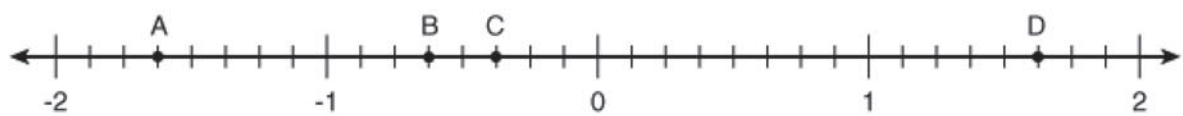
Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Choose all of the symbols that make the following sentence true.  $4^0 \underline{\quad} 5^{-1}$
- a.  $>$                                       b.  $<$                                       c.  $\geq$                                       d.  $\leq$
- e.  $=$     f.  $\neq$
2. Choose all of the symbols that make the following sentence true.  $4.2 \times 10^{-3} \underline{\quad} \frac{1}{4}$
- a.  $>$     b.  $<$     c.  $\geq$     d.  $\leq$
- e.  $=$     f.  $\neq$

3. Match the following items by writing the letter on the blank.
- \_\_\_\_\_  $(-14) + 81 = 81 + (-14)$                                       a. multiplicative inverse
- \_\_\_\_\_  $\frac{13}{17} \cdot \frac{17}{13} = 1$     b. additive identity
- \_\_\_\_\_  $101 + (29 + 417) = (101 + 29) + 417$                                       c. distributive property
- \_\_\_\_\_  $\frac{1}{3} (24 + 15) = \frac{1}{3} \cdot 24 + \frac{1}{3} \cdot 15$                                       d. commutative property of addition
- \_\_\_\_\_  $-72 + 0 = -72$     e. associative property of addition

4. Which of the following is a true statement based on the graph shown?



- a.  $A > B$                                       b.  $D < C$                                       c.  $B \leq C$                                       d.  $D = |C|$
5. If  $\sqrt{x}$  is between 4 and 5, then  $x$  is \_\_\_\_.
- a. greater than 2 and less than 3                                      b. greater than 4 and less than 5
- c. greater than 8 and less than 10                                      d. greater than 16 and less than 25

6. Which of the following numbers is irrational?
- a.  $\frac{3}{7}$     b.  $\overline{1.45}$                                       c.  $\sqrt{32}$                                       d.  $\sqrt{81}$

7. Which of the following lists is in order from least to greatest?
- a.  $5^{-1}, -4, 1, \sqrt{3}$       b.  $-4, 5^{-1}, 1, \sqrt{3}$       c.  $-4, 1, 5^{-1}, \sqrt{3}$       d.  $5^{-1}, -4, \sqrt{3}, 1$
8. If  $n = 4$ , then  $9^8 \div 9^n$  is equal to \_\_\_\_.
- a. 1      b.  $9^2$       c.  $9^4$       d.  $9^{12}$
9. Which of the following expressions *cannot* be written as a whole number?
- a.  $|-2|$       b.  $\frac{15}{5}$       c.  $\sqrt{36}$       d.  $9^0$
10. What is the distance between -3 and 6?
- a. -9      b. -3      c. 3      d. 9

# Pre-Algebra Math 802: Modeling Problems in Integers

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Functions are \_\_\_\_ relations.

- a. always                      b. sometimes                      c. never

2. Solve  $\frac{-6 - 4(-3)}{-2 + 1}$ .

- a. -6                      b. -3                      c. 3                      d. 6

3. If  $f(n) = -5n - 2$ , then  $f(3)$  is \_\_\_\_.

- a. -13                      b. -17                      c. -4                      d. -55

4. Which equation does not have the same solution as the others?

- a.  $11x = 33$                       b.  $\frac{x}{3} = 3$                       c.  $x - 2 = 1$                       d.  $x + 9 = 12$

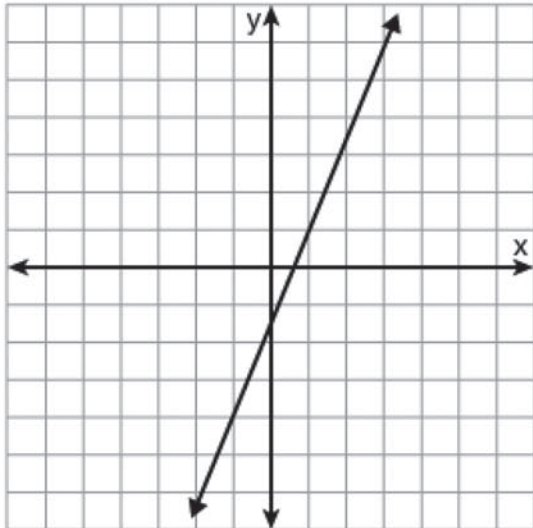
5. The solution to  $4x - 11 = 33$  is also a solution of which of the following equations?

- a.  $2x + 8 = 8$                       b.  $4x - 7 = 13$                       c.  $3x - 22 = 11$                       d.  $5x + 3 = 18$

6. Evaluate  $-2x^2y$ , if  $x = -4$  and  $y = 1$ .

- a. 32                      b. -32                      c. -16                      d. 16

7. Based on the graph below, what is  $f(-1)$ ?



- a. 4                      b. 0                      c. 1                      d. -4

8. Which of the following algebraic equations could represent the sentence, "The sum of a number and 17 is twenty-two"?

- a.  $\frac{x}{17} = 22$                       b.  $17x = 22$                       c.  $x - 17 = 22$                       d.  $x + 17 = 22$



9. Naya is four less than twice her brother's age. Naya is eighteen years old. Which equation can we use to solve for her brother's age?

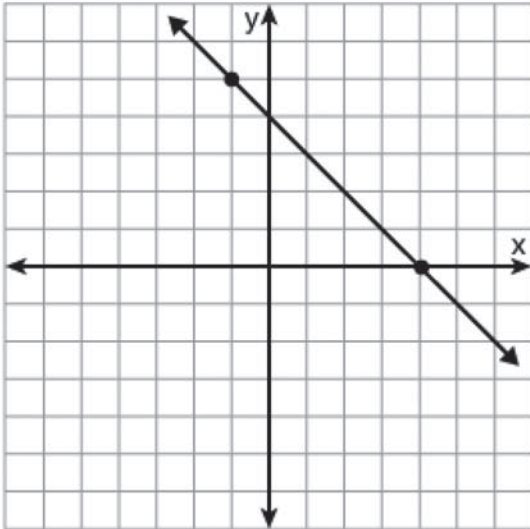
a.  $4x + 2 = 18$

b.  $4x - 2 = 18$

c.  $2x + 4 = 18$

d.  $2x - 4 = 18$

10. Which t-chart matches the graph shown below?



a.

x	y
3	-1
4	0
8	4

b.

x	y
-1	3
0	4
4	8

c.

x	y
-5	1
4	0
0	4

d.

x	y
-1	5
0	4
4	0

# Pre-Algebra Math 803: Modeling Problems with Rational Numbers

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Write  $-\frac{32}{12}$  as a mixed number in reduced form.

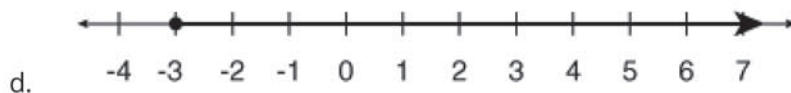
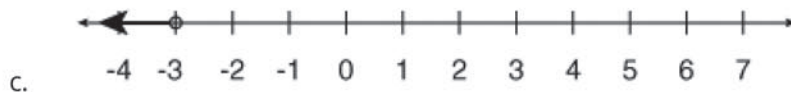
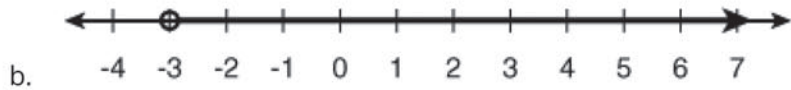
a.  $-2\frac{2}{3}$

b.  $-2\frac{8}{12}$

c.  $-2\frac{3}{4}$

d.  $-1\frac{20}{12}$

2. Which of the following is the graph of the inequality  $-3 \leq n$ ?



3. Solve  $-4a + 5 \leq -7$ .

a.  $a \geq -3$

b.  $a \leq -3$

c.  $a \geq 3$

d.  $a \leq 3$

4. Luis needs to run more than 140 miles in order to go with the cross country team to a summer training camp. He has thirty-five days to pre-train for the camp. Which inequality can you use to find how many miles Luis must run each day to meet this goal?

a.  $35m \geq 140$

b.  $35m > 140$

c.  $35m \leq 140$

d.  $35m < 140$

5. A carpenter has boards of lengths 27, 36, and 54 inches that must be cut into smaller boards of equal length, with no scrap wood left over. What is the longest length of boards he can cut?

a. 9 inches

b. 3 inches

c. 6 inches

d. 12 inches

6. How much is  $\frac{7}{9}$  of  $-\frac{3}{14}$ ?

a.  $\frac{4}{5}$

b.  $\frac{27}{98}$

c.  $\frac{1}{6}$

d.  $\frac{1}{3}$

7. Solve  $22.5 + x = -47.37$ .

a. -24.87

b. 24.87

c. -49.62

d. -69.87

8. What is the value of  $-4.326 + (-0.32) \div 0.4$ ?
- a. -3.526                      b. -10.015                      c. -11.613                      d. -5.126
9. What is the GCF of  $32ab^3$  and  $40a^2$ ?
- a.  $8ab$                       b.  $4ab$                       c.  $8a$                       d.  $4a$
10. Simplify  $\frac{14x^3y^2}{35xy^4z^2}$ .
- a.  $\frac{2x^2}{5y^2z^2}$                       b.  $\frac{2x}{5yz}$                       c.  $\frac{2x^2y^2z^2}{5}$                       d.  $\frac{2}{5x^2y^2z^2}$

# Pre-Algebra Math 804: Proportional Reasoning

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Which of the following lists is in order from smallest to largest?

- a. 4%, 0.042,  $\frac{3}{8}$ ,  $\frac{2}{5}$       b. 0.042, 4%,  $\frac{2}{5}$ ,  $\frac{3}{8}$       c.  $\frac{2}{5}$ , 4%, 0.042,  $\frac{3}{8}$       d. 0.042,  $\frac{3}{8}$ ,  $\frac{2}{5}$ , 4%

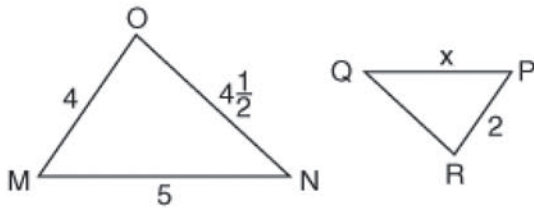
2. Which of the following items has the lowest unit price?

- a. 4 for \$5.00      b. \$1.22 each      c. 6 for \$7.44      d. 3 for \$3.60

3. A t-shirt that was originally priced at \$14 is marked down to \$10. What is the percent decrease?

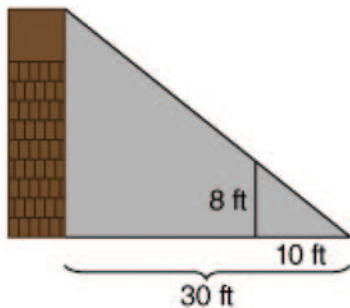
- a. 40%      b. 28.6%      c. 71.4%      d. 140%

4.  $\triangle MNO \sim \triangle PQR$  What is the length of  $x$ ?



- a.  $2\frac{2}{9}$       b.  $2\frac{1}{2}$       c.  $1\frac{4}{5}$       d.  $1\frac{3}{5}$

5. Which proportion could be used to solve for the height of the building?



- a.  $\frac{8}{10} = \frac{n}{20}$       b.  $\frac{n}{8} = \frac{10}{30}$       c.  $\frac{10}{20} = \frac{8}{n}$       d.  $\frac{10}{30} = \frac{8}{n}$

6. A car travels at 66 kilometers per hour. What is its rate in meters per second?

- a. 45 meters per second      b. 1.8 meters per second  
c. 237.6 meters per second      d. 18.3 meters per second

7. Which of the following is a proportion?

a.  $\frac{4}{5} = \frac{2}{10}$

b.  $\frac{3}{7} = \frac{6}{14}$

c.  $\frac{3}{4} = \frac{9}{16}$

d.  $\frac{6}{9} = \frac{3}{5}$

8. The door on a model building is 2 inches wide. The door on the actual building is 4 feet wide. What was the scale used?

a. 1:2

b. 1:12

c. 1:4

d. 1:24

9. Select all of the ratios that are equivalent to  $\frac{3}{13}$ .

a.  $\frac{2}{9}$

b.  $\frac{2}{8}$

c. 6:26

d.  $\frac{12}{52}$

e.  $\frac{5}{24}$

f. 1.5 to 6.5

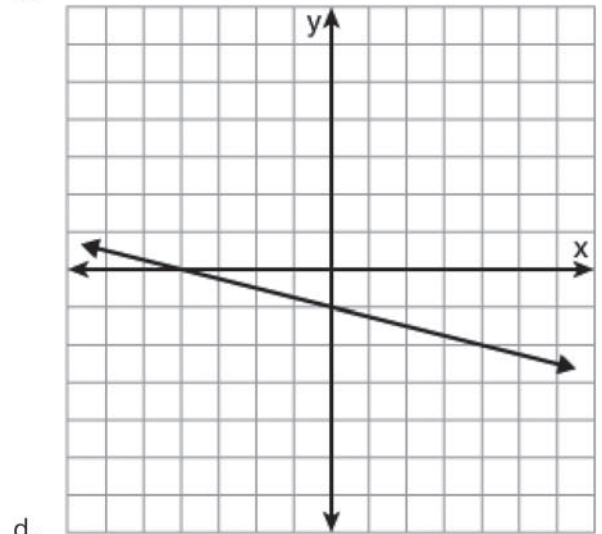
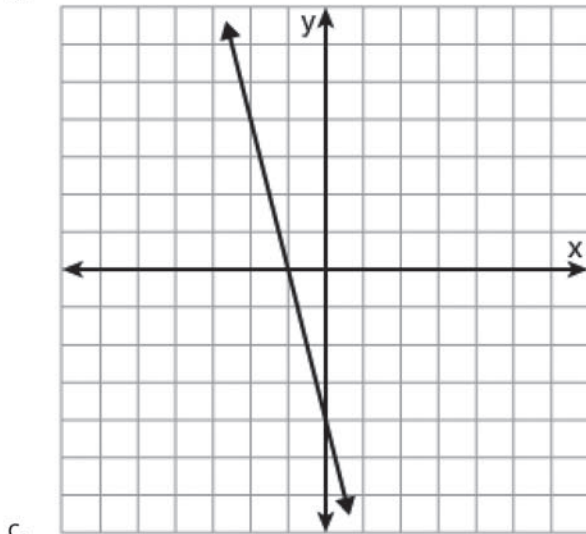
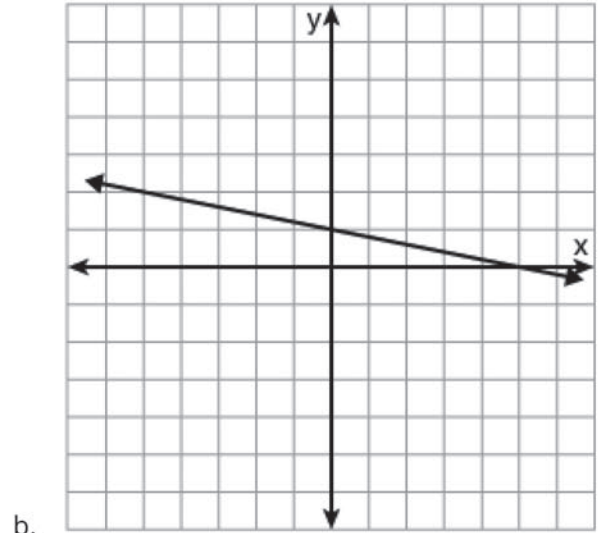
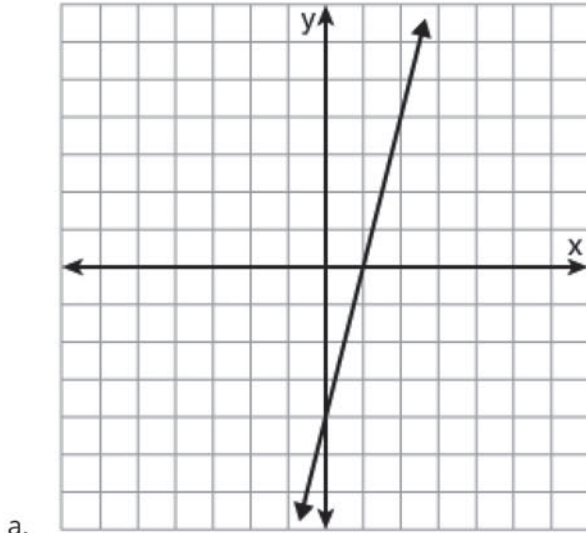
# Pre-Algebra Math 805: More with Functions

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. What is the solution to  $4x - 14 + 6 = 12$ ? \_\_\_\_\_
2. A rectangle with a length of  $x - 4$  and a width of 8 has a perimeter of 34. What is the value of  $x$ ?  
\_\_\_\_\_
3. What is the slope of a line that runs parallel to  $y = 2x + 5$ ? \_\_\_\_\_
4. Simplify  $2x^2 + 7x - 4x - 6x^2$ .  
a.  $-x^2$                       b.  $-4x^2 + 3x$                       c.  $-4x^4 + 3x^2$                       d.  $-x$
5. Which function is *not* an example of exponential decay?  
a.  $y = 0.5(3)^x$                       b.  $y = 2(0.4)^x$                       c.  $y = 3(0.2)^x$                       d.  $y = 0.2(0.5)^x$
6. Which of the following sequences is *not* arithmetic?  
a. 3, 5, 7, 9, ...                      b. 7, 21, 63, 189, ...                      c. 4, 8, 12, 16, ...                      d. 9, 12, 15, 18, ...
7. Solve  $-4(-2y + 3) = 20$ .  
a. -1                      b. 1                      c. 4                      d. -4
8. All of the following points lie on the graph of  $y = 2^x$  *except* \_\_\_\_\_.  
a. (0, 0)                      b. (1, 2)                      c. (2, 4)                      d. (3, 8)
9. What is the slope of a line passing through (3, 4) and (5, 8)?  
a.  $-\frac{3}{2}$                       b.  $\frac{2}{3}$                       c. 2                      d. 3

10. Which graph has an x-intercept of -4 and a y-intercept of -1?



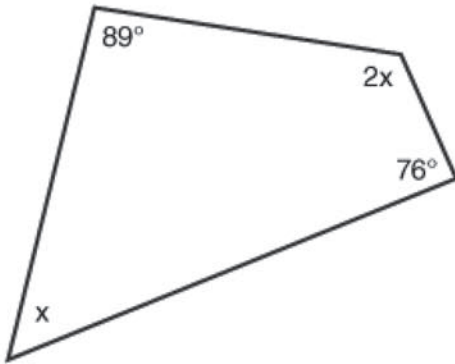
# Pre-Algebra Math 806: Measurement

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

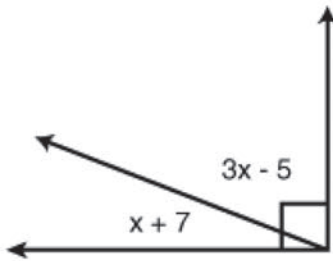
1. Determine if the side lengths 12, 13, and 13 form a triangle. If it is a triangle, classify it by its sides.
- a. It's not a triangle.      b. scalene triangle      c. isosceles triangle      d. equilateral triangle

2. What is the measure of  $2x$ ?



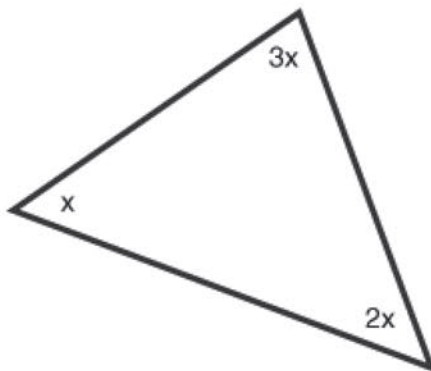
- a.  $65^\circ$       b.  $130^\circ$       c.  $195^\circ$       d.  $360^\circ$

3. What is the measure of  $x$ ?



- a.  $90^\circ$       b.  $61^\circ$       c.  $29^\circ$       d.  $22^\circ$

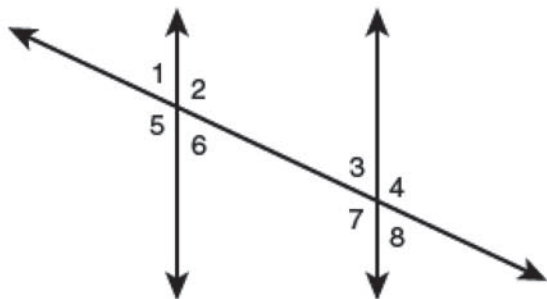
4. What is the measure of the largest angle?



- a.  $180^\circ$       b.  $90^\circ$       c.  $60^\circ$       d.  $30^\circ$



5. Which set of angles is an example of vertical angles?



- a.  $\angle 3$  and  $\angle 8$       b.  $\angle 4$  and  $\angle 5$       c.  $\angle 2$  and  $\angle 7$       d.  $\angle 1$  and  $\angle 2$

6. Which set of side lengths will *not* form a right triangle?

- a. 5, 12, 13      b. 7, 24, 25      c. 9, 16, 20      d. 8, 15, 17

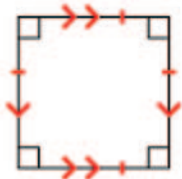
7. The sum of the interior angles of a heptagon is \_\_\_\_.

- a.  $720^\circ$       b.  $900^\circ$       c.  $1,080^\circ$       d.  $1,260^\circ$

8. If the measure of an inscribed angle is  $116^\circ$ , what is the measure of the intercepted arc it creates?

- a.  $232^\circ$       b.  $116^\circ$       c.  $58^\circ$       d.  $29^\circ$

9. Select all of the names of this polygon.



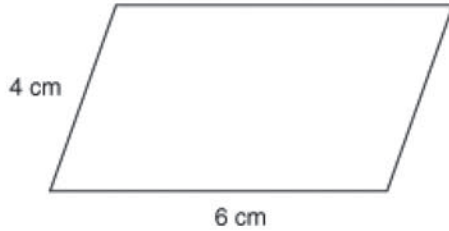
- a. quadrilateral      b. trapezoid      c. isosceles trapezoid      d. parallelogram  
 e. rectangle      f. rhombus      g. square

# Pre-Algebra Math 807: Plane Geometry

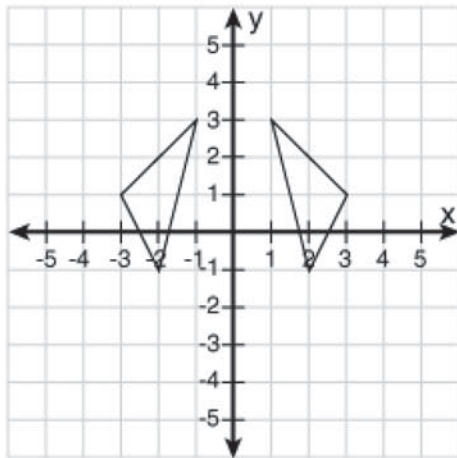
Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. If the perimeter of a figure is doubled, then the dimensions were \_\_\_\_\_ .
2. Reanna was asked to find the perimeter of the following parallelogram. She measured the lengths of the sides, and then multiplied 6 centimeters by 4 centimeters. Her answer was 24 square centimeters. Which of the following statements is true?

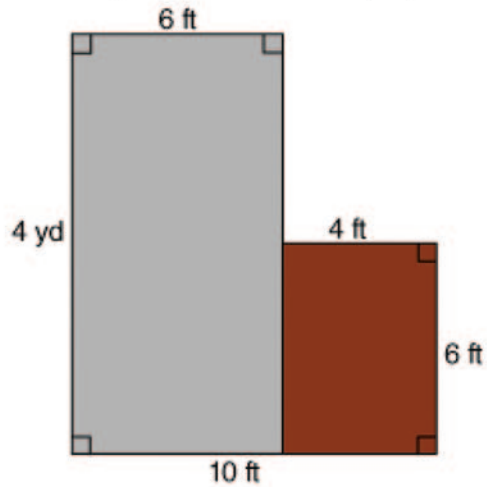


- a. Reanna's answer is correct.
  - b. Reanna should have multiplied 6 cm by the vertical height.
  - c. Reanna should have multiplied her answer by  $\frac{1}{2}$ .
  - d. Reanna should have added all of the sides together.
3. What is the midpoint between  $(-8, -5)$  and  $(-2, 2)$ ?
    - a.  $(-5, -3.5)$
    - b.  $(-5, -1.5)$
    - c.  $(-10, -3)$
    - d.  $(-3, -3.5)$
  4. Paul lives 6 miles west and 3 miles north of school. What is the direct distance from Paul's house to school?
    - a. 9 miles
    - b. 4.5 miles
    - c. 6.7 miles
    - d. 10.5 miles
  5. What is the equation of the line of reflection in the following coordinate plane?



- a.  $x = 0$
- b.  $y = 0$
- c.  $x = 1$
- d.  $y = 3$

6. Tyler is putting an L-shaped patio in his backyard. He's decided to use a reddish colored paving stone for one part of the patio that is the smaller area, and a gray paving stone for the other that is the larger area. How many square feet is the gray part of the patio?



- a.  $24 \text{ ft}^2$                       b.  $40 \text{ ft}^2$                       c.  $72 \text{ ft}^2$                       d.  $120 \text{ ft}^2$
7. A pre-image point is rotated  $270^\circ$  clockwise. If the pre-image point had the coordinates  $(3, -5)$ , what are the coordinates of its image point?
- a.  $(-5, -3)$                       b.  $(5, 3)$                       c.  $(-3, 5)$                       d.  $(-3, -5)$
8. A rectangle has an area of 48 square feet and a perimeter of 32 feet. Which of the following could be its dimensions?
- a. 6 ft and 8 ft                      b. 2 ft and 24 ft                      c. 3 ft and 16 ft                      d. 12 ft and 4 ft

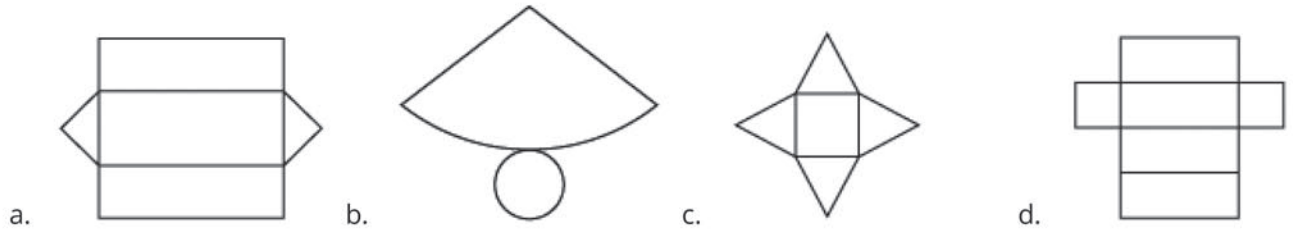
# Pre-Algebra Math 808: Measures of Solid Figures

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

♦ A list of formulas that may be helpful is located at the end of this quiz.

1. Which of the following is the net of a triangular prism?

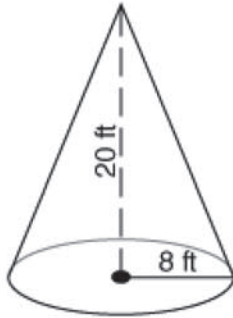


2. If a figure has 10 vertices and 15 edges, how many faces does it have? \_\_\_\_\_

3. A cube has side lengths of 15 inches. What is the volume of the cube?

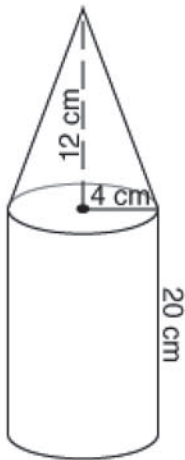
- a. 45 in.<sup>3</sup>
- b. 3,375 in.<sup>3</sup>
- c. 450 in.<sup>3</sup>
- d. 2,700 in.<sup>3</sup>

4. What is the volume of the cone? (use 3.14 for  $\pi$ )



- a. 4,019.2 ft<sup>3</sup>
- b. 1,339.73 ft<sup>3</sup>
- c. 1,067.6 ft<sup>3</sup>
- d. 3,202.8 ft<sup>3</sup>

5. The figure shown is a composite figure. What is its volume? (use 3.14 for  $\pi$ ) \_\_\_\_\_ cm<sup>3</sup>



6. What is the surface area of a sphere with a radius of 11 centimeters? (use 3.14 for  $\pi$ )

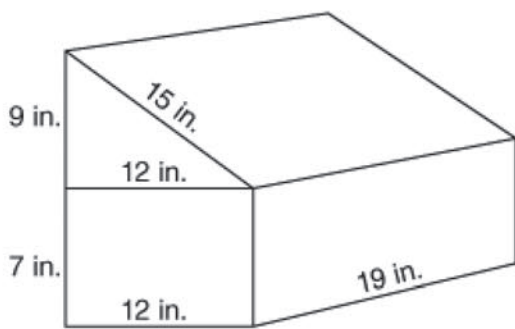
- a. 276.32 cm<sup>2</sup>
- b. 452.16 cm<sup>2</sup>
- c. 1,808.64 cm<sup>2</sup>
- d. 1,519.76 cm<sup>2</sup>

7. What is the surface area of the figure?



- a. 350 in.<sup>2</sup>                      b. 1,118 in.<sup>2</sup>                      c. 168 in.<sup>2</sup>                      d. 600 in.<sup>2</sup>

8. What is the surface area of the composite figure?



- a. 1,172 in.<sup>2</sup>                      b. 1,226 in.<sup>2</sup>                      c. 1,334 in.<sup>2</sup>                      d. 1,394 in.<sup>2</sup>

**Formulas**

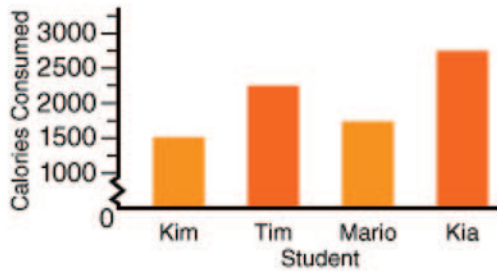
<b>Name</b>	<b>Total Surface Area</b>	<b>Volume</b>	<b>Key:</b>
Rectangular Prism	$2lw + 2lh + 2wh$	$lwh$	$l$ = length, $r$ = radius
Triangular Prism	$2B + Ph$	$Bh$	$w$ = width
Pyramid	$2l + l^2$	$(1/3)Bh$	$h$ = height
Cylinders	$2\pi rh + 2\pi r^2$	$\pi r^2 h$ or $Bh$	$B$ = area of base
Cone	$\pi r l + \pi r^2$	$(1/3)\pi r^2 h$	$P$ = perimeter of base
Sphere	$4\pi r^2$	$(4/3)\pi r^3$	$l$ = slant height

# Pre-Algebra Math 809: Data Analysis

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. Which student consumed 2,250 calories?

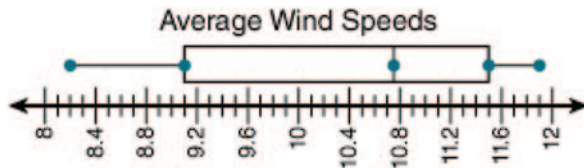


- a. Kim                                      b. Tim                                      c. Mario                                      d. Kia

2. It is called a \_\_\_\_ when members of the population volunteer to take part in the sample.

- a. random sample                      b. self-selected sample  
c. biased sample                      d. convenience sample

3. What is the lower extreme of the annual wind speeds in Chicago?



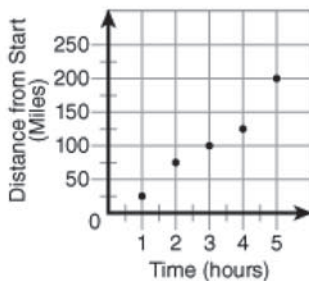
- a. 9.1                                      b. 11.5                                      c. 8.2                                      d. 10.75

4. The following table shows the number of medals won in the 2008 Olympics for swimming by the top five countries. How many degrees will the China section be in a circle graph of the data?

Country	Number of Medals
USA	31
Australia	20
Great Britain	6
China	6
France	6

- a. 6°                                      b. 9°                                      c. 32°                                      d. 64°

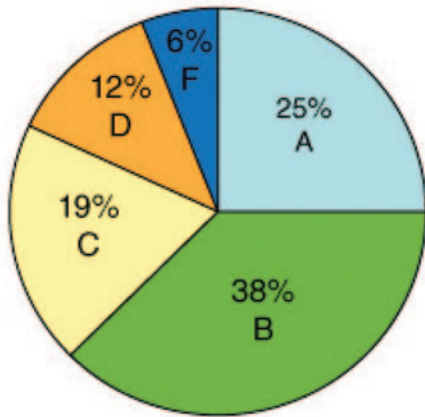
5. According to the scatter plot, how many miles from home will the family be in 2 hours?



- a. 50                                      b. 75                                      c. 100                                      d. 125



6. The circle graph below shows the scores of the latest math test. It represents 32 students. Approximately how many students earned a C or higher on the math test?



- a. 32                      b. 26                      c. 12                      d. 8
7. What is the difference between the median number of electoral votes per state and the range of the number of electoral votes in the following table?

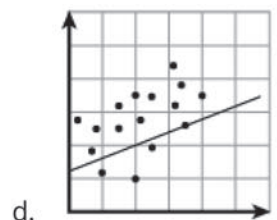
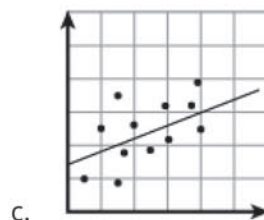
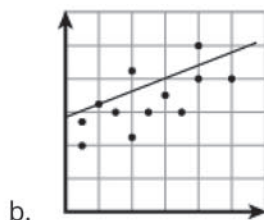
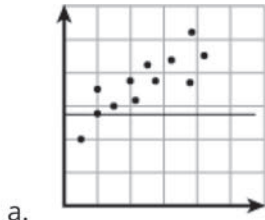
State	Number of Electoral Votes
California	55
Florida	27
Illinois	21
Kentucky	8
Missouri	11
Nevada	5
North Carolina	15
Texas	34
Utah	5

- a. 50                      b. 39                      c. 35                      d. 11
8. A group of teenagers was asked where they prefer to study and do homework. Their results are shown in the table below. Which type of graph would be best to display this data?

Place	Number of Teenagers
library	3
bedroom	52
kitchen	23
living room	22

- a. circle graph                      b. box-and-whisker plot                      c. line graph                      d. histogram

9. Which graph shows the line of best fit?



10. Take a look at the frequency table below. Which frequency is the mode?

Number Rolled	Tally	Frequency
1		4
2		3
3		1
4		4
5		2
6		6

a. 2

b. 3

c. 4

d. 6



# Pre-Algebra Math 810: Probability

Circle the correct letter for each multiple choice question.

Score: \_\_\_\_\_

1. You and two friends (Adam and Alana) will only play a game if it is fair for all three of you. The game your friend has proposed is to roll two dice and find the sum. If the sum is from 2-5 you get the point, 6-8 Adam gets the point, and 9-12 Alana gets the point.

Is this game fair for all three of you? \_\_\_\_\_ Who has the best advantage? \_\_\_\_\_

2. A bag contains five yellow marbles, nine red marbles, three blue marbles, six white marbles, and seven black marbles. What is the theoretical probability of pulling a black marble from the bag?

a.  $\frac{7}{30}$                       b.  $\frac{3}{10}$                       c.  $\frac{7}{23}$                       d.  $\frac{6}{25}$

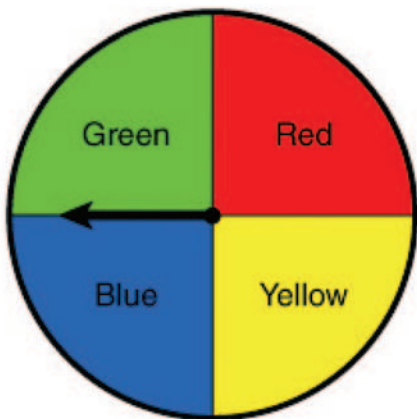
3. Evaluate  ${}_8P_4 =$  \_\_\_\_\_

4. Find  $P(A \text{ or } B)$ , if the events are disjoint.

$P(A) = \frac{9}{25}$        $P(B) = \frac{9}{25}$  .

a.  $\frac{4}{25}$                       b.  $\frac{18}{25}$                       c. 0                      d.  $\frac{9}{25}$

5. What are the odds of spinning green? \_\_\_\_\_



6. You rolled a die 50 times. Your results are shown in the table below. What is the experimental probability of rolling a 1?

Number	Frequency
1	4
2	9
3	6
4	12
5	9
6	10

- a.  $\frac{1}{50}$                       b.  $\frac{1}{25}$                       c.  $\frac{2}{50}$                       d.  $\frac{2}{25}$
7. Evaluate  ${}_8C_3$ .
- a. 24                              b. 168                              c. 56                              d. 336
8. What is the probability of flipping a coin and having heads land up five times in a row?
- a.  $\frac{1}{32}$                               b.  $\frac{1}{16}$                               c.  $\frac{1}{10}$                               d.  $\frac{1}{2}$
9. There are 12 sprinters competing for first, second, and third place ribbons. How many different ways can the ribbons be awarded?
- a. 36                              b. 1,320                              c. 660                              d. 120
10. You are required to choose three topics from a list of five to write about on your science test. How many different pairings are possible?
- a. 10                              b. 20                              c. 12                              d. 15





# LIFEPAC<sup>®</sup>

## MATH


### Placement Tests Answer Key

1 0 0 - 8 0 0

## 101

1. 50, 51
2. 85, 86
3. 93, 62
4. 25, 43
5. 
6. 8, 6, 7, 8
7. 4, 6, 5, 3
8. 2, 6, 14, 15, 18
9. 2
10. 





## 102

1. 10, 10, 9, 7
2. 7, 10, 3
3. 2, 5, 1, 7
4. 14, 10, 19, 16
5. 2, 8, 6
6. four, eight  
three, seven
7. b. 
8. 1(10), 2
9. 321
10. 1 2 3 4 5 6




## 103

1. +
2. ≠
3. minus
4. is not equal to
5. nine
6. 3 bugs
7. 5:00
8. 7
9. 10, 9, 7, 3
10. 67, 68, 69, 70, 71

## 104

1. 4, 8, 10
2. 20, 50, 60
3. 2, 4, 6, 8, 10
4. 13, 84
5. 70, 5
6. a, c, b
7.    
8. 5, 7
9. 13, 13, 11, 15
10. =

## 105

1. 10, 10, 12, 11
2. 3, 6
3. 
4. 
5. 
6. 2:30
7. seventeen, nineteen,  
fifteen, thirteen
8. 8
9. 2, 3
10. 12

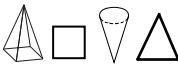
## 106

1. 4, 7, 2, 1
2. 12, 12, 10, 10
3. 7 - 5 = 2
4. Four plus six  
equals ten
5. 10, 20, 25
6. <, >
7. 6, 1, 4
8. 10:15
9. 63, 95, 87
10. 11

107

1. 143, 192
2. 104, 160
3. PM
4.  $\frac{2}{3}$
5. 72, 27
6. >
7. 5, 3, 8, 7
8.  $\neq$
9. 100, 30, 8
10. 10, 20


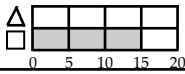

108

1. 8, 9, 8, 9
2. 3:50
3.  $2\frac{1}{2}$
4. fifty-six
5. three-fourths
6. 30
7. 165
8. 
9. 154, 155, 157
10. Thursday

109

1.  $\frac{4 + 8 = 12}{8 + 4 = 12}$
2.  $\frac{12 - 4 = 8}{12 - 8 = 4}$
3. 7, 8, 25, 81
4. 14, 89
5. 50
6. 7
7.  $\frac{3}{8}$
8. F
9. July
10. 44¢

110

1. 0, 2, 4, 6, 8
2. 
3. 89, 37
4. 8, 74, 44, 42
5.  $15 - 8 = 7$
6. 18, 49
7. 12, 33
8. 
9. 
10. five

- 201**
- $\frac{\text{thirteen}}{\text{forty-five}}$
  - $\frac{13}{14}$   
 $\frac{5}{9}$
  - $\frac{98}{77}$   
 $\frac{42}{53}$
  - $\frac{3}{9}$
  - $\frac{16}{18}$   
 $\frac{58}{60}$
  - $4 + 7 = 11$   
 $7 + 4 = 11$   
 $11 - 4 = 7$   
 $11 - 7 = 4$
  - a.  $-$  b.  $-$   
c.  $\neq$  d.  $<$
  - 7 dimes
  - $15 - 6 \neq 8$   
 $74 > 62$
  - d

- 202**
- $\frac{138}{140}$   
 $\frac{142}{143}$
  - $\frac{19}{57}$   
 $\frac{8}{7}$
  - even
  - $\frac{0}{5}$
  - 60
  - 2:50
  - $\frac{33}{59}$
  - 4 cookies
  - $\frac{7}{1}$   
1
  - $\frac{3}{5}$

- 203**
- $\frac{7}{11}$
  - a.  $\frac{1}{3}$   
 $\frac{5}{5}$   
b.  $\frac{100}{30}$   
 $\frac{5}{5}$
  - $\frac{84}{74}$
  - $\frac{97\text{c}}{\$4.24}$
  - inches
  - $\frac{3}{3}$   
 $\frac{1}{3}$
  - $\frac{40}{10}$
  - a. 104  
b. one hundred  
fifty-three  
9. 4 oranges
  - $> / \neq$

- 204**
- $\frac{500}{501}$
  - a. 719  
b. six hundred  
one
  - a.  $\frac{8}{0}$   
 $\frac{4}{4}$   
b.  $\frac{800}{0}$   
 $\frac{4}{4}$
  - $\frac{2}{3}$   
 $\frac{1}{4}$
  - $\frac{948}{72}$
  - $\frac{42}{211}$
  - $\frac{12}{3}$
  - a / d
  - $\frac{60}{90}$
  - 2 pennies

- 205**
- $> / =$
  - 4
  - 3, 6, 9, 12
  - a. 953 b. 359
  - $\frac{3}{5} / \frac{7}{8}$
  - 35° F
  - $\frac{565}{572}$
  - $\frac{30}{331}$
  - 12
  - fifteenth

- 206**
- 8:52
  - $\frac{5}{7} / \frac{2}{12}$
  - $\frac{586}{562}$
  - $\frac{34}{25}$
  - 3 inches
  - a.  $\frac{9}{3}$   
 $\frac{2}{2}$   
b.  $\frac{900}{30}$   
 $\frac{2}{2}$
  - \$3.45
  - $\frac{36}{16}$
  - $\frac{356}{365}$   
 $\frac{536}{563}$
  - circle

207

1. two-sevenths
2.  $\frac{76}{498}$   
 $\frac{885}{615}$
3.  $\frac{41}{322}$   
 $\frac{38}{59}$
4. subtract 2
5. May / June  
July / Aug.
6. 60
7.  $\frac{24}{7}$
8.  $\frac{3}{4}$  /  $\frac{4}{12}$
9.  $\frac{0}{2}$   
 $\frac{4}{6}$   
8
10.  $74^\circ$

208

1.  $3 + 3 = 6$
2.  $\frac{10}{14}$
3. - / -
4.  $\frac{3}{1}$   
 $\frac{0}{2}$
5. fifth
6. 12 inches
7. 3
8. east
9.  $\frac{2}{4}$
10.  $\frac{\$6.84}{912}$   
 $\frac{820}{24}$

209

1.  $\frac{2 \text{ in}}{1 \text{ in}}$
2.  $\frac{6 \text{ in}}{2 \text{ sq in}}$
3.  $\frac{3}{6}$
4.  $2\frac{1}{2} \text{ in}$
5. a.  $\frac{5}{7} / 904$   
b. four-ninths  
three hundred  
seventy-eight
6. 52
7. < / =
8. odd
9.  $\frac{107}{625}$   
 $\frac{660}{\frac{5}{7}}$
10.  $\frac{37}{206}$   
 $\frac{223}{\frac{2}{15}}$

210

1.  $\frac{600}{800}$
2. 1 quart
3. odd
4. a. \$5.13  
b. eight dollars  
and six cents
5.  $\frac{700}{50}$   
4
6. 8:16 PM
7.  $\frac{5}{6}$
8. a. - / = or = / +  
b. + / =
9.  $\frac{4}{7}$
10.  $\frac{816}{\$7.75}$   
 $\frac{235}{\$2.13}$

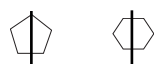


- 301**
- 0-9 (any two)
  - 905
  - 14, 62,  
291, 315,  
351, 845
  - 700
  - 14 / 3
  - 652 / 465  
532 / 321
  - 12 / 3
  - 17 - 8 ≠ 6  
4 + 5 > 12 - 7
  - fourth
  - 23 pennies

- 302**
- 10 / even
  - 832 / 427  
36 / 38
  - 300 / 0
  - 54
  - 0 / 5
  - b.
  - > / ≠
  - rectangle
  - 62¢ / \$.62
  - 16 cookies

- 303**
- 6+0=6 / 0+6=6  
6-0=6 / 6-6=0
  - seven hundred  
nine
  - 879 / 843  
461 / 317
  - 16 / 2,000  
2 / 4
  - 863 / 368
  - 8 + 7 = 15
  - $\frac{3}{5}$  /  $\frac{8}{9}$
  - $\frac{4}{6}$  /  $\frac{6}{6}$
  - midnight
  - 1  $\frac{1}{2}$  inches

- 304**
- thousands
  - 825 / 58  
286 / 667
  - 70
  - 1  $\frac{3}{4}$  inches
  - 2 / 12  
16 / 36
  - five thousand,  
eight hundred  
six
  - 4 D, 2 qtrs  
2 d, 3 pen
  - 26
  - cube  
cone
  - four-sixths

- 305**
- $\frac{7}{8}$  /  $\frac{9}{12}$   
 $\frac{6}{9}$  /  $\frac{3}{5}$
  - 32 / 212
  - 3 cookies
  - 700
  - 12 inches
  - pentagon  
hexagon  

  - odd
  - 14
  - 15
  - June 14

- 306**
- 7,823 / 7,642  
369 / 2,116
  - 2, 4, 6, 8, 10,  
12, 14, 16, 18, 20
  - 60 / 144  
365 / 9
  - 8 linear feet  
4 square feet
  - $\frac{5}{7}$  /  $\frac{4}{9}$
  - \$2.77 / \$7.05
  - 8 + 6 ≠ 5 + 7
  - 20 cars
  - b / a
  - \$1.86

307

1.  $\frac{12}{18} / \frac{15}{25}$
2. four-sevenths  
three and two-eighths
3.  $\frac{2,736}{4,429} / \frac{2,618}{4,683}$
4. 10 linear inches  
4 square inches
5.  $7\frac{5}{7} / 6\frac{4}{6}$
6. LIX
7. 3 out of 8
8. 85 / 85
9. 32¢
10. 4,132

308

1. faces  
angles
2. 12 / 8
3. 34 / 174
4.  $\frac{4}{10}$
5.  $\frac{4,706}{2,008}$
6.  $7\frac{7}{9} / 8$
7.  $\frac{3,362}{3,154}$
8.  $\frac{14}{24} / \frac{30}{40}$
9. 6
10. 85

309

1.  $\frac{2}{9} / 7\frac{3}{8}$
2. yes
3.  $\frac{7,022}{3,669}$
4. = / <
5. 32 / 0
6. pyramid  
hexagon
7.  $\frac{18}{50} / \frac{32}{18}$
8.  $\frac{7,000}{9,000}$
9. DXXXVII
10. 80 minutes

310

1. 8,000
2.  $\frac{1,316}{6,462} / \frac{9,276}{3,994}$
3. 4, 8, 12, 16, 20,  
24, 28, 32, 36, 40
4.  $\frac{7}{9} / 9$   
 $\frac{3}{8} / 2\frac{4}{7}$
5.  $\frac{30}{28} / \frac{12}{30}$
6. 12 linear feet  
5 square feet
7. 4 out of 10
8. 10
9. 15 - 8 = 7
10.  $\frac{5}{8}$  glass

- 401**
- 1, 2, 3, 4
  - 4,056
  - a. 2  
b. 8  
c. 6
  - 9
  - \$70.04
  - 8,000 or  $8 \times 1,000$   
000 or  $0 \times 100$   
50 or  $5 \times 10$   
9 or  $9 \times 1$
  - sixth  
 $\frac{4}{9}$
  - $\frac{11}{12}$
  - a. 20  
b. 24  
c. 18

- 402**
- >
  - $\neq$
  - a. 90  
b. 240
  - 500
  - 1,809
  - a. 1 b.  $\frac{1}{9}$
  - 10
  - $\frac{6}{9}$
  - 40, 610
  - $\frac{6}{11}$

- 403**
- 6,000
  - 3,000
  - 0
  - 15
  - 6, 7
  - >
  - =
  - 520,685
  - 5
  - a. 3,210 b. 2,346

- 404**
- 7,000
  - a, d, f
  - 2
  - 3
  - 1
  - b
  - a. 3  
b. 2
  - $\frac{14}{40}$
  - $\frac{3}{8}$
  - 543

- 405**
- $5 + 6 = 11$   
 $6 + 5 = 11$   
 $11 - 6 = 5$   
 $11 - 5 = 6$
  - $7 \times 8 = 56$   
 $8 \times 7 = 56$   
 $56 \div 8 = 7$   
 $56 \div 7 = 8$
  - a. 12  
b. 2  
c. 4  
d. 22 ft.  
e. 30 sq. ft.
  - a. 57  
b. MCCCXXVI  
c. 36  
d. 9
  - a. 14,688  
b. 53,851
  - a. 8  
b. 5  
c. 9  
d. 8

- 406**
- 1, 2, 3, 5, 7
  - 1, 2, 4, 8
  - 5, 10, 15, 20
  - b
  - $\frac{1}{3}$  or  $\frac{2}{6}$  or  $\frac{3}{9}$
  - $2\frac{2}{3}$ ,  $3\frac{1}{3}$
  - a.  $11\frac{3}{5}$   
b.  $5\frac{2}{9}$
  - 15 in.
  - 4
  - a. 7 R3 b. 5 R1

407

1. a. 1,075  
b. 33,264
2. a.  $\frac{1}{4}$  b.  $4\frac{4}{5}$
3. a.  $1\frac{1}{2}$  b.  $\frac{2}{3}$
4. a.  $\frac{1}{2}$  b.  $\frac{1}{3}$
5. c
6. a. 16 ft.  
b. 15 sq. ft.
7. 9
8. \$43.92
9. 30
10.  $3 \times 24 = 72$   
 $9 \times 8 = 72$

408

1. 41
2. a. 116,712  
b. 66,312
3. a. 230 R3  
b. 31
4. 6
5. a. 6 b. 16
6. a.  $1\frac{3}{10}$  b.  $\frac{3}{4}$
7. a.  $\frac{1}{3}$  b.  $\frac{4}{9}$
8. 10
9. <
10. 32°

409

1. a.  $\frac{4}{100}$  b.  $\frac{903}{1,000}$
2. a. .03  
b. .425
3. a. sixty-three hundredths  
b. two and four tenths
4. 6
5. 12.84
6. 5.302
7.  $11\frac{31}{40}$
8.  $7\frac{1}{24}$
9. a.  $\frac{7}{8}$  b.  $1\frac{1}{3}$
10. a. = b. <

410

1. d
2. b
3. i
4. c
5. a
6. e
7. h
8. g
9. f
10. j

## MATH 501: Place Value, Addition, and Subtraction

### Answer Key

1. c.

2. b.

3. c.

4. c.

5. a.

3 is in the hundredths place. The digit to the right of the hundredths place (1) is less than 5, so keep 3 the same.

6. a.

$$22 + 4 + 2 = 28$$

7. a.

$$\begin{array}{r} \phantom{5} \phantom{11} \phantom{8} \phantom{12} \\ 6,492 \\ -5,735 \\ \hline 457 \end{array}$$

8. a.

$$\begin{array}{r} \phantom{1} \phantom{1} \\ 3,448 \\ + 680 \\ \hline 4,128 \end{array}$$

9. a.

$$\begin{array}{r} \phantom{1} \phantom{1} \\ 31.25 \\ + 9.38 \\ \hline 40.63 \end{array}$$

10. a.

$$\begin{array}{r} \phantom{1} \phantom{10} \\ 7.20 \\ - 7.08 \\ \hline 0.12 \end{array}$$

## MATH 502: Multiplying Whole Numbers and Decimals

### Answer Key

1. a.

$$100 \times 300 = 30,000$$

2. c.

The product of any number and zero is zero.

3. a.

$$\begin{array}{r} 478 \\ \times 32 \\ \hline 956 \\ 14340 \\ \hline 15,296 \end{array}$$

4. a.

$$10^1 = 10, 10^2 = 100, 10^3 = 1,000$$

6. a.

The decimal point moved one place to the right. So, she multiplied by 10.

7. d.

8. c.

$$\begin{array}{r} 6.41 \\ \times 11 \\ \hline 641 \\ 6410 \\ \hline 70.51 \end{array}$$

9. b.

There are three decimal places in the factors, so there should be three decimal places in the product.

10. a.

$$\begin{array}{r} 47.50 \\ \times 2.5 \\ \hline 23750 \\ 95000 \\ \hline 118.750 \end{array}$$

# MATH 503: Dividing Whole Numbers and Decimals

## Answer Key

1. b.  
 $28 \div 4 = 7$

2. b.  
 $4,000 \div 8 = 500$

3. b.

$$\begin{array}{r} 386 \\ 6 \overline{) 2,316} \\ \underline{18} \phantom{00} \\ 51 \phantom{00} \\ \underline{48} \phantom{00} \\ 36 \phantom{00} \\ \underline{36} \phantom{00} \\ 0 \end{array}$$

4. b.

$$\begin{array}{r} 16 \text{ R}1 \\ 3 \overline{) 49} \\ \underline{3} \phantom{00} \\ 19 \phantom{00} \\ \underline{18} \phantom{00} \\ 1 \end{array}$$

5. a.

$$\begin{array}{r} 52 \\ 38 \overline{) 1,976} \\ \underline{190} \phantom{00} \\ 76 \phantom{00} \\ \underline{76} \phantom{00} \\ 0 \end{array}$$

6. c.

$$\begin{array}{r} 203 \text{ R}7 \\ 17 \overline{) 3,458} \\ \underline{34} \phantom{00} \\ 058 \phantom{00} \\ \underline{51} \phantom{00} \\ 7 \end{array}$$

7. c.  
 $149 \div 18 = 8 \text{ R} 5$

8. c.  
 Move the decimal point three places to the left.

9. d.

$$\begin{array}{r} 4.37 \\ 8 \overline{) 34.96} \\ \underline{32} \phantom{00} \\ 29 \phantom{00} \\ \underline{24} \phantom{00} \\ 56 \phantom{00} \\ \underline{56} \phantom{00} \\ 0 \end{array}$$

10. c.

$$\begin{array}{r} 1.64 \\ 5 \overline{) 8.20} \\ \underline{5} \phantom{00} \\ 32 \phantom{00} \\ \underline{30} \phantom{00} \\ 20 \phantom{00} \\ \underline{20} \phantom{00} \\ 0 \end{array}$$

## MATH 504: Algebra and Graphing

### Answer Key

- d.**  
 $9 \times 3 = 27$
- c.**  
 $9 + (7 - 4)^2 \div 3$   
 $9 + 3^2 \div 3$   
 $9 + 9 \div 3$   
 $9 + 3 = 12$
- a.**  
 $17 - 8 = 9$
- c.**  
 $11 \times 13 = 143$ .  
Although students might not know mentally that  $11 \times 13 = 143$ , they should know that  $11 \times 9 = 99$ ,  $11 \times 10 = 110$ , and that  $11 \times 20$  is over 200.
- c.**  
 $14 = 8 + 6$
- c.**  
 $y = 9 \times 5, y = 45$
- a.**  
Line A passes through (0, 6):  $6 = 0 + 6$ .
- d.**  
In 8 hours, she would ride 80 miles; 10 miles each hour.
- c.**  
Moving left to right on the number line, -7, -4, -2, 1, and 5 are in order.
- a., b., d.**  
The graph begins at 3 miles (perhaps distance from home) and increases by 1 mile every 2 hours (or  $\frac{1}{2}$  a mile per hour).

## MATH 505: Measurement

### Answer Key

- c.**  
hecto- means 100
- c.**  
Each of the other choices is equivalent to 5 m.  
 $0.5 \text{ km} = 500 \text{ m}$ .
- d.**  
Multiply to go from a larger unit to a smaller unit. Kilometers are 1,000 times larger than meters so the decimal moves 3 places to the right.
- c.**  
 $4.5 \times 1,000 = 4,500$
- d.**  
 $8 \text{ yards} = 24 \text{ feet}, 24 + 5 = 29 \text{ feet}$
- c.**  
 $3 \text{ lbs.} = 2 \text{ lbs} + 16 \text{ oz.}$   
Subtract:  $2 \text{ lbs} + 16 \text{ oz.} - 6 \text{ oz.} = 2 \text{ lbs.}, 10 \text{ oz.}$
- c.**  
 $32 \text{ fl. oz.} = 1 \text{ quart} = 4 \text{ cups} = 2 \text{ pints}$
- b.**  
 $4 \text{ hours}, 10 \text{ minutes} = 4 \times 60 + 10 = 250 \text{ minutes.}$   
 $2 \text{ hours}, 20 \text{ minutes} = 2 \times 60 + 20 = 140 \text{ minutes.}$   
 $250 - 140 = 110 \text{ minutes.}$   
 $110 \text{ minutes} = 1 \text{ hour}, 50 \text{ minutes}$
- d.**  
 $10:15 + 4 \text{ hours} = 14:15$ , or  $2:15$ ,  
 $2:15 + 10 \text{ minutes} = 2:25$
- a.**  
 $(0.55)(132 - 32) = (0.55)(100) = 55$

## MATH 506: Factors and Fractions

### Answer Key

1. b.

The factors of 9 are 1, 3, and 9, so it is composite.

2. c.

$$\begin{array}{l} 2 \times 3 \times 7 \\ 6 \times 7 \\ 42 \end{array}$$

3. b.

$$\begin{array}{l} 22: \mathbf{2}, 11 \\ 32: \mathbf{2}, 2, 2, 2, 2 \end{array}$$

4. a.

5. b.

Improper fractions are greater than or equal to 1 in value.

6. c.

9 and 12 have a common factor of 3. So,  $\frac{9}{12}$  is not in simplest form.

7. b.

$$\frac{3 \times 3}{8 \times 3} = \frac{9}{24}$$

8. d.

$$\begin{array}{l} 3: 3, 6, 9, 12, 15, 18, \mathbf{21} \\ 7: 7, 14, \mathbf{21}, 28 \end{array}$$

9. b.

The LCD is 42.

$$\frac{3 \times 7}{6 \times 7} = \frac{21}{42}$$

$$\frac{3 \times 6}{7 \times 6} = \frac{18}{42}$$

10. a.

## MATH 507: Fraction Operations

### Answer Key

1.  $\mathbf{2/6 = 1/3}$

$$\frac{5}{6} - \frac{3}{6} = \frac{2+2}{6+2} = \frac{1}{3}$$

2.  $\mathbf{2\ 5/6}$

3. c.

5 is very close to 6. So, the mixed number rounds up.

4.  $\mathbf{7/12}$

The LCD is 12.

$$\frac{4}{12} + \frac{3}{12} = \frac{7}{12}$$

5.  $\mathbf{1/5}$

The LCD is 10.

$$\frac{7}{10} - \frac{5}{10} = \frac{2}{10} = \frac{1}{5}$$

6.  $\mathbf{5\ 11/36}$

The LCD is 36.

$$3\frac{32}{36} + 1\frac{15}{36} = 4\frac{47}{36} = 4 + 1\frac{11}{36} = 5\frac{11}{36}$$

7. a.

$$\begin{array}{l} 24 \div 3 = 8 \\ 2 \times 8 = 16 \end{array}$$

8.  $\mathbf{1/12}$

$$\frac{1 \times 2}{8 \times 3} = \frac{2}{24} = \frac{1}{12}$$

9. c.

Because 6 is being multiplied by a value that is greater than 1, the product will be greater than 6.

10. a.

When 8 is divided into fourths, there are 32 equal parts.



## MATH 508: Data Analysis and Probability

### Answer Key

- c.**  
A random sample is needed for a valid conclusion.
- b.**  
The numbers add to 54,  $54 \div 6 = 9$
- c.**  
The middle pair is 8 and 9, so the median is  $(8 + 9)/2 = 17/2 = 8.5$ .
- b.**
- b.**  
 $15 - 6 = 9$
- c.**  
The graph is steepest between Week 3 and 4
- d.**  
There are 8 dollar bills, each representing 2 million dollars,  $8 \times \$2,000,000 = \$16,000,000$ .
- d.**  
There are 12 possible outcomes, 6 are favorable (1-4, 2-3, 2-4, 3-2, 3-3, 3-4).  
 $\frac{6}{12} = \frac{1}{2}$
- b.**  
There are 12 outcomes, and 1 is favorable.  
 $\frac{1}{12} = \frac{x}{600}$ ,  
 $\frac{1}{12} \times \frac{50}{50} = \frac{50}{600}$ . Or  $600 \div 12 = 50$
- d.**

## MATH 509: Geometry

### Answer Key

- a., b.**  
Two points on a line can define a ray or a line segment.
- b., d.**  
The  $70^\circ$  is an acute angle, but can be measured opening from the left or right.
- b., c.**  
A radius has one endpoint on the circle and the other at the center.
- c.**  
An octagon has 8 sides. The other polygons have more sides (10, 9, and 12).
- b., d.**  
The triangle has acute angles and two of the sides are the same length.
- c., d.**  
All rhombuses are parallelograms.
- a., b., c.**  
The base of a prism can be any polygon. The lateral faces will be congruent only if the base is a regular polygon.
- c.**  
The sides of ABCD are twice as long as the sides of EFGH. The ratio of GH to CD is 3 to 6, or 1 to 2.
- c.**  
The vertices match a rotation of  $180^\circ$ .
- d.**  
The hexagon has point symmetry ( $180^\circ$ ), but not line symmetry.

# MATH 510: Perimeter, Area, and Volume

## Answer Key

1. b.

$$10 + 4 + 7 + 2 + 5 = 28$$

2. b.

$$2(8) + 2(9) = 16 + 18 = 34$$

3. d.

$$d = 2 \times 50 \text{ mm}, d = 100 \text{ mm.}$$

$$3.14 \times 100 = 314$$

4. c.

The figure has 11 squares and 2 half squares.

5. d.

$$12.5 \times 6 = 75$$

6. b.

$$4 \times 3 = 12$$

7. b.

8. c.

$$2(8 \times 4) + 2(8 \times 4) + 2(4 \times 4) = 64 + 64 + 32 = 160$$

9. b.

$$4 \times 4 \times 1 = 16, 3 \times 3 \times 3 = 27,$$

$$2 \times 4 \times 2 = 16, 1 \times 6 \times 2 = 12$$

10. c.

$$16 + 60 = 76$$

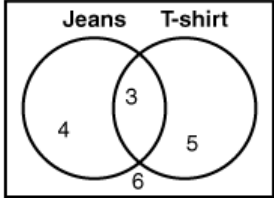
## MATH 601: Whole Numbers and Algebra

### Answer Key

- a.**  
 $\$128 + \$63 + \$45 = \$236$
- c.**  
 $28 \times 4 = 112$
- d.**  
The commutative property of multiplication changes the order of the factors.
- c.**  
The sequence starts at 176 and repeatedly subtracts 20.  
 $116 - 20 = 96$   
 $96 - 20 = 76$
- c.**  
 $10^2 - 2 \times 8 + 11$   
 $100 - 2 \times 8 + 11$   
 $100 - 16 + 11$   
 $84 + 11$   
95
- d.**
- a.**  
 $4^2 = 16$
- a.**  
 $8x$  and  $7x$  are like terms, so they may be combined.
- c.**
- c.**  
Substitute the values into the expression.  
 $a + c$   
 $18 + 11$   
29

## MATH 602: Data Analysis

### Answer Key

- d.**  
The other choices will give a biased sample.
- d.**  
This is the only line plot with the correct number of data points: 10.
- c.**  
There are 10 values. The middle pair is 3 and 4.
- c.**  
 $2 + 9 + 7 + 5 = 23$ .
- c.**
- c.**  
The graph is steepest between Tuesday and Wednesday.
- d.**  

- a.**  
This choice avoids the longest edge (A to D), which all of the other choices use.
- a.**  
In this case, the mean is not a good indicator because the range is wide and there is an outlier lowering the mean. Since the mode and median are both 26, this is probably where most of the data is concentrated.
- b.**  
The sum of the data is 209, and there are 11 data points.  $209/11 = 19$

## MATH 603: Decimals

### Answer Key

1. a.
2. a.  
9.134 is greater than 9.125.
3. c.  
 $130 + 30 + 20 = 180$
4. d.  
 $50.00 - 37.52 = 12.48$
5. b.  
 $1.2 + 3.5 \times 4.1$   
 $1.2 + 14.35$   
15.55
6. d.  
 $190.72 \div 8 = 23.84$
7. a.
8. c.
9. **False**  
The development of the metric system began in 1670.
10. c.  
 $800 \div 1,000 = 0.8$

## MATH 604: Fractions

### Answer Key

1. c.
2. c.  
 $20 = 2 \times 2 \times 5$   
 $30 = 2 \times 3 \times 5$   
 $\text{GCF} = 2 \times 5 = 10$
3. c.  
The rectangle is divided into six equal pieces, with four of them shaded.
4. d.  
 $\frac{15 \div 3}{18 \div 3} = \frac{5}{6}$
5. a.  
24:  $2 \times 2 \times 2 \times 3$   
36:  $2 \times 2 \times 3 \times 3$   
 $\text{LCM} = 2 \times 2 \times 3 \times 2 \times 3 = 72$   
 $72 \div 36 = 2$  packages
6. b.  
 $\frac{1 \times 5}{4 \times 5} = \frac{5}{20}$   
 $\frac{1 \times 4}{5 \times 4} = \frac{4}{20}$
7. c.  
4 goes into 9 two times, with a remainder of 1.
8. b.  
 $7.13 = 7 \frac{13}{100}$
9. c.
10. c.  
$$\begin{array}{r} 7 \\ 8 \overline{) 63} \\ -7 \phantom{0} \\ \hline 0 \phantom{0} 21 \end{array}$$

# MATH 605: Fraction Operations

## Answer Key

1. c.

$$\frac{11 + 11}{12} = \frac{22}{12} = 1 \frac{10}{12} = 1 \frac{5}{6}$$

2. d.

The LCD is 45.

$$\frac{7 \times 3}{15 \times 3} = \frac{21}{45}$$

$$\frac{4 \times 5}{9 \times 5} = \frac{20}{45}$$

3. d.

The LCD is 18.

$$\frac{5 \times 3}{6 \times 3} = \frac{15}{18}$$

$$\frac{2 \times 2}{9 \times 2} = \frac{4}{18}$$

$$14 \frac{15}{18} + 18 \frac{4}{18} = 32 \frac{19}{18} = 33 \frac{1}{18}$$

4. a.

Borrow 1 from the whole number and add  $\frac{7}{7}$  to the fraction.

$$4 \frac{11}{7} - 2 \frac{6}{7}$$

$$2 \frac{5}{7}$$

5. c.

$$\frac{5}{6} \times \frac{12}{1} = \frac{10}{1} = 10$$

6. b.

$$\frac{7}{1} \times \frac{7}{1} = \frac{49}{1} = 49$$

7. d.

$$\frac{101}{12} \div \frac{7}{4} = \frac{101}{12} \times \frac{4}{7} = \frac{101}{21} = 4 \frac{17}{21}$$

8. b.

9. c.

$$\frac{27}{8} \times \frac{16}{1} = \frac{54}{1} = 54$$

$$54 \text{ oz} = 54 \text{ oz}$$

10. c.

$$\frac{42 \div 2}{8 \div 2} = \frac{21}{4} = 5 \frac{1}{4}$$

## MATH 606: Ratio, Proportion, and Percent

### Answer Key

1. b.

12 to 16 reduces to 3 to 4.

2. a.

$$\frac{22}{7} \div \frac{8}{1} = \frac{176}{7} = 25 \frac{1}{7}$$

3. b.

$$\text{Carly: } \frac{\$17.50 \div 7}{7 \text{ gal} \div 7} = \frac{\$2.50}{1 \text{ gal}}$$

$$\text{Jade: } \frac{\$45.00 \div 15}{15 \text{ gal} \div 15} = \frac{\$3.00}{1 \text{ gal}}$$

4. c.

$$\frac{18 \div 9}{27 \div 9} = \frac{2}{3}$$

5. d.

$d$  represents the number of dollars. The ratios should be written in the same way: pounds to dollars

6. b.

$$\frac{5 \text{ mm} \times 5}{32 \text{ km} \times 5} = \frac{25 \text{ mm}}{160 \text{ km}}$$

7. d.

$$\frac{34 \div 2}{100 \div 2} = \frac{17}{50}$$

8. d.

Move the decimal point two places to the right.

9. d.

Add the percentages of students that had no absences, one absence, or two absences. Then, subtract that sum from 100%.

$$23\% + 45\% + 21\% = 89\%$$

$$100\% - 89\% = 11\%$$

10. b.

$$0.18 \times 14 = 2.52$$

## MATH 607: Probability and Geometry

### Answer Key

1. a.

10 out of 12 marbles are not blue.  $\frac{10}{12} = \frac{5}{6}$

2. a.

There are 12 outcomes and 4 are 14 or less: 11, 12, 13, 14. So, there must be 8 outcomes

greater than 14.  $\frac{8}{12} = \frac{2}{3}$ .

3. c., d.

The common endpoint is the vertex, point N, so each ray must start with point N.

4. b.

The angle is acute and about halfway between  $0^\circ$  and  $90^\circ$ .

5. a., c.

The vertical angle will measure  $25^\circ$ , and the two adjacent angles, which are supplementary, will measure  $155^\circ$  ( $180^\circ - 25^\circ = 155^\circ$ )

6. a., c.

The other 2 angles in a right triangle are complementary:  $40^\circ + 50^\circ = 90^\circ$ ,  $25^\circ + 65^\circ = 90^\circ$ .

7. a., d.

A right triangle can be scalene or isosceles. An equilateral triangle is an acute triangle.

8. a., c.

A rectangle is a quadrilateral and a parallelogram. A square is a rectangle, but a rectangle is not necessarily a square.

9. a.

$\angle A$  corresponds to  $\angle R$ , so  $m\angle T = 125^\circ$ .

$$98^\circ + 35^\circ + 102^\circ + \underline{125^\circ} = 360^\circ$$

10. a.

Both ratios are equal:  $\frac{2}{4} = \frac{8}{16} = \frac{1}{2}$

# MATH 608: Geometry and Measurement

## Answer Key

1. d.

An octagon has 8 sides.  $8 \times 8 \text{ cm} = 64 \text{ cm}$

2. b.

$$8 + 8 + 12 + 6 + (12 - 8) + (8 - 6) = 34 + 4 + 2 = 40 \text{ mm}$$

3. d.

The area of the parallelogram is twice the area of the triangle.

4. a.

$$A = \frac{1}{2}bh$$
$$A = \frac{1}{2}(10)(4)$$
$$A = 20\text{cm}^2$$

5. c.

Dividing the trapezoid into a parallelogram and a triangle, we can use the formula

$A = \frac{1}{2}bh + bh$ . The triangle will have a base of 14 inches ( $20 - 6 = 14$ ).

$$\frac{1}{2}(14 \text{ in.})(7 \text{ in.}) + (6 \text{ in.})(7 \text{ in.})$$
$$= 49 + 42 = 91 \text{ in.}^2$$

6. d.

$$A = \frac{\pi r^2}{2}, r = \frac{1}{2}d = 11, \frac{3.14(11 \times 11)}{2} = 189.97$$

7. b.

A pentagonal pyramid has 5 edges around the base and 5 lateral edges.

8. c.

$$SA = 2lw + 2lh + 2wh:$$
$$2(6)(10) + 2(6)(6) + 2(10)(6) = 120 + 72 + 120 = 312 \text{ square meters.}$$

9. c.

$$V = l \times w \times h: 3 \times 8 \times 6 = 144 \text{ cubic feet.}$$

10. d.

$$\text{Top + bottom} = 2(4)(4) = 32.$$

$$224 - 32 = 192.$$

The lateral side rectangle is 16 long ( $4 + 4 + 4 + 4 = 16$ ).

$$192 \div 16 = 12.$$

## MATH 609: Integers and Transformations

### Answer Key

- d.**  
 $| -4 | = 4$ ,  $| -6 | = 6$ ,  $| -8 | = 8$ , Moving left to right on the number line, 4, 5, 6, 7, 8 are in order.
- a.**  
45 is 28 more than 17 ( $45 - 17 = 28$ ).
- d.**  
 $-8 - (-4) = -8 + 4 = -4$ .
- a.**  
 $6 - 7 = -1$   
 $-1 + 7 = 6$ .
- c.**  
Both factors have the same sign, so the product is positive.
- a.**  
Negative divided by *negative* is positive.
- b., c.**  
Since the figure moves over the  $x$ -axis the  $y$ -coordinates will change sign, but the  $x$ -coordinates will stay the same.
- a., c.**  
The triangles could have been reflected because each corresponding pair of points is the same distance from the  $y$ -axis. The triangles also could have been rotated  $90^\circ$ .
- d.**  
The prime symbols denote the image, so the translation was 4 units left.
- a.**  
The letter Z has rotational symmetry, but not line symmetry.

## MATH 610: Equations and Functions

### Answer Key

- a.**  
The first comma separates  $\frac{d}{5}$  from  $+ 4$ .
- d.**  
 $6(5) - 5 = 30 - 5 = 25$ .
- a.**  
Since 4 is subtracted from the variable, 4 must be added to both sides to isolate the variable.
- c.**  
 $6.4 - 4.3 = 2.1$ , or  $2.1 + 4.3 = 6.4$
- d.**  
 $5(10.2) = 51$ .
- b.**  
 $\frac{24}{6} = 4$ , not 5.
- a., d.**  
For  $<$ , the endpoint is not part of the solution, and numbers less than or equal to 4.5, are to the left.
- b.**  
The closed circle indicates either  $\leq$  or  $\geq$ , and the ray moving to the left indicates  $\leq$  or  $<$ .
- b.**  
 $3(5) - 4 = 15 - 4 = 11$ .  
 $11 \neq 8$
- d.**  
All 4 points (0, 2), (1, 4), (2, 6), and (3, 8) will only work in this choice.



## Math 701: Integers

### Answer Key

- b.**
- d.**
- a.**  
The difference between  $|-13|$  and  $|5|$  is 8. Since  $|-13|$  has the larger absolute value, the result is negative.
- c.**  
Subtracting  $-7$  is the same as adding  $+7$ .
- d.**  
 $(-6)(-6) = 36$   
Multiplying two negative factors results in a positive product.
- a., b.**
- b.**
- c.**  
 $5 - 2 \cdot 3 + 4$   
 $= 5 - 6 + 4$   
 $= -1 + 4$   
 $= 3$
- a.**
- b.**

## Math 702: Fractions

### Answer Key

- d.**  
You can make two groups of 7 and have 1 left over, making the mixed number  $2\frac{1}{7}$ .
- b.**  
The fractions  $\frac{4}{10}$ ,  $\frac{6}{15}$ , and  $\frac{8}{20}$  can all be simplified to  $\frac{2}{5}$ .
- c.**
- d.**  
The factors of 28 are 1, 2, 4, 7, 14, and 28. The factors of 42 are 1, 2, 3, 6, 7, 14, 21, and 42. The largest factor these numbers have in common is 14.
- c.**
- b.**  
 $\frac{7}{13} + \frac{11}{26}$   
 $= \frac{14}{26} + \frac{11}{26}$   
 $= \frac{25}{26}$
- b.**  
 $\frac{20}{6} - \frac{2}{3}$   
 $= \frac{20}{6} - \frac{4}{6}$   
 $= \frac{16}{6}$   
 $= 2\frac{4}{6}$   
 $= 2\frac{2}{3}$
- d.**
- c.**
- c.**

## Math 703: Decimals

### Answer Key

1. a.

The second number after the decimal tells us that 4.576 is larger.

2. a.

259.98991 rounds up to 259.99.

3. d.

$$0.82 + 0.70 + 0.25 = \$1.77$$

4. d.

$$72.25 - 51.5 = 20.75$$

5. a.

6. b.

$$0.312 = \frac{312}{1000} = \frac{312 \div 8}{1000 \div 8} = \frac{39}{125}$$

7. d.

8. 8.2 cm

$$\text{length} = \frac{20.5}{2.5}$$

$$\text{length} = 20.5 \div 2.5 = 8.2$$

9. c.

10. b.

Move the decimal point three places to the left.

## Math 704: Patterns and Equations

### Answer Key

1. c.

2. b.

$$(-2)^2 - (-8) + 1$$

$$= 4 - (-8) + 1$$

$$= 4 + 8 + 1$$

$$= 12 + 1$$

$$= 13$$

3. c.

There is no common difference or common ratio between each pair of consecutive numbers.

4. a.

The inputs are the first part of each ordered pair.

5. c.

All ordered pairs must satisfy the function rule:

$$x = -3; y = 1$$

$$1 = (-3) + 4$$

$$1 = 1$$

$$x = 0; y = 4$$

$$4 = (0) + 4$$

$$4 = 4$$

$$x = 2; y = 6$$

$$6 = (2) + 4$$

$$6 = 6$$

6. c.

$$w - 9\frac{1}{2} + 9\frac{1}{2} = 15 + 9\frac{1}{2}$$

$$w = 24\frac{1}{2}$$

## Math 705: Ratios and Proportions

Answer Key

7. d.  
 $4 \cdot \frac{n}{4} = -12.4 \cdot 4$   
 $n = -49.6$

8. b.

9. b.

$$25 + 0.15m = 71.8$$

$$25 - 25 + 0.15m = 71.8 - 25$$

$$0.15m = 46.8$$

$$\frac{0.15m}{0.15} = \frac{46.8}{0.15}$$

$$m = 312$$

10. b.

1. c.

2. b.

3. c.

4. c.

5. a.

6. d.

7. b.

8. d.

9. c.

10. d.

## Math 706: Probability and Graphing

### Answer Key

1. a.
2. b.
3. c.
4. d.
5. a.
6. c.
7. b.
8. b.
9. b.
10. c.

## Math 707: Data Analysis

### Answer Key

1. a., b., e.

Mode:

The numbers 3, 8, and 9 all appear twice in the list.

Median:

Put the list in order from smallest to largest:

1, 2, 3, 3, 4, 5, 6, 8, 8, 9, 9, 10

There is an even number of items, so the median is the mean of the two middle values:

$$\frac{5+6}{2} = \frac{11}{2} = 5.5$$

Mean:

$$\frac{1 + 2 + 3 + 3 + 4 + 5 + 6 + 8 + 8 + 9 + 9 + 10}{12}$$

$$= \frac{68}{12} = 5.\bar{6}$$

2. b.

range = highest value - lowest value

range = 45 - 12

range = 33

3. a.

The interquartile range is the difference between the upper and lower quartiles, which is 18 - 15, or 3.

4. a.

Count the leaves that come before a 75 in the plot.

5. d.

Add the bars from the last two intervals:

$$10 + 4 = 14$$

6. a.  
Including the 8 that enjoy both country and jazz, 32 enjoy country. So  $32 - 8$ , or 24, enjoy just country. And  $14 - 8$ , or 6, enjoy just jazz.

7. c.

8. c.

9. a.  
 $0.24 \cdot 360^\circ = 86.4^\circ$

10. b.

## Math 708: Geometry

Answer Key

1. c.

2. c.

3. b.

4. d.

5. b.

6. a.

7. c.

8. b.

9. d.

10. b.

## Math 709: Measurement and Area

### Answer Key

- b.**  
 $37 = 18 + 11 + x$   
 $37 = 29 + x$   
 $8 = x$
- b.**  
 $C = (3.14)(8) = 25.12.$
- a.**  
 $42 = 6h$
- d.**  
 $A = \frac{1}{2} (10)(5) = 25$
- a.**  
 $A = (3.14)(9)^2 = (3.14)(81) = 254.34$
- c.**  
 $A = \frac{1}{2} (8 + 4)(3) = \frac{1}{2} (12)(3) = 18$
- c.**  
Area changes by the square of the change in dimensions:  
 $3^2 = 9$
- b.**
- d.**  
 $\sqrt{50}$  lies between  $\sqrt{49}$  and  $\sqrt{64}$ , or 7 and 8.
- a.**  
 $6^2 + 8^2 = c^2$   
 $36 + 64 = c^2$   
 $100 = c^2$   
 $10 = c$

## Math 710: Surface Area and Volume

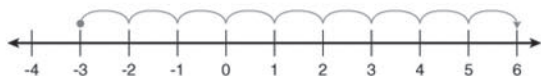
### Answer Key

- a.**
- d.**
- b.**  
 $31.4 + 12.56 = 43.96$
- a.**  
 $SA = 2(15)(15) + 2(15)(15) + 2(15)(15)$   
 $SA = 450 + 450 + 450$   
 $SA = 1,350$
- c.**  
 $V = (3)(4)(1) = 12$
- d.**  
 $SA = 2B + Ph$   
 $SA = 2(6) + (12)(7)$   
 $SA = 12 + 84$   
 $SA = 96$
- c.**  
 $V = Bh$   
 $V = (7)(11)$   
 $V = 77$
- a.**  
 $SA = 25.12 + 87.92$   
 $SA = 113.04$
- d.**  
 $V = \pi r^2 h$   
 $V = (3.14)(2 \text{ in.})^2(7 \text{ in.})$   
 $V = (3.14)(4 \text{ in.}^2)(7 \text{ in.})$   
 $V = 87.92 \text{ in.}^3$
- a.**  
The dimensions are three times larger, so the surface area is  $3^2$ , or 9 times larger.

## Pre-Algebra Math 801: The Real Number System

Answer Key

- a., c, f.**  
 $4^0 = 1$   
 $5^{-1} = 1/5$
- b., d., f.**  
 $4.2 \times 10^{-3} = 0.0042$   
 $1/4 = 0.25$
- d., a., e., c., b.**
- c.**
- d.**  
 $x$  is between  $4^2$  and  $5^2$ , or between 16 and 25.
- c.**  
 The square root of a number that is not a perfect square is irrational. 32 is not a perfect square.
- b.**  
 $\sqrt{3}$  is between 1 and 2.  
 $5^{-1} = 1/5$
- c.**  
 $9^8 \div 9^n = 9^{8-4} = 9^4$
- b.**  
 The whole numbers include counting numbers and 0.  
 $|-2| = 2$   
 $-15/5 = -3$   
 $\sqrt{36} = 6$   
 $9^0 = 1$
- d.**



## Pre-Algebra Math 802: Modeling Problems in Integers

Answer Key

- a.**
- a.**  

$$\frac{-6 - 4(-3)}{-2 + 1}$$

$$= \frac{-6 - (-12)}{-2 + 1}$$

$$= \frac{-6 + 12}{-2 + 1}$$

$$= \frac{6}{-1}$$

$$= -6$$
- b.**  
 $f(3) = -5(3) - 2$   
 $f(3) = -15 - 2$   
 $f(3) = -15 + -2$   
 $f(3) = -17$
- b.**  
 $11x = 33$   

$$\frac{11x}{11} = \frac{33}{11}$$
 $x = 3$   

$$\frac{x}{3} = 3$$
  
 $(3) \frac{x}{3} = 3(3)$ 
 $x = 9$   
 $x - 2 = 1$   
 $x - 2 + 2 = 1 + 2$ 
 $x = 3$   
 $x + 9 = 12$   
 $x + 9 - 9 = 12 - 9$ 
 $x = 3$

5. c.

$$4x - 11 = 33$$

$$4x - 11 + 11 = 33 + 11$$

$$4x = 44$$

$$4x/4 = 44/4$$

$$x = 11$$
  

$$2x + 8 = 8$$

$$2x + 8 - 8 = 8 - 8$$

$$2x = 0$$

$$2x/2 = 0/2$$

$$x = 0$$
  

$$4x - 7 = 13$$

$$4x - 7 + 7 = 13 + 7$$

$$4x = 20$$

$$4x/4 = 20/4$$

$$x = 5$$
  

$$3x - 22 = 11$$

$$3x - 22 + 22 = 11 + 22$$

$$3x = 33$$

$$3x/3 = 33/3$$

$$x = 11$$
  

$$5x + 3 = 18$$

$$5x + 3 - 3 = 18 - 3$$

$$5x = 15$$

$$5x/5 = 15/5$$

$$x = 3$$

6. b.

$$-2x^2y, \text{ if } x = -4 \text{ and } y = 1$$

$$-2(-4)^2(1)$$

$$-2(16)(1)$$

$$-32(1)$$

$$-32$$

7. d.  
 8. d.  
 9. d.  
 10. d.

## Pre-Algebra Math 803: Modeling Problems with Rational Numbers

Answer Key

1. a.  
 Twelve will go into 32 twice, with 8 leftover.  
 And,  $-2\frac{8}{12}$  simplifies to  $-2\frac{2}{3}$ .
2. d.  
 Closed circle on -3 and shade to the right.
3. c.  
 $-4a + 5 \leq -7$   
 $-4a + 5 - 5 \leq -7 - 5$   
 $-4a \leq -12$   
 $\frac{-4a}{-4} \leq \frac{-12}{-4}$   
 $a \geq 3$
4. b.  
 "More than" means "greater than".
5. a.  
 Find the GCF.  
 $27 = 3 \cdot 3 \cdot 3$   
 $36 = 2 \cdot 2 \cdot 3 \cdot 3$   
 $54 = 2 \cdot 3 \cdot 3 \cdot 3$   
 GCF =  $3 \cdot 3 = 9$
6. c.  
 $\frac{7}{9}\left(-\frac{3}{14}\right)$   
 $\frac{17}{39}\left(-\frac{3^1}{44^2}\right) = -\frac{1}{6}$
7. d.  
 $22.5 + x = -47.37$   
 $22.5 - 22.5 + x = -47.37 - 22.5$   
 $x = -69.87$



8. d.  
 $-4.326 + (-0.32) \div 0.4$   
 $-4.326 + (-0.8) = -5.126$

9. c.  
The GCF of  $32ab^3$  and  $40a^2$  is  $8a$ .

10. a.  
$$\frac{14x^3y^2}{35xy^4z^2} = \frac{2x^2}{5y^2z^2}$$

## Pre-Algebra Math 804: Proportional Reasoning

### Answer Key

1. a.  
 $4\% = 0.04$   
 $3/8 = 0.375$   
 $2/5 = 0.4$
2. d.  
 $\$5.00/4 = \$1.25/1$   
 $\$7.44/6 = \$1.24/1$   
 $\$3.60/3 = \$1.20/1$
3. b.  
Amount of discount:  $\$14 - \$10 = \$4$   
Percent of discount:  $4/14 = 0.2857\dots$
4. b.  
 $4/2 = 5/x$
5. d.  
Small triangle/Large triangle
6. d.  
Convert kilometers to meters:  
 $66 \text{ km}/x = 1 \text{ km}/1,000 \text{ m}$   
 $x = (66)(1,000)$   
 $x = 66,000$   
Convert hours to seconds:  
 $66,000 \text{ m}/1 \text{ hr} \cdot 1 \text{ hr}/3,600 \text{ sec} =$   
 $66,000/3,600 = 18.3333/1 \text{ sec}$
7. b.  
In a proportion, the products of cross multiplication must be equal.
8. d.  
Convert feet to inches:  
 $x/4 \text{ ft} = 12 \text{ in.}/1 \text{ ft}$   
 $x = (4)(12) = 48 \text{ in}$   
Find the scale:  $2/48$  reduces to  $1/24$ .

9. c., d., f.  
 $2/9 = 3:13.5$   
 $2/8 = 3:12$   
 $6:26 = 3:13$   
 $12/52 = 3:13$   
 $5/24 = 3:14.4$   
 $1.5 \text{ to } 6.5 = 3:13$

## Pre-Algebra Math 805: More with Functions

### Answer Key

1. **5**  
 $4x - 14 + 6 = 12$   
 $4x - 8 = 12$   
 $+8 \quad +8$   
 $4x = 20$   
 $4x/4 = 20/4$   
 $x = 5$
2. **13**  
 $2(x - 4) + 2(8) = 34$   
 $2x - 8 + 16 = 34$   
 $2x + 8 = 34$   
 $-8 \quad -8$   
 $2x = 26$   
 $2x/2 = 26/2$   
 $x = 13$
3. **2**  
 The equation is in the slope-intercept form so the slope is 2. This would also be the slope of a parallel line.
4. **b.**  
 $2x^2 + 7x - 4x - 6x^2$   
 $2x^2 - 6x^2 + 7x - 4x$   
 $-4x^2 + 7x - 4x$   
 $-4x^2 + 3x$
5. **a.**  
 If the base of the exponent is greater than 1, the function will produce exponential growth. The only equation with a base greater than 1 is  $y = 0.5(3)^x$ .
6. **b.**  
 $7, 21, 63, 189, \dots$  has a common ratio so it is a geometric sequence.

7. c.  
 $-4(-2y + 3) = 20$   
 $8y - 12 = 20$   
 $+ 12 + 12$   
 $8y = 32$   
 $8y/8 = 32/8$   
 $y = 4$

8. a.  
 $y = 2^x$   
 $y = 2^0$   
 $y = 1$  then (0, 1)

9. c.  
 $m = (y_2 - y_1)/(x_2 - x_1)$   
 $m = (8 - 4)/(5 - 3)$   
 $m = 4/2$   
 $m = 2$

10. d.

## Pre-Algebra Math 806: Measurement

Answer Key

1. c.  
 $12 + 13 > 13$   
 $25 > 13$   
 It's an isosceles triangle.

2. b.  
 $x + 2x + 89^\circ + 76^\circ = 360^\circ$   
 $3x + 165^\circ = 360^\circ$   
 $3x = 195^\circ$   
 $x = 65^\circ$   
 $2x = 2(65^\circ) = 130^\circ$

3. d.  
 $x + 7 + 3x - 5 = 90^\circ$   
 $4x + 2 = 90^\circ$   
 $4x = 88^\circ$   
 $x = 22^\circ$

4. b.  
 $x + 2x + 3x = 180^\circ$   
 $6x = 180^\circ$   
 $x = 30^\circ$   
 $3x = 3(30^\circ) = 90^\circ$

5. a.

6. c.  
 $a^2 + b^2 = c^2$   
 $9^2 + 16^2 = 20^2$   
 $81 + 256 = 400$   
 $337 \neq 400$

7. b.  
 A heptagon has five triangles in its interior at  $180^\circ$  each. So,  $5(180^\circ) = 900^\circ$ .

8. a.  
 Intercepted arcs measure twice the inscribed angle.  
 $2(116^\circ) = 232^\circ$

9. a., d., e., f., g.

## Pre-Algebra Math 807: Plane Geometry

### Answer Key

- 1. doubled**
- 2. d.**  
Add all the sides to find the perimeter.
- 3. b.**  
 $(-8) + (-2) = -10$ ;  $-10 \div 2 = -5$   
 $-5 + 2 = -3$ ;  $-3 \div 2 = -1.5$
- 4. c.**  
 $(6)^2 + (3)^2 = c^2$   
 $36 + 9 = c^2$   
 $45 = c^2$   
 $\sqrt{45} = c$
- 5. a.**  
Vertical line of reflection along the  $y$ -axis.
- 6. c.**  
Convert yards to feet:  $4 \text{ yd} = 12 \text{ ft}$   
 $A = (6 \text{ ft})(12 \text{ ft}) = 72 \text{ ft}^2$
- 7. b.**  
In a  $270^\circ$  rotation, the coordinates are switched, and the  $x$ -coordinate changes sign.
- 8. d.**  
 $12 \text{ ft} \cdot 4 \text{ ft} = 48 \text{ ft}^2$ ;  $2(12 \text{ ft}) + 2(4 \text{ ft}) = 24 \text{ ft} + 8 \text{ ft} = 32 \text{ ft}$

## Pre-Algebra Math 808: Measures of Solid Figures

### Answer Key

- 1. a.**
- 2. 7**  
 $V + F = E + 2$   
 $10 + F = 15 + 2$   
 $10 + F = 17$   
 $F = 7$
- 3. b.**  
 $V = lwh$   
 $V = (15)(15)(15)$   
 $V = 3,375 \text{ in.}^3$
- 4. b.**  
 $V = \frac{1}{3} \pi r^2 h$   
 $V = \frac{1}{3} (3.14)(8^2)(20)$   
 $V = \frac{1}{3} (3.14)(64)(20)$   
 $V = 1,339.73 \text{ ft}^3$
- 5. 1,205.76**  
 $V = \frac{1}{3} \pi r^2 h + \pi r^2 h$   
 $V = \frac{1}{3} (3.14)(4^2)(12) + (3.14)(4^2)(20)$   
 $V = \frac{1}{3} (3.14)(16)(12) + (3.14)(16)(20)$   
 $V = 200.96 + 1,004.8$   
 $V = 1,205.76 \text{ cm}^3$
- 6. d.**  
 $SA = 4\pi r^2$   
 $SA = 4(3.14)(11^2)$   
 $SA = 4(3.14)(121)$   
 $SA = 1,519.76 \text{ cm}^2$

7. **b.**  
 $SA = 2lw + 2lh + 2wh$   
 $SA = 2(7)(12) + 2(7)(25) + 2(12)(25)$   
 $SA = 168 + 350 + 600$   
 $SA = 1,118 \text{ in.}^2$
8. **b.**  
 $SA = 2\left(\frac{(9)(12)}{2}\right) + 15(19) + 9(19) + 2(7)(12) + 2(7)(19) + (12)(19)$   
 $SA = 2(54) + 15(19) + 9(19) + 2(7)(12) + 2(7)(19) + (12)(19)$   
 $SA = 108 + 285 + 171 + 168 + 266 + 228$   
 $SA = 1,226 \text{ in.}^2$

## Pre-Algebra Math 809: Data Analysis

### Answer Key

1. **b.**
2. **b.**  
 A self-selected sample allows members of a population to volunteer to participate.
3. **c.**  
 The lower extreme is the first point, which is located at 8.2.
4. **c.**  
 $6/69 = 0.09$ ;  $0.09 \cdot 360 = 32^\circ$
5. **b.**  
 At 2 hours, the family will be 75 miles from home.
6. **b.**  
 $25\% + 38\% + 19\% = 82\% = 0.82 \cdot 32 = 26.24 \approx 26$
7. **c.**  
 Range = 50, Median = 15,  $50 - 15 = 35$
8. **a.**  
 A circle graph allows the reader to see a visual of the individual category compared to the whole.
9. **c.**  
 A line of best fit has approximately the same number of points above it as it does below it.
10. **c.**  
 The mode is the frequency of 4.

# Pre-Algebra Math 810: Probability

## Answer Key

1. **No, Adam**

$$\text{you} = P(2-5) = 10/36 = 5/18$$

$$\text{Adam} = P(6-8) = 16/36 = 4/9$$

$$\text{Alana} = P(9-12) = 10/36 = 5/18$$

The game is not fair. Adam has the best advantage.

2. **a.**

$$P(\text{black}) = 7/30$$

3. **1,680**

$${}_8P_4 = 8 \cdot 7 \cdot 6 \cdot 5 = 1,680$$

4. **b.**

$$P(A \text{ or } B) = P(A) + P(B) = 9/25 + 9/25 = 18/25$$

5. **1/4**

$$\text{Odds}(\text{green}) = 1/4$$

6. **d.**

$$\text{exp } P(1) = 4/50 = 2/25$$

7. **c.**

$${}_8C_3 = 8!/[3!(8-3)!] = 8!/[3!5!]$$

$$= (8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1)/(3 \cdot 2 \cdot 1 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1) = (8 \cdot 7 \cdot 6)/(3 \cdot 2 \cdot 1) = 336/6 = 56$$

8. **a.**

$$P(\text{heads and heads and heads and heads}) = 1/2 \cdot 1/2 \cdot 1/2 \cdot 1/2 \cdot 1/2 = 1/32$$

9. **b.**

$${}_{12}P_3 = 12!/(12-3)! = 12!/9! = 12 \cdot 11 \cdot 10 = 1,320$$

10. **a.**

$${}_5C_3 = 5!/[3!(5-3)!] = 5!/[3!2!]$$

$$= (5 \cdot 4)/(2 \cdot 1) = 20/2 = 10$$





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