PERIMETER FORMULAS

perimeter = distance around

square. ........... $P = 4s$

rectangle. ........ $P = 2b + 2h$
   OR
   $P = 2l + 2w$

triangle. .......... $P = a + b + c$

AREA FORMULAS

square. ........... $A = s \times s$

rectangle. ......... $A = bh$
   OR
   $A = lw$

parallelogram ....... $A = bh$

triangle. ......... $A = \frac{1}{2}bh$

circle. ........... $A = \pi r^2$

VOLUME FORMULAS

rectangular prism. .... $V = lwh$

cube. ............... $V = s \times s \times s$
   $(s = \text{length of an edge})$

CIRCLE FORMULAS

$C = 2\pi r$
   OR
   $C = \pi d$

$A = \pi r^2$
A dairy farmer delivered milk over two days.

- On Monday, he used 5 gallons of fuel to drive 40 miles.
- On Tuesday, he drove 120 miles at an average rate of 10 miles per gallon of fuel.

Which of the following sentences about the miles traveled per gallon of fuel on Monday and the number of gallons of fuel used on Tuesday is true?

A. The dairy farmer drove at an average rate of 8 miles per gallon of fuel on Monday, and used a total of 12 gallons of fuel on Tuesday.

B. The dairy farmer drove at an average rate of 0.125 miles per gallon of fuel on Monday, and used a total of 0.1 gallon of fuel on Tuesday.

C. The dairy farmer drove at an average rate of 40 miles per gallon of fuel on Monday, and used a total of 120 gallons of fuel on Tuesday.

D. The dairy farmer drove at an average rate of 5 miles per gallon of fuel on Monday, and used a total of 10 gallons of fuel on Tuesday.
This table shows the weight, in pounds, of 15 pumpkins that are for sale at a farm.

<table>
<thead>
<tr>
<th>Weight of Pumpkins (pounds)</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Which of the following histograms correctly represents the data?
Which of the following graphs shows a triangle with vertices located at (4, -2), (1, -2), and (4, 5) on the coordinate plane?
This question has three parts. Be sure to label each part of your response.

This table shows the amount, in pounds, of snow that Andy can remove over time using a shovel.

<table>
<thead>
<tr>
<th>Time (minutes)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snow Removed (pounds)</td>
<td>80</td>
<td>160</td>
<td>240</td>
<td>320</td>
<td>480</td>
<td></td>
</tr>
</tbody>
</table>

A. Based on the table, what is the amount, in pounds, of snow that Andy can remove in 5 minutes using a shovel? Show or explain how you got your answer.

B. On the coordinate plane provided in your answer space, plot the data from the table to show the amount of snow that Andy can remove over time.

C. Based on your graph in Part B, what is the amount, in pounds, of snow that Andy can remove in 7 minutes? Show or explain how you got your answer.
The table shows the colors of 18 cars on the street.

<table>
<thead>
<tr>
<th>Car Color</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>6</td>
</tr>
<tr>
<td>Blue</td>
<td>4</td>
</tr>
<tr>
<td>Black</td>
<td>3</td>
</tr>
<tr>
<td>White</td>
<td>5</td>
</tr>
</tbody>
</table>

Based on the information shown in the table, what could the ratio 3:6 describe?

A. The ratio 3:6 could describe the number of red cars to the number of black cars on the street.
B. The ratio 3:6 could describe the number of blue cars to the number of white cars on the street.
C. The ratio 3:6 could describe the number of black cars to the number of red cars on the street.
D. The ratio 3:6 could describe the number of white cars to the number of blue cars on the street.
A student earns $12 each time he shovels his neighbor’s driveway. He earned a total of $108 shoveling the driveway last winter. Which of the following equations could be used to find \( w \), the number of times the student shoveled his neighbor’s driveway last winter?

A. \( 108w = 12 \)
B. \( 12w = 108 \)
C. \( w + 12 = 108 \)
D. \( 108 + w = 12 \)
13 Which of the following plotted points represents the location of the number that is the opposite of \(-9\)?

A

B

C

D

14 Which of the following equations with exponential expressions are true?

Select the three correct equations.

A \(2^3 = 2 \cdot 2 \cdot 2\)

B \(3^2 = 2 \cdot 2\)

C \(4^5 = 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4\)

D \(5 \cdot 5 = 2^5\)

E \(6 \cdot 6 \cdot 6 = 6^3\)

F \(7 \cdot 7 \cdot 7 \cdot 7 \cdot 7 \cdot 7 = 7^1\)
A student used congruent cubes to build a right rectangular prism. The prism and its dimensions are shown in this diagram.

Part A
What is the volume, in cubic inches, of the prism?

A 6
B 12
C 36
D 48

Part B
What is the volume, in cubic inches, of 1 of the cubes?

A 1
B \( \frac{1}{2} \)
C \( \frac{1}{4} \)
D \( \frac{1}{8} \)
The net of a triangular prism and some of its dimensions are shown in the diagram.

What is the total surface area, in square inches, of the triangular prism?

Enter your answer in the box.
Mr. Johnson's class has 24 students.

- There are 18 students in the class who study Spanish.
- The other students in the class study French.

In Mr. Johnson's class, which of the following is the ratio of students who study French to students who study Spanish?

A. 1:3
B. 1:4
C. 2:3
D. 3:4
The diagram below shows some model airplanes and some model ships.

What is the ratio of the number of model airplanes to the number of model ships?

A. 8:3
B. 5:3
C. 3:8
D. 3:5

Which of the following number lines best-represents all the solutions of the inequality \( x < 4 \)?

A. \([-4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6]\)
B. \([-4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6]\)
C. \([-4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6]\)
D. \([-4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6]\)
An expression is shown below.

\[ g + 3f + f + g + g \]

Write an equivalent expression that uses each variable only once.

Marvin surveyed his classmates to find out their favorite sports. Each classmate chose only one sport. The results of his survey are represented in the circle graph below.

Classmates' Favorite Sports

In all, Marvin surveyed 48 of his classmates. An equal number of Marvin's classmates chose baseball and football. Based on the circle graph, what is the total number of classmates who chose baseball as their favorite sport?
A circular pool is located in the center of a square park. The park, the pool, and some of their dimensions are shown in the diagram below.

**a.** What is the radius, in yards, of the pool? Show or explain how you got your answer.

**b.** What is the circumference, in yards, of the pool? Show or explain how you got your answer. (Use 3.14 for \( \pi \)).

**c.** What is the area, in square yards, of the pool? Show or explain how you got your answer. (Use 3.14 for \( \pi \)).

The ground in the park surrounding the pool is covered with grass.

**d.** What is the total area, in square yards, of the ground in the park that is covered with grass? Show or explain how you got your answer.
Mathematics

15. Guthrie made the input-output table shown below.

<table>
<thead>
<tr>
<th>Input (x)</th>
<th>Output (y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
</tr>
</tbody>
</table>

Which of the following equations is true for all values in Guthrie's input-output table?

A. \( x + 3 = y \)
B. \( x + 7 = y \)
C. \( 3x + 1 = y \)
D. \( 4x - 1 = y \)

16. At the beginning of the day, a water tank contained 526.8 gallons of water. During the day, some of the water was used to water a garden. At the end of the day, the water tank contained 318.05 gallons of water. What was the total amount of water used that day?

A. 202.75 gallons
B. 208.75 gallons
C. 208.85 gallons
D. 210.80 gallons
Elijah wrote two numbers that follow the rules in the box below.

- Both numbers are less than 10.
- Both numbers are whole numbers.
- The least common multiple of the numbers is 18.
- The greatest common factor of the numbers is 3.

What two numbers did Elijah write?
Choice Informational Report - Science

Over the next two weeks, you will be working on an informational report on a topic you get to choose. This report can be about a scientist, a scientific invention (microscopes, telescopes, etc.), something from nature (specific plant, tree, body of water, etc.), an animal, solar system topics, a planet, a body system, a body part or function, light/sound waves, matter and atoms, landforms such as mountains or volcanoes, or some other science topic. The sky's the limit!

Criteria:
- must be a science topic
- use at least 3 different sources (textbook, books, websites, magazines, etc.)
- come up with at least 4 sections (areas to write about) that you will use to organize your information. These sections are like topics within the overall topic.
- take notes while doing your research (notecards, paper, google doc)
- pick a method of writing your report (slideshow preferred, poster, brochure, essay, etc.)
- report must be neat, organized, and use proper spelling and mechanics
- you may create a project or model to go along with your report, but this is optional

Your Name: ____________________________

Science Topic: __________________________

Four Sections: (EXAMPLES: Tigers: 1-habitat, 2-life cycle, 3-appearance, 4-prey/predators. Mountains: 1-folded, 2-uplifted, 3-fault block, 4-famous mountains. Albert Einstein: 1-early life, 2-family, 3-major inventions, 4-impact on the world. Eyeballs: 1-anatomy of eyeballs, 2-how we see, 3-color blindness, 4-how eye color is determined)

1. __________________________________________

2. __________________________________________

3. __________________________________________

4. __________________________________________

I plan to take notes using: ____________________________

Type of Report (slideshow preferred with digital submission): ____________________________

Sources used: ________________________________________________

_________________________________________________________________________

_________________________________________________________________________
**Plate Boundaries of the World Lab**

Directions: Using your plate boundary map and a map of the world, complete the following for each location given.

<table>
<thead>
<tr>
<th>Location</th>
<th>Type of Boundary</th>
<th>Geologic Features</th>
<th>Explosive vs. Non-Explosive Volcanos</th>
<th>Viscosity of Magma (High or Low)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Japan</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Malaysia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Hawaiian Islands</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Pupua New Guinea</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Red Sea</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Iceland</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Himalayan Mountains</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Caribbean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Philippines</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Andes Mtns. (Chile)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Mid-Atlantic Ridge</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Appalacian Mountains</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 Italy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 New Zealand</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key: o-o conv = oceanic-oceanic conv. Boundary  
o-c conv = oceanic-continental conv. Boundary  
c-c conv = continental-continental conv. Boundary  
P=pyroclastic flow, L-lahar, EQ=earthquakes, MOR=mid-ocean ridge