Name ________________________________

• Reading and Writing Decimal Numbers

- To read the decimal number 123.123:
  Say "and" for the decimal point.

  123 . 123:   **"One hundred twenty-three and one hundred twenty-three thousandths"**

  Say "thousandths" to conclude naming the number.

  Examples: $0.3 = \frac{3}{10}$ Both are read "three tenths."

  $0.21 = \frac{21}{100}$ Both are read "twenty-one hundredths."

Practice:

Write each number as a decimal number.

1. Forty-nine and thirteen hundredths

____

2. Seven hundred eight and sixty-four thousandths

____

Use words to write each decimal number.

3. 38.459

____

4. 500.05

____

5. In the number 74.5604, which digit is in the thousandths place? ________

Name ______________________________

• Metric System

Units of Length

10 millimeters (mm)	=	1 centimeter (cm)
1000 millimeters (mm)	=	1 meter (m)
100 centimeters (cm)	=	1 meter (m)
1000 meters (m)	=	1 kilometer (km)

Units of Liquid Measure

1000 milliliters (mL)	=	1 liter (L)

Units of Mass

1000 grams (g)	=	1 kilogram (kg)
1000 milligrams (mg)	=	1 gram

Examples of Metric Prefixes

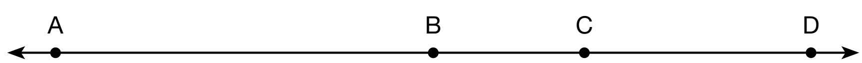
Unit	Relationship
kilometer (km)	1000 meters
hectometer (hm)	100 meters
dekameter (dkm)	10 meters
meter (m)	
decimeter (dm)	$\frac{1}{10}$ meter
centimeter (cm)	$\frac{1}{100}$ meter
millimeter (mm)	$\frac{1}{1000}$ meter

Celsius/Fahrenheit Scales

An increase of 100°C on the Celsius scale is equivalent to an increase of 180°F on the Fahrenheit scale.

Practice:

Write the length of each segment in centimeters and in millimeters.



1. $\overline{AB}$ ______________

2. $\overline{AD}$ ______________

3. $\overline{BD}$ ______________

4. The bag of grapes has a mass of 500 grams.

a. How many kilograms is that? ______________

b. How many milligrams is that? ______________

Name ______________________________

• Comparing Decimals
• Rounding Decimals

- To round a number:
  1. Circle the place value you are rounding to.
  2. Underline the digit to its right.
  3. Ask "Is the underlined number 5 or more?"

     Yes ⟶ Add 1 to the circled number.

     No ⟶ Circled number stays the same.
  4. Replace the underlined number (and any numbers after it) with zero.

     Examples: ⑥7 ⟶ 70

     ③2 9 ⟶ 300

- *Terminal zeros* are zeros at the end of a number to the right of the decimal point. They have no value.

  Example: 1.3 = 1.30 = 1.300 = 1.3000

- To **compare decimal numbers,** it helps to insert or delete terminal zeros so that both numbers have the same number of digits after the decimal point. Then compare digits in each place from left to right.

  Examples: 0.12 ◯ 0.012 ⟶ 0.120 ⊳ 0.012

  0.4 ◯ 0.400 ⟶ 0.4 ⊜ 0.4

- After **rounding decimal numbers,** remove all terminal zeros after the decimal point.

  Example: Round 3.14159 to the nearest hundredth.

  3.1 ④ 159 ⟶ 3.14~~000~~ ⟶ 3.14

Practice:

Compare 1–3.

1. 4.73 ◯ 4.09 **2.** 0.27 ◯ 1.0 **3.** 5.618 ◯ 5.861

4. Estimate the sum of 7.08, 4.901, and 3.521 by rounding each number to the nearest whole number before adding. __________

5. Round 1154.07085 to the nearest thousandth.

____

6. Round 1154.07085 to the nearest thousand.

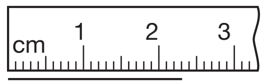
____

Name ____________________

• Decimal Numbers on the Number Line

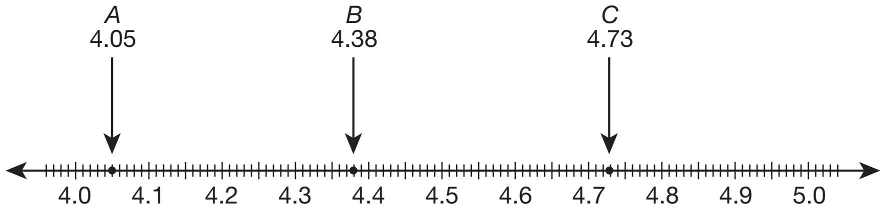
- The metric system uses decimals, not fractions.

Example: Find the length of this segment:



a. in millimeters. 23 mm
b. in centimeters. 2.3 cm

Example: Find the number on the number line indicated by each arrow.



Sometimes adding a zero to the end of each number on the decimal number line helps you to locate decimal numbers.

Example: 4.38 is between 4.30 and 4.40.
The number halfway between two numbers is the average (mean) of the two numbers.

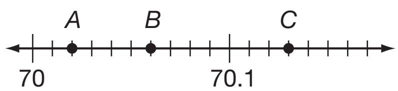
Practice:

1. How many millimeters equal 40.7 cm? ________

2. What decimal number is halfway between 20 and 21? ________

3. What decimal number is halfway between 2.7 and 2.8? ________

4. What decimal number names each point on this number line?



a. *A* ________ **b.** *B* ________ **c.** *C* ________

• Adding, Subtracting, Multiplying, and Dividing Decimal Numbers

Decimals Chart

+/−	×	÷ by whole	÷ by decimal
A. Line up the decimal points.	**B.** Multiply. Then count decimal places.	**C.** Decimal point is up.	**D.** Decimal point is over, over, up.
E. 1. Place a decimal point to the right of a whole number.			
F. 2. Fill empty places to the right of the decimal point with zeros.			

Examples:

A and **E**

$$\begin{array}{r} 3.6 \\ 0.36 \\ +\ 36. \\ \hline 39.96 \end{array}$$

A, E, and **F**

$$\begin{array}{r} 5.00 \\ -\ 4.32 \\ \hline 0.68 \end{array}$$

B

$$\begin{array}{rl} 0.23 & \text{2 places} \\ \times\ 0.4 & \text{1 places} \\ \hline 0.092 & \text{3 places} \end{array}$$

C and **F**

$$8\overline{)0.0144}\quad = 0.0018$$

Practice:

Simplify 1–4.

1. (6.3)(2.4)(1.2) ________

2. 1.55 ÷ 5 ________

3. 29.71 − 3.087 ________

4. 2.2 + 0.54 + 12 ________

5. If the product of seven tenths and two tenths is subtracted from the sum of eight tenths and five tenths, what is the difference?

____

6. What is the area and perimeter of a rectangle that is 1.3 meters wide and 0.9 meter long?

   a. area: ____________________

   b. perimeter: ____________________

Name ______________________________

• Ratio
• Sample Space

- **Ratio** is a way to describe a relationship between two numbers.

Example: In a class of 28 students, there are 12 boys. What is the boy-girl ratio? What is the girl-boy ratio?

1. Find the number of girls in the class.

12 boys	12 boys
+ ? girls	+ 16 girls
28 total	28 total

(12 boys + ? girls = 28 total) ⟶ (12 boys + 16 girls = 28 total)

2. Write the ratios as reduced fractions.

$$\frac{\text{boys}}{\text{girls}} = \frac{12}{16} = \frac{3}{4}$$

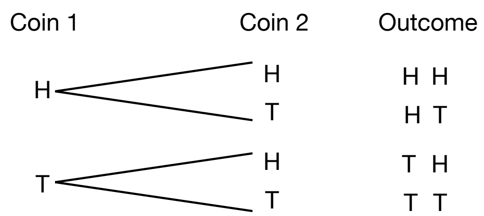
$$\frac{\text{girls}}{\text{boys}} = \frac{16}{12} = \frac{4}{3}$$

- **Probability** $= \dfrac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$

- A **sample space** is the list of all possible outcomes for an event.

Example: One coin toss has two possible outcomes.
Sample space = {heads, tails}

- A **tree diagram** shows all the possible outcomes of two events that occur at the same time, such as tossing two coins.



- The **Fundamental Counting Principal** says:
If there are *m* ways for *A* to occur, and *n* ways for *B* to occur, then there are $m \times n$ ways for *A* and *B* to occur together.

Example: There are 2×6, or 12 outcomes for tossing a coin and a number cube.

Practice:

1. In a box of pens, the ratio of red pens to blue pens is 3 to 2. What fraction of the pens are blue? __________

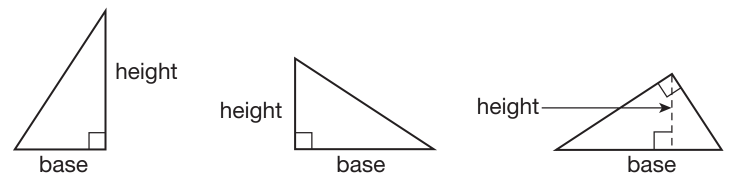
2. What is the probability of tossing heads with one coin toss? __________

3. A coin is tossed and a number cube is rolled.
One possible outcome is H3 (heads, 3).
What is the sample space for the experiment? __________

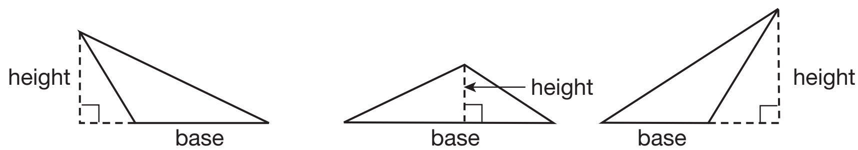
Name ______________________________

• Area of a Triangle
• Rectangular Area, Part 2

One Right Triangle Rotated to Three Positions



One Obtuse Triangle Rotated to Three Positions



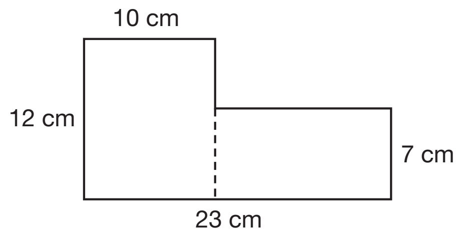
A triangle has three sides, and any side can be the base. A triangle may have three base-height orientations, as shown by rotating these triangles.

Area of a triangle $= \frac{1}{2}bh$ or $\frac{bh}{2}$

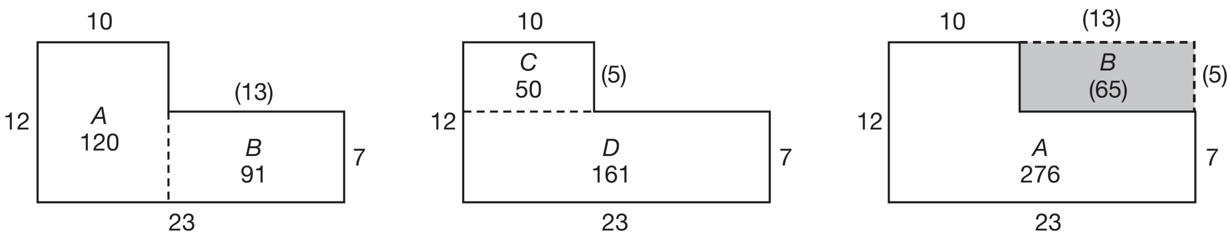
- To find the **area of a complex shape:**
  1. Divide the shape into rectangular parts.
  2. Find the area of each part.
  3. Add the areas to find the total area.

  Sometimes subtracting a "ghost" area (the area that is missing) from a larger rectangle that includes the entire figure is easier.

Example:



There are three ways to find the area of this shape.

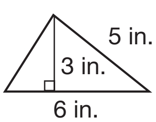


$120 + 91 = 211$ cm^2 $50 + 161 = 211$ cm^2 $276 - 65 = 211$ cm^2

Practice:

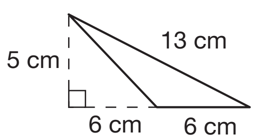
Find the area of each figure.

1.



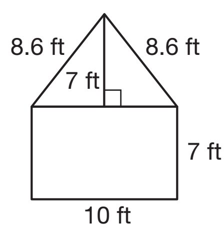
____

2.



____

3.

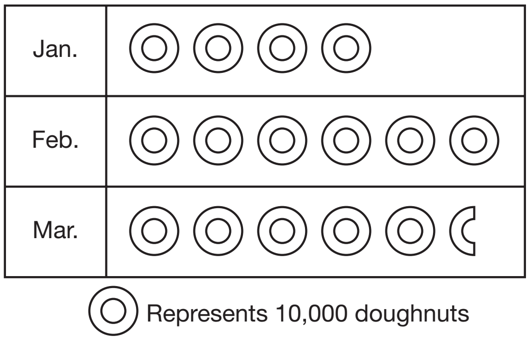


____

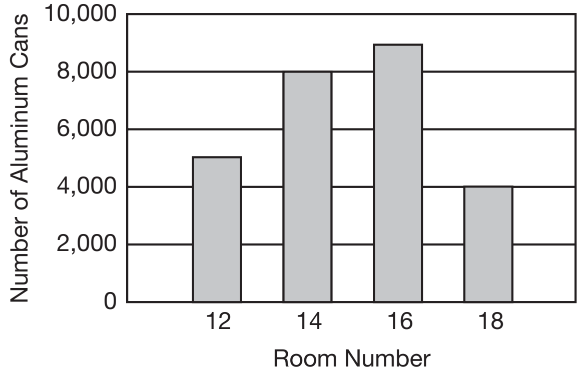
Name ______________________________

• Interpreting Graphs

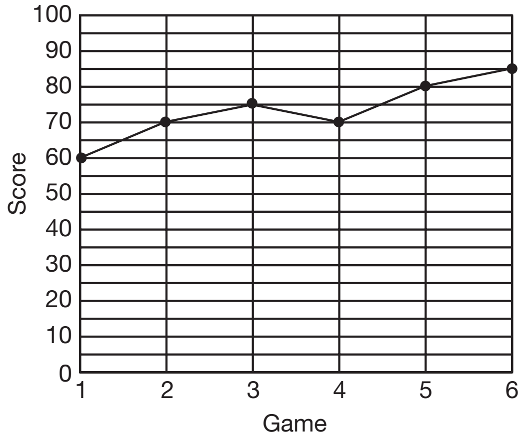
Pictograph
Doughnut Sales



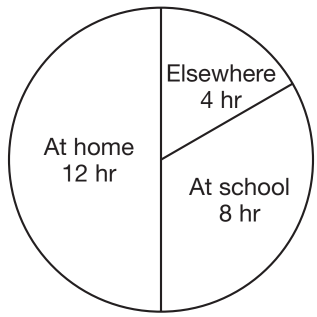
Bar graph
Number of Aluminum Cans Collected by Each Homeroom



Line graph
Paul's Game Scores



Circle graph
Where Dina Spends Her Day



Practice:

Use information from the graphs above to answer each question.

1. How many more doughnuts were sold in March than in January? ________

2. Which homeroom collected twice as many cans as homeroom 18? ________

3. To the nearest whole number, what was Paul's average score? ________

4. True or false? Dina spends 60% of her time at home. ________

Name ______________________________

• Proportions

• A proportion is a statement that two ratios are equal.

Example: $5 \cdot 16 = 80$ $\qquad$ $20 \cdot 4 = 80$

$$\frac{16}{20} = \frac{4}{5}$$

Solve a proportion by finding the missing term.

1. Find the cross products.
2. Divide the known product by the known factor.

Example:

$$\frac{3}{5} = \frac{6}{W}$$
$$3 \cdot W = 5 \cdot 6$$
$$3W = 30$$
$$W = \frac{30}{3}$$
$$W = 10$$

Practice:

Solve 1–6.

1. $\frac{16}{4} = \frac{0.4}{r}$ __________

2. $\frac{7}{20} = \frac{a}{40}$ __________

3. $\frac{24}{32} = \frac{21}{t}$ __________

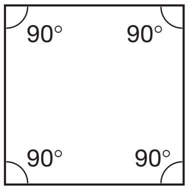
4. $\frac{1.5}{2.5} = \frac{b}{45}$ __________

5. $\frac{0.45}{8.1} = \frac{c}{2.7}$ __________

6. $\frac{w}{50} = \frac{28}{70}$ __________

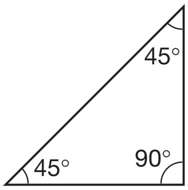
Name ____________________

• Sum of the Angle Measures of a Triangle
• Angle Pairs



- A **square** has four angles and *each one* measures 90°.

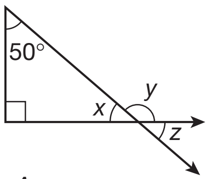
  By drawing a diagonal segment from one corner to the opposite corner, the square divides into two congruent triangles.



- A **triangle** has three angles and the *sum* of those angles is 180°.

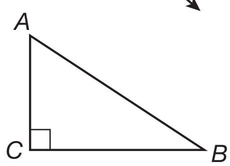
  Adjacent angles share a common side.

  Examples: ∠1 and ∠4, ∠*x* and ∠*y*



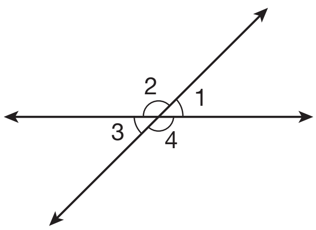
Supplementary angles are two angles whose sum is 180°.

Examples: ∠*y* and ∠*z*, ∠3 and ∠4



Complementary angles are two angles whose sum is 90°.

Example: ∠*A* and ∠*B*



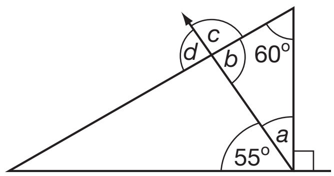
Vertical angles are a pair of non-adjacent angles formed by two intersecting lines and have the same measure.

Examples: ∠1 and ∠3, ∠2 and ∠4, ∠*x* and ∠*z*

Practice:

1. If one angle of a right triangle measures 60°, then what are the measures of the other two angles? ____________________

Find each angle measure in this figure.



2. m∠*a* = ________ **3.** m∠*b* = ________

4. m∠*c* = ________ **5.** m∠*d* = ________

