

• Reducing Fractions, Part 1

- To find equivalent fractions, multiply by a fraction name for 1.

$$\frac{1}{2} \times \frac{3}{3} = \frac{3}{6}$$

- To reduce fractions, divide by a fraction name for 1.

$$\frac{3 \div 3}{6 \div 3} = \frac{1}{2} \quad \begin{array}{l} (3 \div 3 = 1) \\ (6 \div 3 = 2) \end{array}$$

- If both terms cannot be divided by the same number, the fraction cannot be reduced.

$$\frac{2}{5} \text{ cannot be reduced.}$$

Practice:

1. Reduce $\frac{9}{15}$ by dividing both 9 and 15 by 3. _____

2. Which of these fractions cannot be reduced? _____

A $\frac{2}{10}$

B $\frac{3}{10}$

C $\frac{4}{10}$

Add, subtract, or multiply as indicated. Remember to reduce the answers.

3. $\frac{3}{4} \times \frac{2}{3} =$ _____

4. $\frac{3}{8} + \frac{3}{8} =$ _____

5. $\frac{4}{6} - \frac{2}{6} =$ _____

Rewrite each mixed number with a reduced fraction. Keep the whole number.
Reduce the fractions.

6. $2\frac{4}{8} =$ _____

7. $4\frac{6}{18} =$ _____

8. $3\frac{6}{15} =$ _____

• Greatest Common Factor (GCF)

- To find the **greatest common factor** (GCF):
 1. List the factors of the smaller number in order.
 2. Starting with the largest factor, cross out any factor that does not divide evenly into the larger number.
 3. Circle the first number that divides evenly into the larger number.
This is the GCF.

Example: Find the GCF of 16 and 36.

1. List the factors of 16: 1, 2, 4, 8, 16
2. Sixteen does not divide evenly into 36, so cross it out.
1, 2, 4, 8, ~~16~~
3. Eight does not divide evenly into 36, so cross it out.
1, 2, 4, 8, ~~16~~
4. Four divides evenly into 36, so circle it and stop.
1, 2, **4**, 8, ~~16~~
Four is the greatest common factor of 16 and 36.

Practice:

Find the greatest common factor of each pair of numbers.

1. 8 and 12 _____
2. 9 and 18 _____
3. 24 and 100 _____
4. 7 and 56 _____
5. 18 and 44 _____
6. 20 and 45 _____

Reduce each fraction by dividing the terms of the fraction by their GCF.
(See problems 1–3 above.)

7. $\frac{8}{12} =$ _____

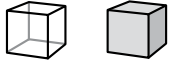
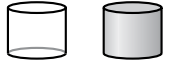
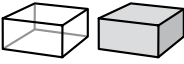
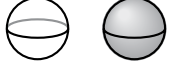
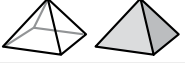

8. $\frac{9}{18} =$ _____

9. $\frac{24}{100} =$ _____

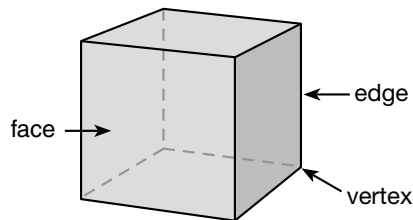
• Properties of Geometric Solids

- **Plane** figures are “flat”. They do not take up space.
- Geometric **solids** are shown as 3-dimensional models. They take up space.

Geometric Solids

Shape	Name	Shape	Name
	Cube		Cylinder
	Rectangular prism		Sphere
	Pyramid		Cone

- The flat surfaces of solids are called **faces**.
- Two faces meet at an **edge**.
- Three edges meet at a **vertex**.



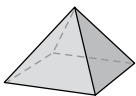
Practice:

Name the geometric shape of each of these real-world objects.

1. tissue box _____
2. juice can _____
3. ice cream cone _____
4. tennis ball _____

Use manipulatives for help.

5. The pyramid has how many triangular faces? _____



6. The pyramid has how many square faces? _____
7. The pyramid has how many edges? _____
8. The pyramid has how many vertices? _____

• Mean, Median, Mode, and Range

- The **mean** is the average (add; then divide) of the numbers.
- The **median** is the middle number when the set is arranged in order.
- If the list has no middle number, the median is the average of the two middle numbers.
- The **mode** is the most frequent number.
- There can be more than one mode, and there can be no mode.
- The **range** is the difference between the greatest and the least numbers.

Practice:

Put the numbers into numerical order first.

1. 7, 8, 2, 8, 5

Mean: _____ Median: _____

Mode: _____ Range: _____

2. 18, 5, 10, 6, 9, 10, 19

Mean: _____ Median: _____

Mode: _____ Range: _____

3. 1, 12, 13, 3, 7, 8, 12

Mean: _____ Median: _____

Mode: _____ Range: _____

4.

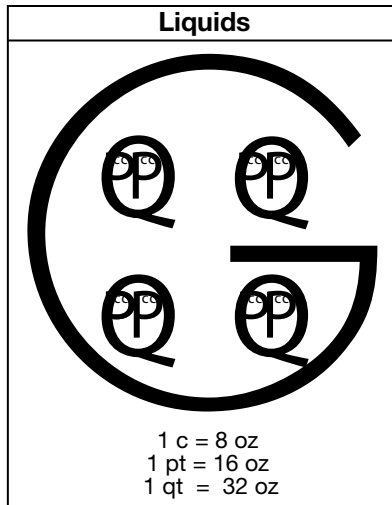
Name	Marcus	Sydney	Gael	Andrea	Brandon	Felina	Toby
Age	12	10	11	12	11	16	12

Mean: _____ Median: _____

Mode: _____ Range: _____

• Units of Capacity

- Capacity is the amount of liquid a container can hold.
- The Liquids chart shows the relationship between gallons (G), quarts (Q), pints (P), and cups (C).



Equivalent Measures

U.S. Customary System	Metric System
16 oz = 1 pt 2 pt = 1 qt 4 qt = 1 gal	1000 mL = 1 L
A liter is about 2 ounces more than a quart.	

Practice:

Remember to write the units.

1. Four quarters total a dollar. How many quarts total a gallon? _____
2. How many cups equal one quart? _____
3. How many milliliters equal 4 liters? _____
4. A quart is two pints. A quart is how many ounces? _____
5. How many pints are in a gallon? _____

• Multiplying Fractions and Whole Numbers

- To multiply a fraction and a whole number:
 - Convert the whole number to a fraction. (Write the whole number over 1.)
 - Multiply the fractions.
 - Simplify the answer.

Example: What number is $\frac{2}{5}$ of 8?

$\frac{2}{5}$ of 8

↓ ↓ ↓

$$\frac{2}{5} \times \frac{8}{1} = \frac{16}{5} = 3\frac{1}{5}$$

Practice:

Multiply. Simplify answers when possible. Reverse the order of factors to check your answer.

1. $\frac{2}{3}$ of 9

$$\frac{2}{3} \times \text{---} = \text{---}$$

2. $\frac{3}{4}$ of 10

$$\frac{3}{4} \times \text{---} = \text{---}$$

3. $\frac{1}{5}$ of 18

$$\frac{1}{5} \times \text{---} = \text{---}$$

4. $\frac{3}{5}$ of 8

$$\frac{3}{5} \times \text{---} = \text{---}$$

5. $\frac{6}{7}$ of 3

$$\frac{6}{7} \times \text{---} = \text{---}$$

6. What number is $\frac{1}{2}$ of 7?

$$\frac{1}{2} \times \text{---} = \text{---}$$

7. What number is $\frac{1}{7}$ of 4?

$$\frac{1}{7} \times \text{---} = \text{---}$$

8. What number is $\frac{2}{3}$ of 10?

$$\frac{2}{3} \times \text{---} = \text{---}$$

• Using Manipulatives and Sketches to Divide Fractions

- When dividing fractions, use fraction manipulatives or sketches for help.
- We can shade fraction circles to model division of fractions.

Example: How many one eighths are in one fourth?

Sketch the dividend by dividing the fraction circle into the number of parts (fourths).

Sketch the divisor on the same fraction circle by again dividing the fraction circle into the number of parts (eighths).

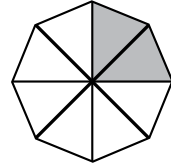
Shade the number of parts that represent the dividend (one fourth).

Then count the number of “divisor parts” that are also shaded (two eighths).

There are 2 “one-eighth pieces”, or two eighths, in one fourth.

We know this is right because:

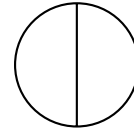
$$\frac{1}{8} + \frac{1}{8} = \frac{2}{8} = \frac{1}{4}$$



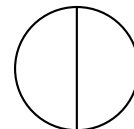
Practice:

Sketch and shade fraction circles to model and then answer the question.

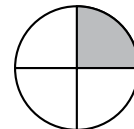
1. How many one fourths are in one half? _____



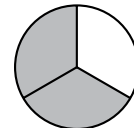
2. How many one eighths are in one half? _____



3. How many one twelfths are in one fourth? _____



4. How many one sixths are in two thirds? _____



Find each quotient. Try answering the problems mentally.

5. $\frac{3}{4} \div \frac{3}{4} =$ _____

6. $\frac{2}{5} \div \frac{1}{5} =$ _____

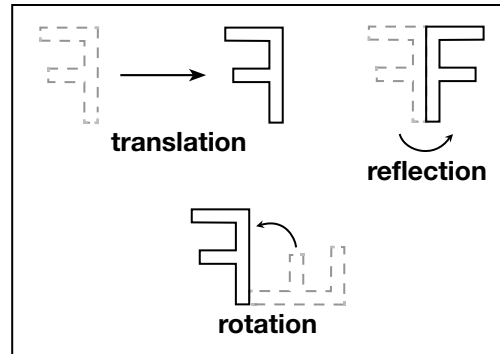
7. $\frac{5}{6} \div \frac{1}{6} =$ _____

8. $1 \div \frac{1}{4} =$ _____

• **Transformations**

- Three kinds of transformations are **translations** (slides), **reflections** (flips), and **rotations** (turns).

Transformations	
Name	Movement
Translation	sliding a figure in one direction without turning the figure
Reflection	reflecting a figure as in a mirror or "flipping" a figure over a certain line
Rotation	turning a figure about a certain point



- Rotations can be described by their direction and by their degree.

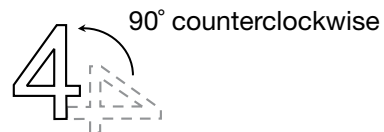
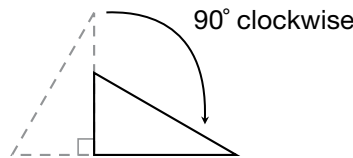
Clockwise is the same direction as clock hands turn.

Counterclockwise is the opposite direction as clock hands turn.

A **full turn** is 360° .

A **half turn** is 180° .

A **quarter turn** is 90° .



Practice:

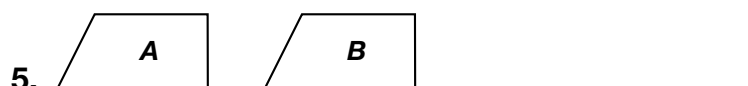
1. Sketch an uppercase letter B after a reflection in its vertical segment.

B

2. Sketch an uppercase letter B after 90° counterclockwise rotation.

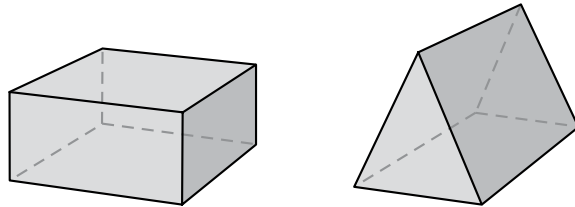
B

For problems 3–5, name the transformation that could be used to position trapezoid **A** on trapezoid **B**.

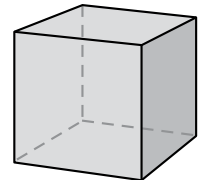


• **Analyzing Prisms**

- A **prism** is a kind of **geometric solid**.
- Prisms have three dimensions: **length, width, and height**.
- Faces of prisms are **congruent** if they have the same dimensions.
- **Rectangular prisms** have 6 rectangular **faces**, or sides. **Triangular prisms** have 3 rectangular faces and 2 triangular **bases**.



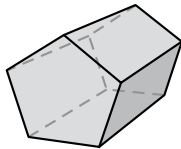
- Bases or opposite faces of prisms are parallel.
- In a rectangular prism, faces that share an edge are **perpendicular**.
- A **cube** is a rectangular prism with 6 congruent square faces.



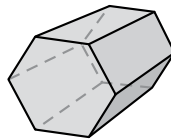
Practice:

Name each prism below by the shape of its bases.

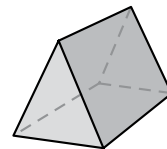
1.



2.



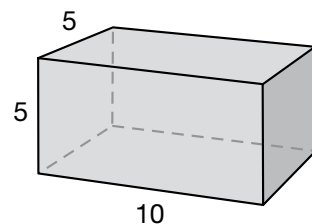
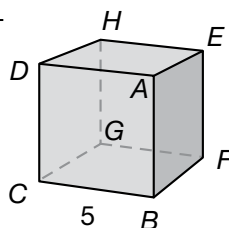
3.



- Which faces of a triangular prism are parallel? _____
- Which faces of a pyramid with a triangular base are parallel? _____
- How many pairs of parallel faces does a rectangular prism have? _____

Refer to the geometric solids below for problems 7–8.

- How many faces on the rectangular prism are congruent to square $ABCD$ of the cube below? _____



- Name a face that is perpendicular to square $ABCD$. _____

• Reducing Fractions, Part 2

- To reduce a fraction to lowest terms:

- Cancel matching zeros (divide numerator and denominator by 10).
- Find a common factor of the numerator and denominator.
- Divide both by the common factor.
- Repeat steps 2 and 3 until there are no common factors.

Example: Reduce $\frac{60}{100}$.

$$\frac{60}{100} = \frac{6}{10}$$

A common factor of 6 and 10 is 2.

$$\frac{6}{10} = \frac{6 \div 2}{10 \div 2} = \frac{3}{5}$$

- To write a percent as a reduced fraction:

- Write the percent as a fraction.
- Reduce the fraction.

Example: Write 84% as a reduced fraction.

$$1. \quad 84\% = \frac{84}{100}$$

$$2. \quad \frac{84}{100} = \frac{84 \div 4}{100 \div 4} = \frac{21}{25}$$

Practice:

Reduce each fraction to lowest terms. Remember to find the GCF first.

$$1. \quad \frac{3}{12} = \underline{\hspace{2cm}}$$

$$2. \quad \frac{4}{20} = \underline{\hspace{2cm}}$$

$$3. \quad \frac{18}{27} = \underline{\hspace{2cm}}$$

$$4. \quad \frac{12}{20} = \underline{\hspace{2cm}}$$

$$5. \quad \frac{15}{35} = \underline{\hspace{2cm}}$$

$$6. \quad \frac{21}{24} = \underline{\hspace{2cm}}$$

Simplify. Reduce each answer to lowest terms.

$$7. \quad \frac{8}{12} + \frac{2}{12} = \underline{\hspace{2cm}}$$

$$8. \quad \frac{2}{5} \times \frac{3}{4} = \underline{\hspace{2cm}}$$

$$9. \quad \frac{22}{24} - \frac{16}{24} = \underline{\hspace{2cm}}$$

Write each percent as a reduced fraction.

$$10. \quad 32\% = \underline{\hspace{2cm}}$$

$$11. \quad 50\% = \underline{\hspace{2cm}}$$

$$12. \quad 70\% = \underline{\hspace{2cm}}$$