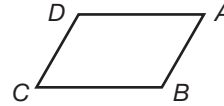


• **Parallelograms**

Angle properties:

- The four angle measures total 360°
- Opposite angles have equal measures.

Example: The measure of $\angle A$ is 60° .
So, the measure of $\angle C$ is 60° .



- Adjacent angle measures total 180° . (Adjacent angles share a side.)

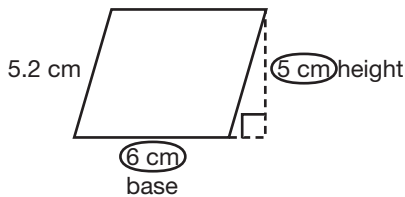
Example: If the measure of $\angle A$ is 60° ,
the measure of $\angle B$ must be 120° .

Area:

To find the **area**, multiply the **base** by the **height**.

- The height is perpendicular to the base.
- Do not be distracted by the slanted side.

Example: Find the area of this parallelogram.



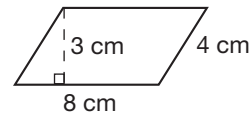
$$A = bh$$

$$A = (6)(5)$$

$$A = 30 \text{ sq. cm}$$

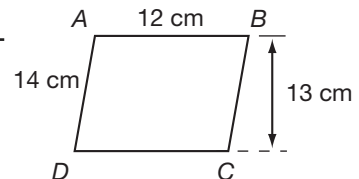
Practice:

1. What is the area of this parallelogram? _____



Refer to parallelogram *ABCD* to answer problems 2–5.

2. What is the perimeter of the parallelogram? _____



3. What is the area of the parallelogram? _____

4. If angle *A* measures 100° , what is the measure of angle *C*? _____

5. If angle *A* measures 100° , what is the measure of angle *B*? _____

Name _____

• **Fractions Chart**
 • **Multiplying Three Fractions**

- To use the S.O.S. method in the Fractions Chart:
 1. Write the problem in the correct *shape*.
 2. Perform the *operation*.
 3. *Simplify* the answer.

- To multiply three or more fractions:

- Step 1:** Write the numbers in fraction form.
- Step 2:** Cancel terms by reducing numerator-denominator pairs with common factors. Multiply the remaining terms.
- Step 3:** Simplify if possible.

Fractions Chart

	+ -		× ÷	
Shape	Write fractions with common denominators.		Write numbers in fraction form.	
Operate	Add or subtract the numerators.		×	÷
			cancel. ←	Find reciprocal of divisor; then
Simplify			$\frac{n \times n}{d \times d}$	
Reduce fractions. Convert improper fractions.				

Example: 1. $\frac{2}{3} \times \frac{8}{5} \times \frac{3}{4}$,

2. $\frac{2}{\cancel{3}_1} \times \frac{\cancel{8}^2}{5} \times \frac{\cancel{3}^1}{\cancel{4}_1}, \frac{2}{1} \times \frac{2}{5} \times \frac{1}{1} = \frac{4}{5}$,

3. $\frac{4}{5}$ is reduced to lowest terms.

Practice:

1. What is the first step in adding fractions? _____
2. What is the last step in multiplying fractions?

Simplify 3–6.

3. $\frac{1}{2} \times \frac{3}{4} \times \frac{4}{9} =$ _____

4. $\frac{5}{6} \times \frac{3}{5} \times \frac{2}{3} =$ _____

5. $\frac{5}{7} \times \frac{3}{10} \times \frac{2}{3} =$ _____

6. $\frac{3}{8} \times \frac{2}{3} \times \frac{3}{4} =$ _____

- **Exponents**
- **Writing Decimal Numbers as Fractions, Part 2**

- The **exponent** shows how many times the base number is used as a factor.
- We read numbers with exponents as **powers**.
The exponent 2 is read “squared.”
The exponent 3 is read “cubed.”

Examples: $5^2 = 5 \times 5 = 25$

(five squared)

$$3^4 = 3 \times 3 \times 3 \times 3 = 81$$

(three to the fourth power)

- Using a factor tree or division by primes, we find the prime factorization of 1000.

$$1000 = 2 \cdot 2 \cdot 2 \cdot 5 \cdot 5 \cdot 5$$

We group the three 2's and the three 5's with exponents.

$$1000 = 2^3 \cdot 5^3$$

- To write decimal numbers as fractions or mixed numbers:
 1. Write the digits after the decimal point as the numerator.
 2. Write the denominator (10 or 100 or 1000 ...) indicated by the number of decimal places in the decimal number.
 3. Any digits to the left of the decimal point represent the whole number.
 4. Reduce the fraction if possible.

Examples: $0.5 = \frac{5}{10} = \frac{1}{2}$

$$3.75 = 3\frac{75}{100} = 3\frac{3}{4}$$

Practice:

1. Write the prime factorization of 36 using exponents. _____
2. Write the prime factorization of 200 using exponents. _____

Write each decimal number as a fraction or mixed number for 3–6.

3. $0.53 =$ _____

4. $8.5 =$ _____

5. $0.4 =$ _____

6. $1.25 =$ _____

Name _____

• Writing Fractions as Decimal Numbers

To write a fraction as a decimal:

- Divide the numerator by the **denominator**.
- Keep the whole number.

Examples: $\frac{3}{4} \rightarrow 4 \overline{)3.00} \begin{array}{r} 0.75 \\ \end{array}$

$2\frac{2}{5} \rightarrow 5 \overline{)2.0} \begin{array}{r} 0.4 \\ \end{array} \rightarrow 2.4$

Practice:

1. Write $\frac{3}{5}$ in decimal form. _____

2. Write $\frac{3}{8}$ in decimal form. _____

3. Write $2\frac{1}{4}$ as a decimal numeral. Then add it to 3.5 and find the sum.

4. Write $1\frac{3}{4}$ as a decimal numeral. Then add it to 4.75 and find the sum.

Simplify 5–6.

5. $5.25 - 2\frac{1}{2} =$ _____

6. $4.5 + \frac{3}{10} =$ _____

• Writing Fractions and Decimals as Percents, Part 1

- A percent is a fraction with a denominator of 100.

Instead of writing the denominator, we write a percent sign.

Example: $\frac{25}{100} = 25\%$

- To write a fraction as a percent, first write an equivalent fraction that has a denominator of 100.

Example: $\frac{3}{10} \cdot \frac{10}{10} = \frac{30}{100} = 30\%$

- To change a decimal to a percent:

1. Write as a fraction with a denominator of 100.

Example: $0.8 = 0.80 = \frac{80}{100} = 80\%$

2. Shift the decimal point two places to the right.

Example: $0.\underline{25} \rightarrow 0.25 \rightarrow 25\%$

Practice:

1. Write $\frac{3}{10}$ as a percent. _____

2. Write $\frac{2}{5}$ as a percent. _____

3. Write 0.06 as a percent. _____

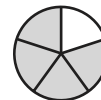
4. Carlos correctly answer 46 of the 50 questions.

What percent of the questions did he answer correctly? _____

5. Victoria correctly answered 17 of the 20 questions.

What percent of the questions did she answer correctly? _____

6. What percent of this circle is shaded? _____



Name _____

Math Course 1, Lesson 76

• Comparing Fractions by Converting to Decimal Form

- Another way to compare fractions:

Convert the fractions to decimal form.

Example: $\frac{3}{5} \bigcirc \frac{5}{8} \longrightarrow 0.6 \bigcirc 0.625$

Since 0.6 is less than 0.625, we know that $\frac{3}{5}$ is less than $\frac{5}{8}$.

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

- If a problem contains fractions and decimal numbers, convert to the same form.

Example: $0.7 \bigcirc \frac{3}{4} \longrightarrow 0.7 \leq 0.75$

Practice:

Compare 1–6.

1. $\frac{3}{8} \bigcirc 0.4$

2. $\frac{1}{2} \bigcirc 0.5$

3. $0.6 \bigcirc \frac{2}{5}$

4. $\frac{4}{5} \bigcirc \frac{7}{8}$

5. $\frac{7}{4} \bigcirc \frac{7}{10}$

6. $\frac{1}{2} \bigcirc \frac{3}{5}$

• Finding Unstated Information in Fraction Problems

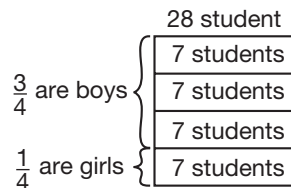
The following sentence directly states information about the number of boys in the class.

It *indirectly* states information about the number of girls in the class.

Three fourths of the 28 students in the class are boys.

Diagram the statement:

- Into how many parts is the class divided? 4 parts
- How many are in each part? $28 \div 4 = 7$
- How many parts are boys? 3 parts
- How many boys are in the class? $3 \times 7 = 21$ boys
- How many parts are girls? 1 part
- How many girls are in the class? 7 girls

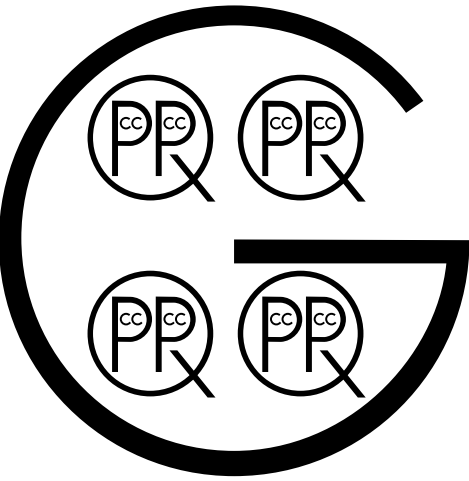


Practice:

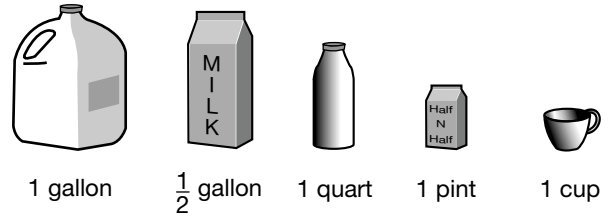
1. If $\frac{1}{4}$ of the dozen eggs were cracked,
how many eggs were not cracked? _____
2. If $\frac{2}{5}$ of the 200 flowers bloomed, how many flowers did not bloom? _____
3. Two thirds of the 24 runners finished. How many did not finish? _____
4. Three eighths of the 32 students are in chorus.
How many students are not in chorus? _____

• **Capacity**

Liquids



1 c = 8 oz
1 pt = 16 oz
768 tsp = 1 gal



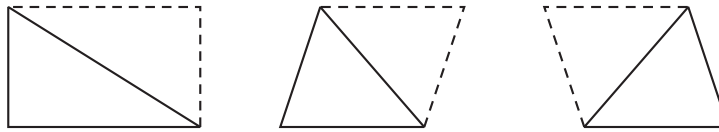
Equivalence Table for Units of Liquid Measure

U.S. Customary System	Metric System
1 gallon = 4 quarts	1 liter = 1000 milliliters
1 quart = 2 pints	
1 pint = 2 cups	
1 pint = 16 ounces	
1 cup = 8 ounces	

Practice:

1. A pint is what fraction of a quart? _____
2. A quart of milk is how many cups? _____
3. How many quarts are in $\frac{1}{2}$ gallon? _____
4. A gallon of juice will fill how many 8-ounce cups? _____

• **Area of a Triangle**

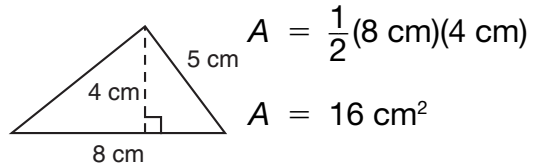


- Notice that the area of any triangle is:

$\frac{1}{2}$ the area of a parallelogram with the same base and height

- So the formula for the area of a triangle is:

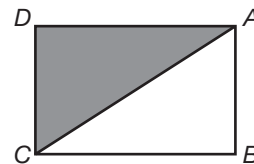
$$A = \frac{1}{2}bh \text{ or } A = \frac{bh}{2}$$



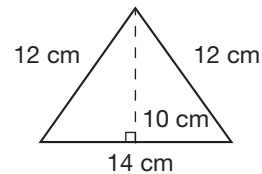
- The height is perpendicular to the base.
- Area is expressed in **square** units (16 cm^2).

Practice:

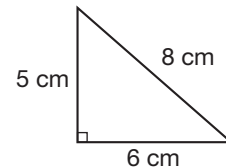
1. Figure $ABCD$ is a rectangle. Segment AD is 5 cm long, segment DC is 4 cm long, and segment AC is 6 cm long. What is the area of triangle ADC ?



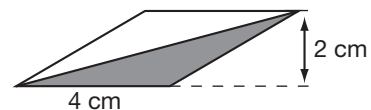
2. What is the area of this triangle? _____



3. What is the area of this triangle? _____

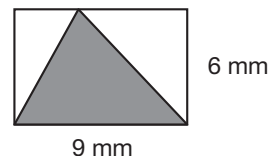


4. What is the area of the shaded part of this parallelogram? _____



5. The area of the shaded part of this rectangle is half of the area of the rectangle.

What is the area of the shaded triangle? _____



- **Finding Scale Factor to Solve Ratio Problems**

- Use a ratio box to sort the numbers in a ratio problem.
- Ratio numbers and actual counts are related by a **scale factor**.
- Find the factor by which the actual count was reduced to form the ratio.

Example: The ratio of boys to girls in the class was 3 to 2. If there were 8 girls in the class, how many boys were there?

	Ratio	Actual Count
Boys	3	
Girls	2	8

Ratio \times scale factor = actual count

$$2 \times 4 = 8$$

$$3 \times 4 = 12$$

There were 12 boys in the class.

Practice:

1. The ratio of red flowers to white flowers in the garden was 4 to 3.

If there were 30 white flowers, how many red flowers were there? _____

2. The ratio of girls to boys on the soccer team was 3 to 5.

If there were 10 boys on the team, how many girls were there? _____

3. The ratio of vans to cars in the parking lot was 2 to 4.

If there were 24 cars in the lot, how many vans were there? _____

4. The ratio of white chalk to colored chalk in the box was 6 to 4. If there were 16 pieces of colored chalk in the box, how many pieces of white chalk were there?
