• Divisibility

Last-Digit Tests
Inspect the last digit of the number. A number is divisible by . . . 2 if the last digit is even. 5 if the last digit is 0 or 5. 10 if the last digit is 0.

Sum-of-Digits Tests
Add the digits of the number and inspect the total. A number is divisible by . . . 3 if the sum of the digits is divisible by 3. 9 if the sum of the digits is divisible by 9.

Practice:

1. Which of these numbers is divisible by 2? _____

A. 2612 **B.** 1541 **C.** 4263

2. Which of these numbers is divisible by 5? _____

A. 1399 **B.** 1395 **C.** 1392

3. Which of these numbers is divisible by 3? _____

A. 3456 **B.** 5678 **C.** 9124

4. Which of these numbers is divisible by 9? _____

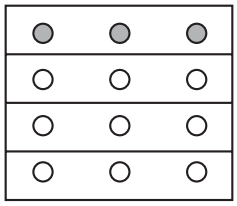
A. 6754 **B.** 8124 **C.** 7938

• "Equal Groups" Word Problems with Fractions

What number is $\frac{3}{4}$ of 12?

Example:

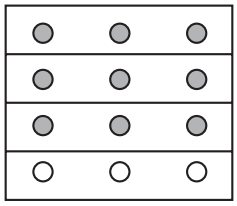
1. Divide the total by the denominator (bottom number).



$$12 \div 4 = 3$$

$\frac{1}{4}$ of 12 is 3.

2. Multiply your answer by the numerator (top number).



$$3 \times 3 = 9$$

So, $\frac{3}{4}$ of 12 is 9.

Practice:

1. If $\frac{1}{3}$ of the 18 eggs were cracked, how many were not cracked?

_____

2. What number is $\frac{2}{3}$ of 15? _____

3. What number is $\frac{3}{8}$ of 72? _____

4. How much is $\frac{5}{6}$ of two dozen? _____

5. Two fifths of the 40 answers were correct. How many answers were correct?

_____

6. If $\frac{3}{4}$ of the 1000 show tickets were sold, how many tickets were sold?

_____

Name _____

• Ratio

A **ratio** is a way to describe a relationship between numbers. Each of the following forms is read the same: "Thirteen to fifteen."

$$13 \text{ to } 15 \qquad 13{:}15 \qquad \frac{13}{15}$$

- Write the ratio in the order asked.
- Reduce ratios if possible. $\frac{12}{16} = \frac{3}{4}$
- Leave ratios in fraction form. (Do not write a ratio as a mixed number.)

Practice:

1. What is the ratio of boys to girls in a class that has 15 boys and 16 girls?

_____

2. A pet store has 16 dogs and 24 cats.

What is the ratio of dogs to cats? _____

3. In a class of 25 students there are 12 boys.

What is the ratio of boys to girls in the class? _____

4. The Bluebirds won 12 of their 20 games and lost the rest.

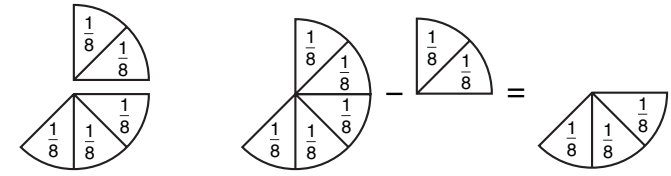
What was the Bluebirds' win-loss ratio? _____

5. The Fireflies won 18 of their 24 games and lost the rest.

What was the Fireflies' win-loss ratio? _____

• Adding and Subtracting Fractions That Have Common Denominators

Use fraction manipulatives to help you see that the denominator does not change.



$\frac{3}{8} + \frac{2}{8} = \frac{5}{8}$ $\qquad$ $\frac{5}{8} - \frac{2}{8} = \frac{3}{8}$

Notice that the denominators are the same. So, add or subtract the numerators. The denominator does **not** change.

Practice:

Simplify 1–6.

1. $\frac{3}{5} + \frac{1}{5} =$ _____

2. $\frac{2}{3} + \frac{1}{3} =$ _____

3. $\frac{1}{6} + \frac{2}{6} + \frac{2}{6} =$ _____

4. $\frac{7}{8} - \frac{2}{8} =$ _____

5. $\frac{6}{7} - \frac{6}{7} =$ _____

6. $\frac{4}{9} + \frac{5}{9} - \frac{2}{9}$ _____

Name _____

• Writing Division Answers as Mixed Numbers
• Multiples

- We write some division answers as mixed numbers.
- A mixed number is a whole number plus a fraction.

whole number → $2\frac{3}{4}$ ← fraction

mixed number

- Put the remainder over the divisor to make the fraction of a mixed number.

Example 1: Write $\frac{25}{6}$ as a mixed number.

$$\begin{array}{r} 4\frac{1}{6} \\ 6\overline{)25} \\ \underline{24} \\ 1 \end{array}$$

Example 2: A whole circle is 100% of a circle.
One third of a circle is what percent of a circle?

$$\begin{array}{r} 33\frac{1}{3}\% \\ 3\overline{)100\%} \\ \underline{9} \\ 10 \\ \underline{9} \\ 1 \end{array}$$

- We find **multiples** of a number by **multiplying** the number by 1, 2, 3, 4, 5, 6, and so on.

Example: The first six multiples of 3 are 3, 6, 9, 12, 15, and 18.

Practice:

1. Write $\frac{11}{3}$ as a mixed number. _____

2. A 25-inch length of string was cut into 4 equal lengths.

How long was each piece of string? _____

3. Add and convert to a mixed number: $\frac{2}{5} + \frac{4}{5} =$ _____

4. What are the first six multiples of 4? _____

5. What are the first five multiples of 10? _____

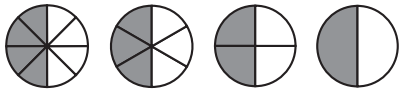
Name _____

Reteaching 26

Math Course 1, Lesson 26

- **Using Manipulatives to Reduce Fractions**
- **Adding and Subtracting Mixed Numbers**

- Each picture illustrates half of a circle that has been divided a different way.



The picture with the fewest pieces is $\frac{1}{2}$. Each of the other fractions $\left(\frac{4}{8}, \frac{3}{6}, \frac{2}{4}\right)$ **reduces** to $\frac{1}{2}$.

We **reduce** when we use the *fewest* number of fraction pieces to show the amount.

We **convert** when we change a fraction to a mixed number or a whole number.

- When adding mixed numbers:
  1. Add the fractions.
  2. Add the whole numbers.
  3. Reduce or convert the fraction if needed.

Practice:

Reduce 1–3.

1. $\frac{6}{8}$ _____

2. $\frac{6}{9}$ _____

3. $\frac{6}{10}$ _____

4. Add and convert: $2\frac{2}{6} + 3\frac{5}{6} =$ _____

5. $5\frac{3}{4} - 2\frac{1}{4} =$ _____

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

7. $3 + N = 6\frac{1}{4}$

$N =$ _____

Name _____

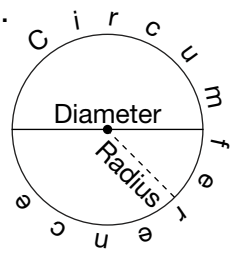
• Measures of a Circle

- The **circumference** is the *distance around* the circle (perimeter).
- The **diameter** is the *distance across a circle* through the center.
- The **radius** is the *distance from the center to the circle*.
- The diameter is twice the radius.

$$d = 2r$$

- The radius is half the diameter.

$$r = \frac{1}{2}d$$



Practice:

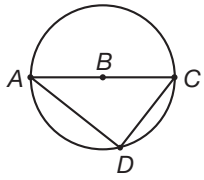
1. Which of these words names the distance from the center to the circle? _____

A. radius **B.** circumference **C.** diameter

2. The diameter of a bicycle tire is 22 inches.

What is the radius of the tire? _____

3. Which segment in the circle at right is a radius? _____



A. segment *AB* **B.** segment *AC* **C.** segment *AD* **D.** segment *CD*

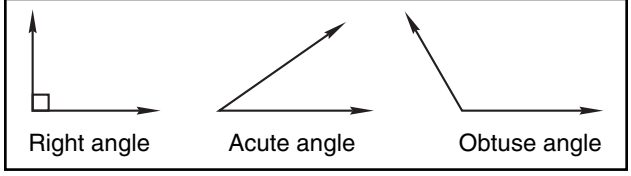
4. The diameter of a big circle is 30 feet.

What is the ratio of the circle's radius to its diameter? _____

5. If the radius of a circle is 18 cm, what is its diameter? _____

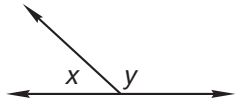
• Angles

Types of Angles



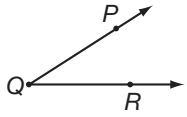
Example: What type of angle is $\angle y$?

What type of angle is $\angle x$?



Two ways of naming angles:

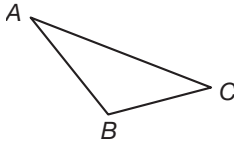
- Use the letter of the vertex: $\angle Q$
- Use 3 letters with the vertex in the middle: $\angle PQR$ or $\angle RQP$



Practice:

1. Name the obtuse angle in triangle *ABC.*

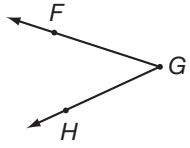
_____



2. What kind of angle is $\angle A$? _____

3. Write three names for this angle?

_____



4. What kind of angle is formed by the hands of a clock showing 3 o'clock?

_____

Name _____

- **Multiplying Fractions**
- **Reducing Fractions by Dividing by Common Factors**

Multiplying fractions

- "Of" means "multiply."

  Multiply numerator $\times$ numerator and multiply denominator $\times$ denominator.

- Set up whole numbers as fractions. $\left(4 = \frac{4}{1}\right)$

  Example: $\frac{2}{3}$ of $\frac{4}{5}$ means $\frac{2}{3} \xrightarrow{\times} \frac{4}{5} = \frac{8}{15}$

  Example: $4 \times \frac{2}{3}$

  $$\frac{4}{1} \xrightarrow{\times} \frac{2}{3} = \frac{8}{3} = 2\frac{2}{3}$$

Reducing fractions

Find a number that will **evenly** divide **both** the numerator and the denominator. (the GCF)

Example: $\frac{4}{6} \overset{\div}{\underset{\div}{\searrow}} 2 = \frac{2}{3}$

Practice:

Simplify 1–2.

1. $\frac{1}{2}$ of $\frac{3}{5}$ = _____

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

3. Convert $\frac{8}{6}$ to a mixed number and reduce the fraction. _____

4. What is the product of $\frac{1}{2}$ and $\frac{2}{3}$? _____

5. Amanda correctly answered 18 of the 20 questions.

What fraction of the questions did she answer correctly? _____

6. What is the ratio of chickens to ducks

with 24 chickens and 18 ducks? _____

Name _____

Reteaching 30

Math Course 1, Lesson 30

- **Least Common Multiple (LCM)**
- **Reciprocals**

Multiples remind us of multiplication.

- Multiples: Think times table.

  Multiples of 3: 3, 6, 9, **12**, 15, 18, 21, **24**, . . .
  Multiples of 4: 4, 8, **12**, 16, 20, **24**, 28, . . .

  12 and 24 are **common** multiples.

  12 is the **least** common multiple (LCM).

  Reciprocal ⟶ **"flip"** the fraction

  Example: $4 = \frac{4}{1}$, so the reciprocal of 4 is $\frac{1}{4}$.

- **Rule:** The product of any fraction and its reciprocal equals 1.

  Examples: $\frac{3}{4} \times \frac{4}{3} = \frac{12}{12} = 1$ $\frac{7}{9} \times \frac{9}{7} = \frac{63}{63} = 1$

Practice:

1. What is the least common multiple (LCM) of 4 and 5? _____

2. What is the LCM of 2 and 7? _____

3. What is the least common multiple (LCM) of 3, 6, and 9? _____

4. What is the reciprocal of $\frac{3}{7}$? _____

5. $\frac{3}{5} \times \square = 1$

6. How many $\frac{4}{5}$'s are in 1? _____