

Name \_\_\_\_\_

• **Order of Operations, Part 2**

**Order of Operations**

1. Parentheses
2. Multiply and divide, in order, left to right.
3. Add and subtract, in order, left to right.

<b>Example:</b>	$2(8 + 6) + 15 \div 5$	original problem
	$\underline{2(14)} + \underline{15 \div 5}$	simplified parentheses
	$28 + 3$	multiplied and divided
	$31$	added.

---

**Practice:**

Simplify 1–6.

1.  $3 \times 3 + 4 \times 5 =$  \_\_\_\_\_

2.  $6 \times 5 - 7 \times 2 =$  \_\_\_\_\_

3.  $2 + 8 \times 2 - 5 =$  \_\_\_\_\_

4.  $10 + 9 \div 3 - 6 =$  \_\_\_\_\_

5.  $6 \times 4 + 3 \times 2 =$  \_\_\_\_\_

6.  $3 \times (3 + 4) \div 4 =$  \_\_\_\_\_

Name \_\_\_\_\_

• **Multiplying Decimal Numbers**

To multiply decimal numbers:

1. Multiply.
2. Count the digits to the **RIGHT** of the decimal points in all the factors.
3. Place the decimal point in the product that many places from the right-hand side.

**Example:** 
$$\begin{array}{r} 0.15 \\ \times 0.9 \\ \hline 0.135 \end{array}$$
 } 3 places

---

**Practice:**

Simplify 1–4.

1.  $0.5 \times 0.14 =$  \_\_\_\_\_

2.  $1.6 \times 0.9 =$  \_\_\_\_\_

3.  $0.24 \times 0.13 =$  \_\_\_\_\_

4.  $0.3 \times 0.8 \times 0.2 =$  \_\_\_\_\_

5. What is the product of 2.3 and 0.024? \_\_\_\_\_

• **Adding, Subtracting, Multiplying, and Dividing Decimal Numbers**

**Decimals Chart**

+/-	×	÷ by whole	÷ by decimal
<b>A.</b> Line up the decimal points.	<b>B.</b> Multiply. Then count decimal places.	<b>C.</b> Decimal point is up.	<b>D.</b> Decimal point is over, over, up.
<b>E.</b> 1. Place a decimal point to the right of a whole number.			
<b>F.</b> 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**

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

**C and F**

$$\begin{array}{r} 0.0018 \\ 8 \overline{)0.0144} \end{array}$$

**Practice:**

Simplify 1-4.

1.  $(6.3)(2.4)(1.2)$  \_\_\_\_\_

2.  $1.55 \div 5$  \_\_\_\_\_

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: \_\_\_\_\_

Complete the table:

Fraction	Decimal	Percent
	0.2	
		12%
22/25		
		5%
	0.52	
27/50		
3/5		
		63%
	0.17	

- To write a fraction or decimal as a percent, multiply by 100%.

**Examples:**  $\frac{7}{10} \times 100\% = \frac{700}{10} = 70\%$

$0.8 \times 100\% = 80\%$

- To write a percent as a decimal or fraction, divide by 100%.

**Examples:**  $60\% \div 100\% = \frac{60}{100} = 0.6$

$60\% \div 100\% = \frac{60}{100} = \frac{3}{5}$

Fraction	Decimal	Percent
$\frac{1}{2}$	0.5	50%
$\frac{3}{10}$	0.3	30%
$\frac{4}{10} = \frac{2}{5}$	0.4	40%

## Least Common Multiple (LCM or LCD)

How to find the Least Common Multiple (LCM) of 3 and 5:

x1	x2	x3	x4	x5	x6	x7	x8	x9	x10
3	6	9	12	15	18	21	24	27	30
5	10	15	20	25	30	35	40	45	50

Step 1: Write out the multiples of each number.

Step 2: Circle the numbers that are in *both* rows.

Step 3: Find the smallest (least) number that is circled.

The least common multiple (LCM) of 3 and 5 is \_\_\_\_\_.

Least Common Multiple of 4 and 6:

x1	x2	x3	x4	x5	x6	x7	x8	x9	x10
4									
6									

The LCM of 4 and 6 is \_\_\_\_\_.

### **Practice**

LCM of 2 and 7:

LCM of 5 and 10:

LCM of 9 and 6:

LCM of 8 and 18:

## Lesson 4.3 Finding the Greatest Common Factor

The **greatest common factor** of two or more numbers is the largest factor they have in common.

A **factor** is a number that divides evenly (no remainder) into a given number.

A **common factor** of two or more numbers is a number that divides each of the given numbers evenly.

### 16, 24, and 36

The factors of 16 are 1, 2, 4, 8, and 16.

The factors of 24 are 1, 2, 3, 4, 6, 8, 12, and 24.

The factors of 36 are 1, 2, 3, 4, 6, 9, 12, 18, and 36.

2 and 4 are common factors of 16, 24, and 36.

The greatest common factor of 16, 24, and 36 is 4.

Find the greatest common factor for each set of numbers.

	a		b	
1.	14 and 42	_____	27 and 18	_____
2.	36 and 24	_____	45 and 20	_____
3.	72 and 54	_____	42 and 49	_____
4.	86 and 94	_____	66 and 11	_____

## Lesson 4.4 Reducing Fractions to their Simplest Form

$$\frac{12}{16} \div \frac{4}{4} = \frac{3}{4}$$

$$\frac{12}{16} = \frac{3}{4}$$

To reduce a fraction to its simplest form, divide the numerator and denominator by the same number. The fraction is in simplest form when 1 is the only common factor.

$$\frac{36}{72} \div \frac{36}{36} = \frac{1}{2}$$

$$\frac{36}{72} = \frac{1}{2}$$

Reduce each fraction to simplest form.

1.  $\frac{3}{6}$  **a** \_\_\_\_\_

$\frac{5}{10}$  **b** \_\_\_\_\_

$\frac{9}{18}$  **c** \_\_\_\_\_

2.  $\frac{6}{24}$  \_\_\_\_\_

$\frac{4}{12}$  \_\_\_\_\_

$\frac{2}{10}$  \_\_\_\_\_

3.  $\frac{4}{20}$  \_\_\_\_\_

$\frac{12}{15}$  \_\_\_\_\_

$\frac{8}{32}$  \_\_\_\_\_

4.  $\frac{18}{36}$  \_\_\_\_\_

$\frac{26}{28}$  \_\_\_\_\_

$\frac{17}{68}$  \_\_\_\_\_

5.  $\frac{25}{35}$  \_\_\_\_\_

$\frac{51}{75}$  \_\_\_\_\_

$\frac{28}{36}$  \_\_\_\_\_

6.  $\frac{22}{64}$  \_\_\_\_\_

$\frac{49}{63}$  \_\_\_\_\_

$\frac{24}{96}$  \_\_\_\_\_

**Lesson 4.5****Changing Improper Fractions to Mixed Numerals**

$\frac{13}{6}$  means  $13 \div 6$  or  $6 \overline{)13}$

$$\begin{array}{r} 2 \frac{1}{6} \\ 6 \overline{)13} \\ \underline{-12} \\ 1 \end{array} \quad \text{So, } \frac{13}{6} = 2 \frac{1}{6}$$

$1 \rightarrow 1 \div 6 = \frac{1}{6}$

$\frac{13}{6}$  is an **improper fraction**, meaning the denominator divides the numerator at least one time. In other words, the numerator is greater than the denominator.

$2 \frac{1}{6}$  is a **mixed numeral**. This is the simplest form of an improper fraction.

Write each improper fraction as a mixed numeral in simplest form.

1.  $\frac{5}{3}$  a \_\_\_\_\_

$\frac{7}{6}$  b \_\_\_\_\_

$\frac{9}{5}$  c \_\_\_\_\_

2.  $\frac{3}{2}$  \_\_\_\_\_

$\frac{4}{3}$  \_\_\_\_\_

$\frac{8}{5}$  \_\_\_\_\_

3.  $\frac{7}{5}$  \_\_\_\_\_

$\frac{9}{7}$  \_\_\_\_\_

$\frac{5}{4}$  \_\_\_\_\_

4.  $\frac{32}{6}$  \_\_\_\_\_

$\frac{51}{4}$  \_\_\_\_\_

$\frac{49}{9}$  \_\_\_\_\_

5.  $\frac{66}{5}$  \_\_\_\_\_

$\frac{83}{3}$  \_\_\_\_\_

$\frac{28}{5}$  \_\_\_\_\_

6.  $\frac{29}{3}$  \_\_\_\_\_

$\frac{38}{7}$  \_\_\_\_\_

$\frac{64}{6}$  \_\_\_\_\_



**Lesson 6.5****Subtracting Fractions with Unlike Denominators**

$$\begin{array}{r} 2 \times 7 = 14 \\ 3 \times 7 = 21 \\ 2 \times 3 = 6 \\ \underline{7 \times 3 = 21} \\ \phantom{7 \times 3 = 21} 8 \\ \underline{\phantom{7 \times 3 = 21} 21} \end{array}$$

When subtracting fractions that have different denominators, rename fractions to have a common denominator. Then, subtract fractions, and write the remainder in simplest form.

$$\begin{array}{r} 5 \times 1 = 5 \\ 6 \times 1 = 6 \\ 2 \times 2 = 4 \\ \underline{3 \times 2 = 6} \\ \phantom{3 \times 2 = 6} 1 \\ \underline{\phantom{3 \times 2 = 6} 6} \end{array}$$

Subtract. Write answers in simplest form.

	a	b	c	d	e
1.	$\frac{3}{4}$	$\frac{5}{6}$	$\frac{9}{10}$	$\frac{4}{7}$	$\frac{5}{9}$
	$\underline{-\frac{1}{2}}$	$\underline{-\frac{1}{3}}$	$\underline{-\frac{2}{5}}$	$\underline{-\frac{1}{8}}$	$\underline{-\frac{1}{3}}$

2.	$\frac{2}{5}$	$\frac{3}{5}$	$\frac{2}{3}$	$\frac{5}{6}$	$\frac{3}{4}$
	$\underline{-\frac{1}{9}}$	$\underline{-\frac{2}{7}}$	$\underline{-\frac{3}{8}}$	$\underline{-\frac{1}{3}}$	$\underline{-\frac{2}{9}}$

3.	$\frac{7}{10}$	$\frac{8}{9}$	$\frac{7}{8}$	$\frac{7}{10}$	$\frac{4}{5}$
	$\underline{-\frac{3}{6}}$	$\underline{-\frac{1}{4}}$	$\underline{-\frac{5}{12}}$	$\underline{-\frac{1}{4}}$	$\underline{-\frac{3}{7}}$

**Lesson 5.6****Adding Mixed Numerals with Unlike Denominators**

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

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

$$5\frac{9}{8} = 6\frac{1}{8}$$

Find the common denominator (8)  
and rename the fractions.

Add the fractions.

Add the whole numbers.

Add the mixed numerals. Write answers in simplest form.

1.      **a**

$$\begin{array}{r} 2\frac{1}{2} \\ +3\frac{2}{5} \\ \hline \end{array}$$

**b**

$$\begin{array}{r} 1\frac{2}{3} \\ +6\frac{1}{5} \\ \hline \end{array}$$

**c**

$$\begin{array}{r} 4\frac{2}{7} \\ +3\frac{3}{4} \\ \hline \end{array}$$

**d**

$$\begin{array}{r} 5\frac{1}{4} \\ +2\frac{1}{5} \\ \hline \end{array}$$

2.      **a**

$$\begin{array}{r} 8\frac{1}{6} \\ +1\frac{4}{7} \\ \hline \end{array}$$

**b**

$$\begin{array}{r} 2\frac{5}{6} \\ +6\frac{3}{5} \\ \hline \end{array}$$

**c**

$$\begin{array}{r} 7\frac{3}{8} \\ +3\frac{1}{3} \\ \hline \end{array}$$

**d**

$$\begin{array}{r} 4\frac{2}{9} \\ +9\frac{1}{2} \\ \hline \end{array}$$

3.      **a**

$$\begin{array}{r} 9\frac{5}{6} \\ +6\frac{5}{8} \\ \hline \end{array}$$

**b**

$$\begin{array}{r} 4\frac{1}{7} \\ +10\frac{2}{3} \\ \hline \end{array}$$

**c**

$$\begin{array}{r} 8\frac{1}{9} \\ +2\frac{6}{7} \\ \hline \end{array}$$

**d**

$$\begin{array}{r} 7\frac{3}{10} \\ +1\frac{5}{6} \\ \hline \end{array}$$

4.      **a**

$$\begin{array}{r} 5\frac{7}{10} \\ +8\frac{2}{3} \\ \hline \end{array}$$

**b**

$$\begin{array}{r} 11\frac{4}{5} \\ +2\frac{8}{9} \\ \hline \end{array}$$

**c**

$$\begin{array}{r} 6\frac{7}{8} \\ +5\frac{1}{6} \\ \hline \end{array}$$

**d**

$$\begin{array}{r} 9\frac{5}{7} \\ +9\frac{9}{10} \\ \hline \end{array}$$

**Lesson 7.1** Multiplying Fractions

$$\frac{3}{4} \times \frac{1}{6} = \frac{3 \times 1}{4 \times 6} \xrightarrow{\text{Multiply the numerators.}} \frac{2}{7} \times \frac{7}{10} = \frac{2 \times 7}{7 \times 10}$$

$$= \frac{3}{24} \xrightarrow{\text{Multiply the denominator.}} = \frac{14}{70}$$

$$= \frac{1}{8} \xrightarrow{\text{Reduce to simplest form.}} = \frac{1}{5}$$

Multiply. Write answers in simplest form.

1.  $\frac{1}{3} \times \frac{2}{9} =$  \_\_\_\_\_ <sup>a</sup>

$\frac{1}{8} \times \frac{2}{5} =$  \_\_\_\_\_ <sup>b</sup>

$\frac{3}{7} \times \frac{3}{4} =$  \_\_\_\_\_ <sup>c</sup>

2.  $\frac{5}{6} \times \frac{3}{8} =$  \_\_\_\_\_

$\frac{5}{9} \times \frac{3}{7} =$  \_\_\_\_\_

$\frac{6}{11} \times \frac{1}{6} =$  \_\_\_\_\_

3.  $\frac{3}{5} \times \frac{2}{3} =$  \_\_\_\_\_

$\frac{3}{7} \times \frac{1}{3} =$  \_\_\_\_\_

$\frac{1}{6} \times \frac{8}{9} =$  \_\_\_\_\_

4.  $\frac{7}{10} \times \frac{4}{5} =$  \_\_\_\_\_

$\frac{7}{8} \times \frac{2}{7} =$  \_\_\_\_\_

$\frac{1}{2} \times \frac{5}{11} =$  \_\_\_\_\_

5.  $\frac{5}{7} \times \frac{7}{9} =$  \_\_\_\_\_

$\frac{3}{4} \times \frac{9}{10} =$  \_\_\_\_\_

$\frac{7}{12} \times \frac{7}{11} =$  \_\_\_\_\_

### • Multiplying Mixed Numbers

• To multiply mixed numbers:

1. First, write the numbers in fraction form.
2. Change the mixed numbers to improper ("top heavy") fractions.
3. Multiply numerators and denominators.
4. Write whole numbers as improper fractions with a denominator of 1.
5. Simplify the product.

**Example:** Change mixed numbers to improper fractions first.

$$\begin{array}{ccc}
 2\frac{1}{2} \times 1\frac{2}{3} & & \\
 \downarrow \quad \downarrow & & \\
 \frac{5}{2} \times \frac{5}{3} = \frac{25}{6} & \quad \quad & \frac{25}{6} = 4\frac{1}{6} \\
 \text{Multiply.} & & \text{Then simplify.}
 \end{array}$$

### Practice:

Simplify 1–6.

1.  $1\frac{1}{3} \times 1\frac{1}{4} =$  \_\_\_\_\_

2.  $1\frac{2}{3} \times 2\frac{1}{2} =$  \_\_\_\_\_

3.  $3\frac{1}{3} \times 2 =$  \_\_\_\_\_

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

5.  $1\frac{3}{4} \times 2\frac{1}{2} =$  \_\_\_\_\_

6.  $2\frac{1}{4} \times 1\frac{1}{2} =$  \_\_\_\_\_

## Lesson 8.3 Dividing Fractions by Fractions

$$\begin{array}{l}
 \text{reciprocals} \\
 \downarrow \quad \downarrow \\
 \frac{1}{6} \div \frac{4}{9} = \frac{1}{6} \times \frac{9}{4} \\
 = \frac{1 \times 9}{6 \times 4} \\
 = \frac{9}{24} = \frac{3}{8}
 \end{array}$$

$\frac{9}{4}$  is the reciprocal of  $\frac{4}{9}$ .

Multiply by the reciprocal.

Reduce to simplest form.

Divide. Write answers in simplest form.

$$\begin{array}{cccc}
 \text{a} & \text{b} & \text{c} & \text{d} \\
 1. \quad \frac{1}{3} \div \frac{1}{2} = \underline{\quad} & \frac{4}{5} \div \frac{1}{10} = \underline{\quad} & \frac{7}{12} \div \frac{7}{8} = \underline{\quad} & \frac{3}{8} \div \frac{1}{4} = \underline{\quad}
 \end{array}$$

$$2. \quad \frac{5}{9} \div \frac{2}{3} = \underline{\quad} \quad \frac{1}{6} \div \frac{1}{4} = \underline{\quad} \quad \frac{2}{5} \div \frac{4}{7} = \underline{\quad} \quad \frac{9}{10} \div \frac{2}{5} = \underline{\quad}$$

$$3. \quad \frac{5}{7} \div \frac{1}{6} = \underline{\quad} \quad \frac{2}{3} \div \frac{8}{9} = \underline{\quad} \quad \frac{2}{3} \div \frac{1}{3} = \underline{\quad} \quad \frac{1}{4} \div \frac{3}{8} = \underline{\quad}$$

$$4. \quad \frac{4}{5} \div \frac{3}{10} = \underline{\quad} \quad \frac{5}{12} \div \frac{10}{11} = \underline{\quad} \quad \frac{7}{8} \div \frac{6}{7} = \underline{\quad} \quad \frac{5}{8} \div \frac{7}{10} = \underline{\quad}$$