NAME_____

Module 4   Fractions, Decimals, Percents, and Factors
Lesson 5   Simplifying and Converting Fractions

Lesson
Notes
4.5

Lesson Objectives

- Use factors of numbers to simplify fractions to the lowest terms.
- Convert between mixed numbers and improper fractions.

Subtopic 1   **Rational Numbers and Equivalent Fractions**

- A **rational number** is any number that can be represented by $\frac{a}{b}$, where a and b are **integers** and b ≠ 0.
- A rational number is a fraction in which the **numerator** and **denominator** are integers and in which the **denominator** can never be **zero.**
- **Proper** and **improper** fractions are rational numbers.
- **Equivalent fractions** are two or more fractions that represent the same quantity.

Subtopic 2   **Simplifying Fractions to Lowest Terms**

- A fraction is in **simplest form**, or lowest terms, when the Greatest Common Factor, or GCF, of the numerator and the denominator is **one**.
- Numbers are **relatively prime** when their only common factor is one.
- To find the simplest form of a fraction, **factor** the numerator and denominator until they have no **common factors** other than the number one.

Write in simplest form.

1 $\dfrac{14}{28}$

$$\dfrac{14}{28} = \dfrac{\overset{1}{\cancel{14}} \cdot 1}{\underset{1}{\cancel{14}} \cdot 2} = \dfrac{1}{2}$$

2 $\dfrac{24}{36}$

$$\dfrac{24}{36} = \dfrac{\overset{1}{\cancel{12}} \cdot 2}{\underset{1}{\cancel{12}} \cdot 3} = \dfrac{2}{3}$$

3 $\dfrac{12}{40}$

$$\dfrac{12}{40} = \dfrac{\overset{1}{\cancel{4}} \cdot 3}{\underset{1}{\cancel{4}} \cdot 10} = \dfrac{3}{10}$$

Proper fractions:
- Show part of a **whole.**
- Have a numerator that is **less** than the denominator.

Improper fractions:
- Have numerators **greater** than or **equal** to the denominator.
- Show an amount greater than or equal to **one whole.**

To change an improper fraction to a **mixed number**:
- **Divide** the numerator by the denominator.
- The **quotient** becomes the whole number of the mixed fraction.
- The **remainder** becomes the numerator of the fraction and the denominator becomes the divisor.

Write as a mixed number.

4 $\dfrac{10}{3}$

$$\dfrac{10}{3}=10\div3=3 \text{ R}1$$

$$3\dfrac{1}{3}$$

5 $\dfrac{19}{5}$

$$\dfrac{19}{5}=19\div5=3 \text{ R}4$$

$$3\dfrac{4}{5}$$

6 $\dfrac{65}{9}$

$$\dfrac{65}{9}=65\div9=7 \text{ R}2$$

$$7\dfrac{2}{9}$$

Subtopic 4   **Converting Mixed Numbers to Improper Fractions**

To write a mixed number as an **improper fraction**:
- **Multiply** the **denominator** by the whole number part.
- Add the **numerator** to the product.
- The sum is the **numerator** of the improper fraction.
- The **denominator** stays the same.

Write as an improper fraction.

7 $2\dfrac{1}{3}$

$$3\times2+1=7$$

$$\dfrac{7}{3}$$

8 $4\dfrac{3}{5}$

$$5\times4+3=23$$

$$\dfrac{23}{5}$$