

*Important Concepts . . .*

# Preview Review



**Mathematics    Grade 7**  
**W1 - Lesson 3: Fractions and Mixed  
Numbers**

## Important Concepts of Grade 7 Mathematics

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W1 - Lesson 2 .....	Decimal Numbers
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W3 - Lesson 5 .....	Transformations
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## Materials Required

Math Set  
Calculator

**No Textbook  
Required**

**This is a stand-  
alone course.**

Mathematics Grade 7

Version 6

Preview/Review W1 - Lesson 3

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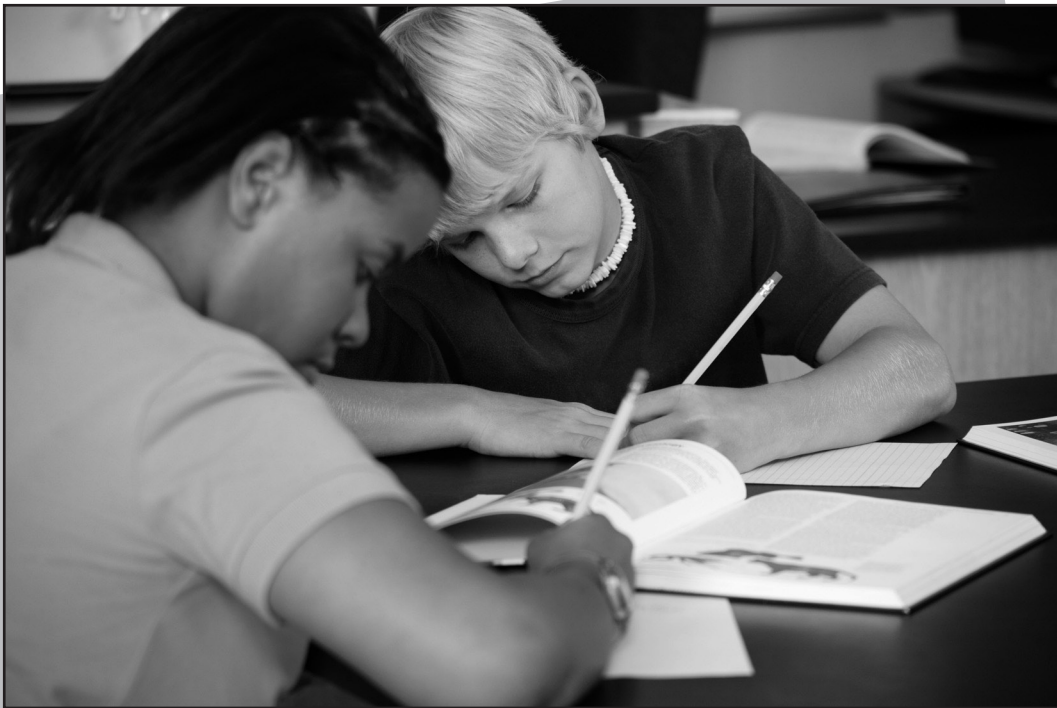
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# **Preview/Review Concepts for Grade Seven Mathematics**



***W1 – Lesson 3:***  
***Fractions and Mixed Numbers***






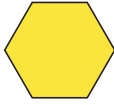



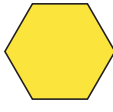

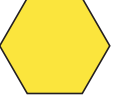
## W1 - Lesson 3: Fractions

### Warm-up:

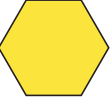



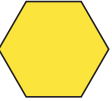



- I can use pattern blocks to model fractions.*

### Fraction Tiles




How many?





1.  are in  ? \_\_\_\_\_
2.  are in  ? \_\_\_\_\_
3.  are in  ? \_\_\_\_\_
4.  are in  ? \_\_\_\_\_
5.  are in  ? \_\_\_\_\_





Based on the relationships above,

1. If  = 1.  = \_\_\_\_\_
2. If  = 1.  = \_\_\_\_\_
3. If  = 1.  = \_\_\_\_\_
4. If  = 1.  = \_\_\_\_\_

Now, try some really fun shapes.

1. If  +  = 1, what is  ? \_\_\_\_\_

2. If  +  = 1, what is  +  ? \_\_\_\_\_

3. If  +  = 1, what is  +  ? \_\_\_\_\_

4. If  +  = 1, what is  ? \_\_\_\_\_

5. If  -  = 1, what is  +  ? \_\_\_\_\_

## Review:

- *I understand fraction basics.*

## Practice

**vinculum**  $\rightarrow$   $\frac{3}{7}$   $\rightarrow$  numerator or dividend  
denominator or divisor

**proper fraction:** a fraction in which the numerator is **less than** the denominator

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

**improper fraction:** a fraction in which the numerator is **greater than** the denominator

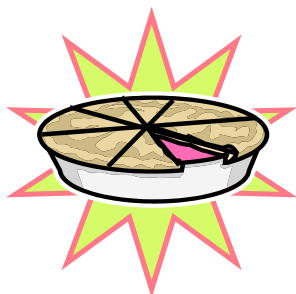
Example:  $\frac{7}{2}$

**mixed number:** the sum of a whole number and a proper fraction

**Example:**  $4\frac{6}{7}$

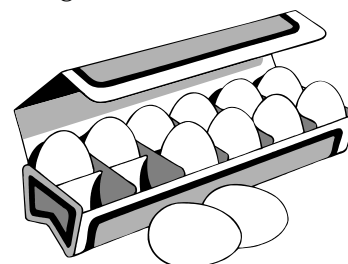
**vinculum:** the line between the numerator and the denominator, showing that the two numbers are connected

**Example 1:** What fraction of the pie has been removed?



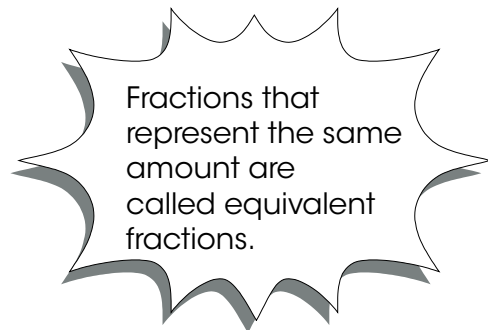
One of eight pieces has been removed; therefore,  $\frac{1}{8}$  has been removed.

**Example 2:** What fraction of the eggs is left in the carton?



Ten of twelve eggs are still in the carton; therefore  $\frac{10}{12}$  or  $\frac{5}{6}$  is left in the carton.

## Equivalent Fractions



**Example:** Write three equivalent fractions for  $\frac{2}{3}$ .

$$\begin{array}{c} \times 2 \\ \frac{2}{3} = \frac{4}{6} \\ \times 2 \end{array}$$

$$\begin{array}{c} \times 3 \\ \frac{2}{3} = \frac{6}{9} \\ \times 3 \end{array}$$

$$\begin{array}{c} \times 4 \\ \frac{2}{3} = \frac{8}{12} \\ \times 4 \end{array}$$

$\frac{4}{6}$ ,  $\frac{6}{9}$ , and  $\frac{8}{12}$  are all equivalent fractions of  $\frac{2}{3}$ .

Multiplying or dividing the numerator **and** denominator by the **same number** can generate an unlimited number of equivalent fractions.

## Practice

Fill in the blanks to complete the equivalent fractions.

a.  $\frac{2}{3} = \frac{\quad}{15}$

b.  $\frac{1}{7} = \frac{\quad}{21}$

c.  $\frac{4}{8} = \frac{1}{\quad}$

d.  $\frac{5}{12} = \frac{10}{\quad}$

e.  $\frac{7}{11} = \frac{\quad}{33}$

f.  $\frac{6}{18} = \frac{\quad}{9}$

g.  $\frac{8}{20} = \frac{\quad}{5}$

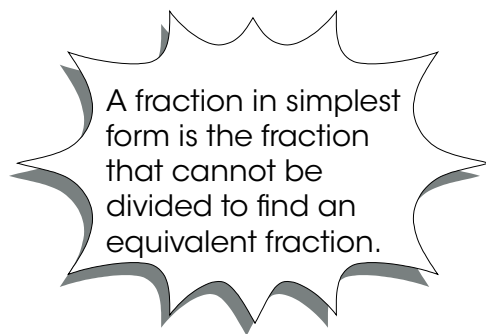
h.  $\frac{33}{99} = \frac{1}{\quad}$

i.  $\frac{2}{\quad} = \frac{4}{10}$

j.  $\frac{3}{\quad} = \frac{21}{28}$



## Reducing Fractions to Simplest Form



**Example:** Write the fractions in lowest terms.

a.  $\frac{9}{12} = \frac{3}{4}$

Diagram showing the simplification of  $\frac{9}{12}$  to  $\frac{3}{4}$  by dividing both numerator and denominator by 3. Arrows point from 9 to 3 and from 12 to 4, with  $\div 3$  written above and below the fraction.

9 and 12 are both divisible by 3.

The simplest form of  $\frac{9}{12}$  is  $\frac{3}{4}$ .

b.  $\frac{7}{12}$

Because 7 and 12 do not have any numbers by which they are **both** divisible, the fraction is already in its simplest form.

A fraction in **simplest form** is also known as a **reduced fraction** or a fraction expressed in **lowest terms**.

Answers should always be given in **lowest terms**.

## Practice

Express each fraction in lowest terms.

a.  $\frac{2}{4} = \text{—}$

b.  $\frac{4}{12} = \text{—}$

c.  $\frac{6}{9} = \text{—}$

d.  $\frac{5}{15} = \text{—}$

e.  $\frac{7}{21} = \text{—}$

f.  $\frac{10}{18} = \text{—}$

g.  $\frac{8}{24} = \text{—}$

h.  $\frac{50}{100} = \text{—}$

i.  $\frac{3}{12} = \text{—}$

j.  $\frac{5}{25} = \text{—}$

**Objective:**

- I can add and subtract fractions with the same denominators..*

Adding fractions with the same denominator

Keep the denominator the same; add the numerators.

**Example:**  $\frac{1}{4} + \frac{2}{4} =$   
 $1 + 2 = 3$  Therefore,  $\frac{1}{4} + \frac{2}{4} = \frac{3}{4}$

Subtracting fractions with the same denominator.

Keep the denominator the same; subtract the numerators.

**Example:**  $\frac{7}{12} - \frac{3}{12} =$   
 $7 - 3 = 4$  Therefore,  $\frac{7}{12} - \frac{3}{12} = \frac{4}{12}$

**Practice**

Solve. Express your answers in lowest terms..

a.  $\frac{1}{3} + \frac{1}{3} =$

b.  $\frac{1}{7} + \frac{5}{7} =$

c.  $\frac{2}{9} + \frac{4}{9} =$

d.  $\frac{5}{10} + \frac{3}{10} =$

e.  $\frac{1}{6} + \frac{3}{6} =$

f.  $\frac{11}{20} + \frac{5}{20} =$

g.  $\frac{3}{8} + \frac{2}{8} =$

h.  $\frac{10}{12} - \frac{8}{12} =$

i.  $\frac{17}{21} - \frac{8}{21} =$

j.  $\frac{13}{15} - \frac{3}{15} =$

k.  $\frac{9}{10} - \frac{5}{10} =$

l.  $\frac{7}{9} - \frac{2}{9} =$

**Objective:**

- I can add and subtract fractions with the different denominators..*

**Example 1:**  $\frac{7}{8} - \frac{2}{10} =$

You need a common denominator.  
8 and 10 are both factors of 40.

Change:  $\frac{7}{8} \rightarrow \frac{35}{40}$

Change:  $\frac{2}{10} \rightarrow \frac{8}{40}$

Subtract:  $\frac{35}{40} - \frac{8}{40} = \frac{27}{40}$

**Example 2:**  $\frac{1}{4} + \frac{3}{12} =$

Common denominator: 12

Change:  $\frac{1}{4} \rightarrow \frac{3}{12}$

Add:  $\frac{3}{12} + \frac{3}{12} = \frac{6}{12} = \frac{1}{2}$

Or  
Common denominator: 4

Change:  $\frac{3}{12} \rightarrow \frac{1}{4}$

Add:  $\frac{1}{4} + \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$

**Practice**

Solve. Express your answers in lowest terms..

a.  $\frac{2}{3} + \frac{1}{7} =$

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

c.  $\frac{1}{2} + \frac{4}{9} =$

d.  $\frac{6}{10} + \frac{3}{8} =$

e.  $\frac{5}{20} + \frac{5}{8} =$

f.  $\frac{3}{21} + \frac{2}{3} =$

g.  $\frac{10}{12} - \frac{1}{4} =$

h.  $\frac{17}{21} - \frac{5}{7} =$

i.  $\frac{9}{10} - \frac{3}{20} =$

j.  $\frac{7}{9} - \frac{1}{3} =$

**Objective:**

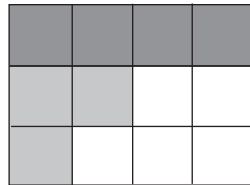
- *I can model the addition and subtraction of fractions.*

**Grid Model**

Note: Use the columns and rows of a grid to represent different denominators.

**Example 1:**  $\frac{1}{3} + \frac{1}{4} =$

1 of 3 rows =  $\frac{1}{3}$   
colour in 4 squares



Total squares = 12

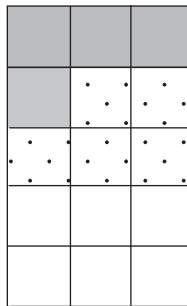
Number of shaded squares = 7

$$\text{Answer} = \frac{7}{12}$$

1 of 4 columns =  $\frac{1}{4}$   
colour in 3 squares

**Example 2:**  $\frac{3}{5} - \frac{1}{3} =$

3 of 5 rows =  $\frac{3}{5}$   
colour in 9 squares



Total squares = 15

Number of shaded squares left = 4

$$\text{Answer} = \frac{4}{15}$$

1 of 3 columns =  $\frac{1}{3}$   
erase 5 squares

**Practice**

Draw the grid that represents best the solution. For this activity you do not need to simplify the fraction.

a.  $\frac{1}{3} + \frac{1}{3} =$

b.  $\frac{1}{7} + \frac{5}{7} =$

c.  $\frac{2}{9} + \frac{4}{9} =$

d.  $\frac{1}{4} + \frac{2}{3} =$

e.  $\frac{1}{5} + \frac{3}{4} =$

f.  $\frac{1}{3} + \frac{3}{10} =$

g.  $\frac{3}{4} - \frac{1}{3} =$

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

i.  $\frac{6}{7} - \frac{2}{6} =$

j.  $\frac{8}{9} - \frac{4}{6} =$

k.  $\frac{7}{8} - \frac{1}{2} =$

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

## Summary and Practice:

- Using what you learned answer the following questions.

- On the chart below, summarize the steps needed to add or subtract fractions with the same denominator and fractions with different denominators.

	Same Denominators	Different Denominators
Steps to add fractions		
Steps to subtract fractions		

- Express the fractions in lowest terms.

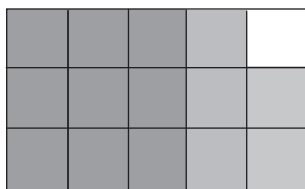
a.  $\frac{6}{18}$

b.  $\frac{9}{54}$

c.  $\frac{16}{48}$

d.  $\frac{14}{21}$

- Using the grid below, write an addition equation represented by the grid.



4. Model using a grid.

a.  $\frac{3}{6} + \frac{1}{3}$

b.  $\frac{9}{10} - \frac{3}{4}$

5.  $\frac{1}{3}$  of entries in a pet show are cats.  $\frac{1}{2}$  of the entries are dogs.

What fraction of the animals is not a cat or a dog?

6. George spent  $\frac{2}{8}$  of his spare time playing video games,  $\frac{2}{6}$  practising basketball,  $\frac{1}{4}$  practising guitar, and the remainder watching TV. What fraction represents the time he spent watching TV?



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