

# Unit 2

## Equivalent Fractions

# Topic A: Equivalent Fractions

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Start from the left side of each drawing and shade in the fraction shown.



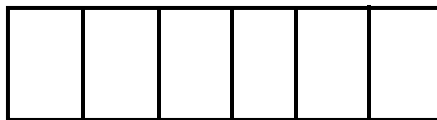
This shape is the whole thing.



Shade  $\frac{1}{2}$



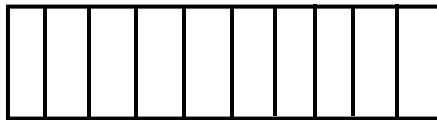
Shade  $\frac{2}{4}$



Shade  $\frac{3}{6}$



Shade  $\frac{4}{8}$



Shade  $\frac{5}{10}$

Did you notice that the amount you shaded was the same in each drawing?

The fractions that you were asked to shade are **equivalent fractions**. Equivalent fractions **are fractions that are equal to each other**.

Now shade the fractions asked for in these drawings, the same way.



This shape is the whole thing.



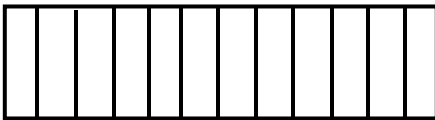
Shade  $\frac{1}{3}$



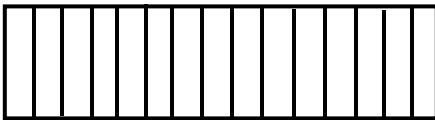
Shade  $\frac{2}{6}$



Shade  $\frac{3}{9}$



Shade  $\frac{4}{12}$



Shade  $\frac{5}{15}$

These above examples are all equivalent fractions.  $\frac{1}{3} = \frac{2}{6} = \frac{3}{9} = \frac{4}{12} = \frac{5}{15}$



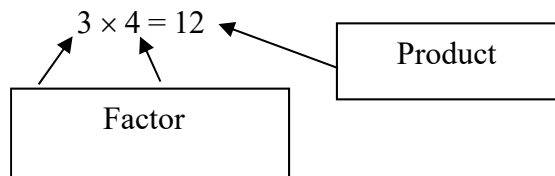
To work with common fractions, it is **often necessary** to **use an equivalent fraction** in place of the fraction that is given. There are several processes to learn which will help you to find equivalent fractions.

# Factors

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Factors are the **numbers which are multiplied together to make a product**. An understanding of factors is needed to express fractions in lowest terms.

**Example A:**



We say, "The factors of 12 are 3 and 4."

Does 12 have any other factors?

What other numbers can be multiplied together to equal 12?

$$\begin{array}{l} 1 \times 12 = 12 \quad \text{or} \quad 12 \times 1 = 12 \\ 2 \times 6 = 12 \quad \text{or} \quad 6 \times 2 = 12 \\ 3 \times 4 = 12 \quad \text{or} \quad 4 \times 3 = 12 \end{array}$$

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

**Example B:** Find the factors of 10.

$$\begin{array}{l} 1 \times 10 = 10 \\ 2 \times 5 = 10 \end{array}$$

The factors of 10 are 1, 2, 5, 10.

**Example C:** Find the factors of 9.

$$\begin{array}{l} 1 \times 9 = 9 \\ 3 \times 3 = 9 \end{array}$$

The factors of 9 are 1, 3, 9.

**Example D:** Find the factors of 18.

$$1 \times 18 = 18$$

$$2 \times 9 = 18$$

$$3 \times 6 = 18$$

The factors of 18 are 1, 2, 3, 6, 9, 18.

## Exercise One

Find all the factors.

a) The factors of 16:  $1 \times 16 = 16$ ;  $2 \times 8 = 16$ ;  $4 \times 4 = 16$   
The factors of 16 are 1, 2, 4, 8, 16.

b) The factors of 4:  $1 \times 4 = 4$ ;  $2 \times 2 = 4$   
The factors of 4 are 1, 2, 4.

c) The factors of 8: \_\_\_\_\_

d) The factors of 20: \_\_\_\_\_

e) The factors of 5: \_\_\_\_\_

f) The factors of 15: \_\_\_\_\_

g) The factors of 21: \_\_\_\_\_

h) The factors of 6: \_\_\_\_\_

i) The factors of 25: \_\_\_\_\_

j) The factors of 14: \_\_\_\_\_

k) The factors of 7: \_\_\_\_\_

l) The factors of 100: \_\_\_\_\_

**Answers to Exercise One**

c) 1, 2, 4, 8

d) 1, 2, 4, 5, 10, 20

e) 1, 5

f) 1, 3, 5, 15

g) 1, 3, 7, 21

h) 1, 2, 3, 6

i) 1, 5, 25

j) 1, 2, 7, 14

k) 1, 7

l) 1, 2, 4, 5, 10, 20, 25, 50, 100

Some numbers **only have two factors, 1 and the number itself**. These numbers are called **prime numbers**. Look at the chart for some prime numbers.

<b>Prime number</b>	<b>Factors</b>
1	1, 1
2	1, 2
3	1, 3
5	1, 5
7	1, 7
11	1, 11
13	1, 13
17	1, 17
19	1, 19
23	1, 23
29	1, 29

Add other prime numbers to the chart as you find them.

**Reminder:** Prime numbers only have \_\_\_\_\_ factors.

# Finding Common Factors

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A **common factor** is a number used to reduce the numerator and denominator.

**Example A:** What are the common factors for  $\frac{4}{6}$ ?

- Find the factors of 4 and 6.
  - The factors of 4 are 1, 2, 4.
  - The factors of 6 are 1, 2, 3, 6.
- What factors do 4 and 6 have in common?

4: 1, 2, 4

6: 1, 2, 3, 6

- The common factors of 4 and 6 are **1 and 2**

We do not use 1 as a **common factor**. 1 is a factor of all **whole numbers**.

**Example B:** What are the common factors of  $\frac{6}{15}$ ?

- Find the factors of 6 and 15.
  - The factors of 6 are 1, 2, 3, 6.
  - The factors of 15 are 1, 3, 5, 15.
- What factors do 6 and 15 have in common?

6: 1, 2, 3, 6

15: 1, 3, 5, 15

- The common factor of 6 and 15 is **3**.



**Example C:** Find the common factors of  $\frac{16}{24}$ .

- The factors of 16 are 1, 2, 4, 8, 16
- The factors of 24 are 1, 2, 3, 4, 6, 8, 12, 24
- The common factors of 16 and 24 are: 2, 4, 8

8 is called the **greatest common factor (GCF)** of 16 and 24 because it is the largest of all the common factors.

## Exercise Two

Find the common factors. Write the greatest common factor in the last column.

	<b>Factors</b>	<b>Common Factors</b>	<b>Greatest Common Factor</b>
a) 10, 15	<i>...of 10 are 1, 2, 5, 10</i> <i>...of 15 are 1, 3, 5, 15</i>	5	5
b) 4, 16	<i>...of 4 are 1, 2, 4</i> <i>...of 16 are 1, 2, 4, 8, 16</i>	2, 4	4
c) 9, 12			
d) 20, 30			
e) 18, 12			
f) 24, 32			
g) 8, 12			
h) 6, 9			
i) 9, 15			
j) 14, 21			
k) 15, 25			
l) 6, 8			

**Answers to Exercise Two**

	<b>Factors</b>	<b>Common Factors</b>	<b>Greatest Common Factor</b>
a) 10, 15	... of 10 are 1, 2, 5, 10 ... of 15 are 1, 3, 5, 15	5	5
b) 4, 16	... of 4 are 1, 2, 4 ... of 16 are 1, 2, 4, 8, 16	2, 4	4
c) 9, 12	... of 9 are 1, 3, 9 ... of 12 are 1, 2, 3, 4, 6, 12	3	3
d) 20, 30	... of 20 are 1, 2, 4, 5, 10, 20 ... of 30 are 1, 2, 3, 5, 6, 10, 15, 30	2, 5, 10	10
e) 18, 12	... of 18 are 1, 2, 3, 6, 9, 18 ... of 12 are 1, 2, 3, 4, 6, 12	2, 3, 6	6
f) 24, 32	... of 24 are 1, 2, 3, 4, 6, 8, 12, 24 ... of 32 are 1, 2, 4, 8, 16, 32	2, 4, 8	8
g) 8, 12	... of 8 are 1, 2, 4, 8 ... of 12 are 1, 2, 3, 4, 6, 12	2, 4	4
h) 6, 9	... of 6 are 1, 2, 3, 6 ... of 9 are 1, 3, 9	3	3
i) 9, 15	... of 9 are 1, 3, 9 ... of 15 are 1, 3, 5, 15	3	3
j) 14, 21	... of 14 are 1, 2, 7, 14 ... of 21 are 1, 3, 7, 21	7	7
k) 15, 25	... of 15 are 1, 3, 5, 15 ... of 25 are 1, 5, 25	5	5
l) 6, 8	... of 6 are 1, 2, 3, 6 ... of 8 are 1, 2, 4, 8	2	2

# Expressing Fractions in Lower Terms

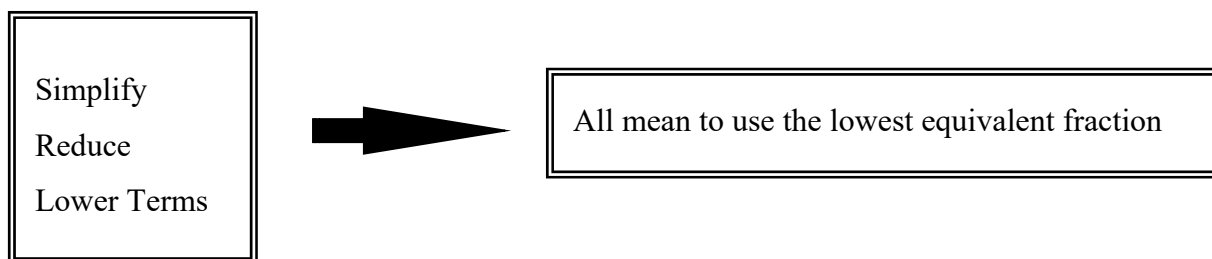
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*Express* means to **say it or write it**.

*Lower terms* means to express equivalent fractions with smaller (lower) denominators.

Look back to page 62. The equivalent fraction in lowest terms is  $\frac{1}{2}$ .

The words **simplify and reduce** are another way to say “**express fractions in lower (or lowest) terms**”.



**To express a fraction in lowest terms, do this:**

**Step 1:** Find the greatest common factor (GCF) of the numerator and denominator

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

The factors of 4 are 1, 2, 4  
The factors of 12 are 1, 2, 3, 4, 6, 12

**The GCF is 4.**

**Step 2:** Divide the numerator and the denominator by the greatest common factor.

$$\frac{4}{12} \left( \frac{\div 4}{\div 4} \right) = \frac{1}{3}$$

$$\frac{4}{12} = \frac{1}{3}$$

**Example A:**

$$\frac{6}{9}$$

The factors of 6 are 1, 2, 3, 6.

The factors of 9 are 1, 3, 9.

**The GCF is 3.**

$$\frac{6}{9} \left( \frac{\div 3}{\div 3} \right) = \frac{2}{3}$$

$$\frac{6}{9} = \frac{2}{3}$$

**Example B:**

$$\frac{15}{24}$$

The factors of 15 are 1, 3, 5, 15.

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

**The GCF is 3.**

$$\frac{15}{24} \left( \frac{\div 3}{\div 3} \right) = \frac{5}{8}$$

$$\frac{15}{24} = \frac{5}{8}$$

**Use lower terms for several reasons:**

- The math is usually easier with lower numbers.
- Is it easier to think of  $\frac{1}{2}$  an apple **or**  $\frac{15}{30}$  of an apple? ( $\frac{1}{2} = \frac{15}{30}$ )
- Do you want to think about  $\frac{155}{620}$  of your pay cheque **or**  $\frac{1}{4}$  of your pay cheque? ( $\frac{1}{4} = \frac{155}{620}$ )
- Always express fractions in lowest terms!

**Dividing** both the numerator and denominator **by the GCF** will give an equivalent fraction in lower terms.

### Exercise Three

Express each fraction in lowest terms. (The directions could also say, "Simplify each fraction," or "Reduce these fractions").

a)  $\frac{2}{4} \left( \frac{\div 2}{\div 2} \right) = \frac{1}{2}$        $\frac{3}{9} \div =$  \_\_\_\_\_

b)  $\frac{2}{12} \left( \frac{\div 2}{\div 2} \right) = \frac{1}{6}$        $\frac{3}{15} \div =$  \_\_\_\_\_

c)  $\frac{5}{10} \div =$  \_\_\_\_\_       $\frac{4}{24} \div =$  \_\_\_\_\_

d)  $\frac{10}{25} \div =$  \_\_\_\_\_       $\frac{9}{12} \div =$  \_\_\_\_\_

**Make sure that you write in the GCF you are dividing with. Do not skip this step until you are totally sure you can do it correctly in your head each time.**

(Good mathematicians know when to skip steps and when not to... sometimes easy steps are never skipped by good mathematicians).

e)  $\frac{3}{30} =$  \_\_\_\_\_       $\frac{6}{10} =$  \_\_\_\_\_

f)  $\frac{9}{24} =$  \_\_\_\_\_       $\frac{18}{27} =$  \_\_\_\_\_

g)  $\frac{4}{16} =$  \_\_\_\_\_       $\frac{3}{12} =$  \_\_\_\_\_

h)  $\frac{15}{24} =$  \_\_\_\_\_       $\frac{12}{32} =$  \_\_\_\_\_

i)  $\frac{2}{32} =$  \_\_\_\_\_       $\frac{6}{20} =$  \_\_\_\_\_

j)  $\frac{21}{24} = \underline{\hspace{2cm}}$

$\frac{10}{15} = \underline{\hspace{2cm}}$

k)  $\frac{10}{14} = \underline{\hspace{2cm}}$

$\frac{16}{32} = \underline{\hspace{2cm}}$

l)  $\frac{15}{25} = \underline{\hspace{2cm}}$

$\frac{12}{28} = \underline{\hspace{2cm}}$

m)  $\frac{2}{16} = \underline{\hspace{2cm}}$

$\frac{2}{20} = \underline{\hspace{2cm}}$

n)  $\frac{10}{16} = \underline{\hspace{2cm}}$

$\frac{6}{9} = \underline{\hspace{2cm}}$

o)  $\frac{10}{30} = \underline{\hspace{2cm}}$

$\frac{3}{18} = \underline{\hspace{2cm}}$

p)  $\frac{6}{24} = \underline{\hspace{2cm}}$

$\frac{8}{16} = \underline{\hspace{2cm}}$

q)  $\frac{14}{24} = \underline{\hspace{2cm}}$

$\frac{6}{18} = \underline{\hspace{2cm}}$

r)  $\frac{10}{18} = \underline{\hspace{2cm}}$

$\frac{6}{36} = \underline{\hspace{2cm}}$

### Answers to Exercise Three

a)  $\frac{1}{2}, \frac{1}{3}$

b)  $\frac{1}{6}, \frac{1}{5}$

c)  $\frac{1}{2}, \frac{1}{6}$

d)  $\frac{2}{5}, \frac{3}{4}$

e)  $\frac{1}{10}, \frac{3}{5}$

f)  $\frac{3}{8}, \frac{2}{3}$

g)  $\frac{1}{4}, \frac{1}{4}$

h)  $\frac{5}{8}, \frac{3}{8}$

i)  $\frac{1}{16}, \frac{3}{10}$

j)  $\frac{7}{8}, \frac{2}{3}$

k)  $\frac{5}{7}, \frac{1}{2}$

l)  $\frac{3}{5}, \frac{3}{7}$

m)  $\frac{1}{8}, \frac{1}{10}$

n)  $\frac{5}{8}, \frac{2}{3}$

o)  $\frac{1}{3}, \frac{1}{6}$

p)  $\frac{1}{4}, \frac{1}{2}$

q)  $\frac{7}{12}, \frac{1}{3}$

r)  $\frac{5}{9}, \frac{1}{6}$



# Expressing Fractions in Higher Terms

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Higher Terms are needed when you add and subtract fractions with different denominators.

You have learned that **dividing** both the numerator and denominator of a fraction by a common factor **gives an equivalent fraction in lower terms**. You know that dividing and multiplying are opposite operations, so this next rule will match the one you just learned for reducing:

**Multiplying both the numerator and denominator** of a fraction by the same number (a **common factor**) will give an **equivalent fraction in higher terms**.

**Example A:**

$$\frac{3}{5} \left( \frac{\times 2}{\times 2} \right) = \frac{6}{10} \qquad \frac{3}{5} = \frac{6}{10}$$

**Example B:**

$$\frac{1}{2} \left( \frac{\times 8}{\times 8} \right) = \frac{8}{16} \qquad \frac{1}{2} = \frac{8}{16}$$

**Example C:**

$$\frac{2}{3} \left( \frac{\times 2}{\times 2} \right) = \frac{6}{9} \qquad \frac{2}{3} = \frac{6}{9}$$

## Are the Fractions Equivalent?

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If the denominators are the same, you can easily judge if the fractions are equivalent by comparing the numerators

$$\text{Compare } \frac{4}{5} \text{ and } \frac{3}{5}: \quad \frac{4}{5} \neq \frac{3}{5} \quad (\neq \text{ means 'not equal'})$$

$$\text{Compare } \frac{12}{20} \text{ and } \frac{12}{20}: \quad \frac{12}{20} = \frac{12}{20}$$

If the denominators are different, you **might be able to rewrite one or more of the fractions so they have the same denominator.**

$$\text{Compare } \frac{4}{5} \text{ and } \frac{6}{10}: \quad \frac{6}{10} \left( \frac{\div 2}{\div 2} \right) = \frac{3}{5} \quad \text{So: } \frac{4}{5} \neq \frac{3}{5}$$

$$\text{Compare } \frac{12}{16} \text{ and } \frac{5}{8}: \quad \frac{5}{8} \left( \frac{\times 2}{\times 2} \right) = \frac{10}{16} \quad \text{So: } \frac{12}{16} \neq \frac{10}{16}$$

$$\text{or you could do this: } \quad \frac{12}{16} \left( \frac{\div 2}{\div 2} \right) = \frac{6}{8} \quad \text{So: } \frac{6}{8} \neq \frac{5}{8}$$

A quick method is to **cross multiply**:

1. multiply the numerator of one fraction by the denominator of the second fraction
2. multiply the numerator of the **other** fraction by the denominator of the **first** fraction

These are called the *cross-products*.

If the cross products are the same, then the fraction is equivalent

Look at the examples:

**Example A:** Compare  $\frac{4}{7}$  and  $\frac{5}{9}$

$$\frac{4}{7} \quad \begin{array}{c} \nearrow \\ \searrow \end{array} \quad \frac{5}{9}$$

Multiply numerator 4 by denominator 9     $4 \times 9 = 36$

Multiply denominator 7 by numerator 5     $7 \times 5 = 35$

The products 36 and 35 **are not** the same.

Therefore  $\frac{4}{7} \neq \frac{5}{9}$

**Example B:** Compare  $\frac{2}{3}$  and  $\frac{12}{18}$

$$\frac{2}{3} \quad \begin{array}{c} \nearrow \\ \searrow \end{array} \quad \frac{12}{18}$$

$$2 \times 18 = 36$$

$$3 \times 12 = 36$$

The products 36 and 36 **are** the same.

Therefore  $\frac{2}{3} = \frac{12}{18}$

**Example C:** Compare  $\frac{24}{40}$  and  $\frac{4}{10}$

$$24 \times 10 = 240$$

$$40 \times 4 = 160$$

The products 240 and 160 **are not** the same.

Therefore  $\frac{24}{40} \neq \frac{4}{10}$

## Exercise Four

State if each pair is equivalent (=) or not equivalent ( $\neq$ ). Use whichever method you wish to find the answer.

a)  $\frac{5}{6} \text{ — } \frac{30}{60}$

b)  $\frac{12}{24} \text{ — } \frac{1}{2}$

c)  $\frac{6}{7} \text{ — } \frac{7}{8}$

d)  $\frac{2}{3} \text{ — } \frac{12}{18}$

e)  $\frac{1}{3} \text{ — } \frac{24}{72}$

f)  $\frac{3}{4} \text{ — } \frac{15}{20}$

g)  $\frac{12}{15} \text{ — } \frac{6}{7}$

h)  $\frac{1}{2} \text{ — } \frac{30}{50}$

i)  $\frac{8}{16} \text{ — } \frac{5}{10}$

j)  $\frac{12}{14} \text{ — } \frac{6}{7}$

k)  $\frac{4}{10} \text{ — } \frac{20}{50}$

l)  $\frac{5}{10} \text{ — } \frac{7}{14}$

### Answers to Exercise Four

a)  $\neq$     b) =    c)  $\neq$     d) =    e) =    f) =    g)  $\neq$   
h)  $\neq$     i) =    j) =    k) =    l) =

# Rounding Common Fractions to Whole Numbers

When rounding to a whole number, if a fraction is less than  $\frac{1}{2}$  do not change the whole number:

Examples:

$$2\frac{2}{5} \approx 2$$

$$\frac{1}{4} \approx 0$$

$$23\frac{1}{3} \approx 23$$

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

If the fraction is  $\frac{1}{2}$  or more, consider the fraction as **another one**, which must be added to the whole number:

Examples:

$$2\frac{1}{2} \approx 3$$

$$6\frac{7}{8} \approx 7$$

$$15\frac{4}{5} \approx 16$$

$$\frac{3}{4} \approx 1$$

If you are not sure if a fraction is more or less than  $\frac{1}{2}$ , you can compare it to  $\frac{1}{2}$  by making equivalent fractions with a common denominator.

**Reminder:** greater > smaller

**Example A:** Round  $2\frac{2}{3}$  to a whole number.

$$\text{Is } \frac{2}{3} > \frac{1}{2} ?$$

$$\frac{2}{3} = \frac{4}{6}$$

$$\frac{1}{2} = \frac{3}{6}$$

$$\text{Yes, } \frac{2}{3} > \frac{1}{2}, \text{ so } 2\frac{2}{3} \approx 3$$

**Example B:** Round  $2\frac{4}{7}$  to a whole number.

$$\text{Is } \frac{4}{7} > \text{ or } < \frac{1}{2} ?$$

$$\frac{4}{7} = \frac{8}{14}$$

$$\frac{1}{2} = \frac{7}{14}$$

$$\frac{4}{7} > \frac{1}{2}, \text{ so } 2\frac{4}{7} \approx 3$$

## Exercise Five

Round to the nearest whole number.

a)  $\frac{4}{5} \approx \underline{1}$

b)  $2\frac{1}{3} \approx \underline{2}$

c)  $18\frac{1}{2} \approx \underline{\quad}$

d)  $3\frac{7}{8} \approx \underline{\quad}$

e)  $9\frac{9}{10} \approx \underline{\quad}$

f)  $\frac{1}{8} \approx \underline{\quad}$

g)  $4\frac{1}{6} \approx \underline{\quad}$

h)  $12\frac{7}{9} \approx \underline{\quad}$

i)  $6\frac{3}{5} \approx \underline{\quad}$

j)  $20\frac{3}{7} \approx \underline{\quad}$

k)  $\frac{13}{15} \approx \underline{\quad}$

l)  $99\frac{2}{3} \approx \underline{\quad}$

### Answers to Exercise Five

c) 19

d) 4

e) 10

f) 0

g) 4

h) 13

i) 7

j) 20

k) 1

l) 100

# Topic A Self-Test

Mark /25 Aim 20/25

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## A. Define

3 marks

a) equivalent \_\_\_\_\_

b) prime number \_\_\_\_\_

c) greatest common factor (GCF) \_\_\_\_\_

## B. Complete the chart:

5 marks

	Factors	Common Factors	Greatest Common Factor
a) 12 18			
b) 15 30			
c) 7 28			
d) 6 16			
e) 18 27			

**C. Express in lowest terms.**

**6 marks**

a)  $\frac{4}{8} =$  \_\_\_\_\_      b)  $\frac{3}{9} =$  \_\_\_\_\_      c)  $\frac{12}{16} =$  \_\_\_\_\_

d)  $\frac{10}{25} =$  \_\_\_\_\_      e)  $\frac{14}{16} =$  \_\_\_\_\_      f)  $\frac{8}{12} =$  \_\_\_\_\_

**D. State if each pair of fractions is equivalent (=) or not equivalent ( $\neq$ ).**

**6 marks**

a)  $\frac{5}{9}$  \_\_\_\_\_  $\frac{15}{27}$       b)  $\frac{6}{36}$  \_\_\_\_\_  $\frac{4}{18}$       c)  $\frac{3}{7}$  \_\_\_\_\_  $\frac{15}{35}$

d)  $\frac{4}{15}$  \_\_\_\_\_  $\frac{20}{55}$       e)  $\frac{3}{7}$  \_\_\_\_\_  $\frac{6}{15}$       f)  $\frac{2}{3}$  \_\_\_\_\_  $\frac{9}{15}$

**E. Round to the nearest whole number.**

**5 marks**

a)  $4\frac{5}{8} \approx$  \_\_\_\_\_      b)  $19\frac{4}{10} \approx$  \_\_\_\_\_      c)  $\frac{1}{2} \approx$  \_\_\_\_\_

d)  $6\frac{3}{4} \approx$  \_\_\_\_\_      e)  $\frac{1}{3} \approx$  \_\_\_\_\_



**Answers to Topic B Self-Test**

**A.**

Check your definitions on pages 64 - 69.

**B.**

	<b>Factors</b>	<b>Common Factors</b>	<b>Greatest Common Factor</b>
a) 12 18	... of 12 are 1, 2, 3, 4, 6, 12 ... of 18 are 1, 2, 3, 6, 9, 18	2, 3, 6	6
b) 15 30	... of 15 are 1, 3, 5, 15 ... of 30 are 1, 2, 3, 5, 6, 10, 15, 30	3, 5, 15	15
c) 7 28	... of 7 are 1, 7 ... of 28 are 1, 2, 4, 7, 14, 28	7	7
d) 6 16	... of 6 are 1, 2, 3, 6 ... of 16 are 1, 2, 4, 8, 16	2	2
e) 18 27	... of 18 are 1, 2, 3, 6, 9, 18 ... of 27 are 1, 3, 9, 27	3, 9	9

**C.**

- a)  $\frac{1}{2}$       b)  $\frac{1}{3}$       c)  $\frac{3}{4}$       d)  $\frac{2}{5}$       e)  $\frac{7}{8}$       f)  $\frac{2}{3}$

**D.**

- a) =      b)  $\neq$       c) =      d)  $\neq$       e)  $\neq$       f)  $\neq$

**E.**

- a) 5      b) 19      c) 1      d) 7      e) 0

## Unit 2 Review

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1. Find all the factors for each number, some of the numbers are prime numbers, write 'prime' next to it.

a) 4 \_\_\_\_\_

b) 10 \_\_\_\_\_

c) 21 \_\_\_\_\_

d) 6 \_\_\_\_\_

e) 2 \_\_\_\_\_

f) 16 \_\_\_\_\_

g) 20 \_\_\_\_\_

h) 8 \_\_\_\_\_

i) 25 \_\_\_\_\_

j) 9 \_\_\_\_\_

k) 3 \_\_\_\_\_

l) 18 \_\_\_\_\_

2. Find the factors, common factors and the Greatest Common Factor (GCF).

	<b>Fraction</b>	<b>Factors</b>	<b>Common Factors</b>	<b>G.C.F.</b>
a)	$\frac{2}{8}$			
b)	$\frac{8}{16}$			
c)	$\frac{24}{32}$			
d)	$\frac{9}{12}$			
e)	$\frac{5}{15}$			
f)	$\frac{25}{30}$			
g)	$\frac{4}{12}$			
h)	$\frac{3}{9}$			
i)	$\frac{4}{32}$			
j)	$\frac{3}{15}$			
k)	$\frac{2}{10}$			
l)	$\frac{6}{15}$			

3. Express each fraction in lowest terms. Remember: be sure to write the GCF you are dividing with.

a)  $\frac{6}{9} = \underline{\hspace{2cm}}$

g)  $\frac{15}{30} = \underline{\hspace{2cm}}$

b)  $\frac{6}{18} = \underline{\hspace{2cm}}$

h)  $\frac{4}{24} = \underline{\hspace{2cm}}$

c)  $\frac{12}{28} = \underline{\hspace{2cm}}$

i)  $\frac{10}{18} = \underline{\hspace{2cm}}$

d)  $\frac{2}{16} = \underline{\hspace{2cm}}$

j)  $\frac{2}{32} = \underline{\hspace{2cm}}$

e)  $\frac{6}{20} = \underline{\hspace{2cm}}$

k)  $\frac{3}{18} = \underline{\hspace{2cm}}$

f)  $\frac{10}{30} = \underline{\hspace{2cm}}$

l)  $\frac{6}{24} = \underline{\hspace{2cm}}$

4. Circle the fractions that are in lowest terms.

a)  $\frac{1}{2}$

b)  $\frac{3}{6}$

c)  $\frac{4}{5}$

d)  $\frac{3}{9}$

e)  $\frac{4}{8}$

f)  $\frac{5}{10}$

g)  $\frac{1}{7}$

h)  $\frac{3}{12}$

i)  $\frac{2}{5}$

j)  $\frac{2}{4}$

5. Find all the fractions that are not already in lowest terms and reduce them. Write 'lowest terms' next to those already reduced.

a)  $\frac{4}{8} =$  \_\_\_\_\_

b)  $\frac{1}{3} =$  \_\_\_\_\_

c)  $\frac{2}{5} =$  \_\_\_\_\_

d)  $\frac{3}{9} =$  \_\_\_\_\_

e)  $\frac{8}{12} =$  \_\_\_\_\_

f)  $\frac{14}{16} =$  \_\_\_\_\_

g)  $\frac{1}{9} =$  \_\_\_\_\_

h)  $\frac{2}{10} =$  \_\_\_\_\_

i)  $\frac{15}{35} =$  \_\_\_\_\_

j)  $\frac{3}{7} =$  \_\_\_\_\_

k)  $\frac{42}{80} =$  \_\_\_\_\_

l)  $\frac{15}{27} =$  \_\_\_\_\_

m)  $\frac{6}{36} =$  \_\_\_\_\_

n)  $\frac{9}{42} =$  \_\_\_\_\_

o)  $\frac{9}{15} =$  \_\_\_\_\_

6. State if each pair of fractions is equivalent (=) or not equivalent ( $\neq$ ).

a)  $\frac{4}{5}$  \_\_\_\_\_  $\frac{7}{8}$

b)  $\frac{1}{3}$  \_\_\_\_\_  $\frac{22}{44}$

c)  $\frac{10}{12}$  \_\_\_\_\_  $\frac{5}{6}$

d)  $\frac{3}{4}$  \_\_\_\_\_  $\frac{15}{20}$

e)  $\frac{5}{15}$        $\frac{1}{3}$   
\_\_\_\_\_

f)  $\frac{4}{16}$        $\frac{2}{8}$   
\_\_\_\_\_

g)  $\frac{6}{7}$        $\frac{36}{41}$   
\_\_\_\_\_

h)  $\frac{4}{9}$        $\frac{9}{18}$   
\_\_\_\_\_

i)  $\frac{3}{5}$        $\frac{15}{25}$   
\_\_\_\_\_

7. Round to the nearest whole number.

a)  $1\frac{1}{4} =$  \_\_\_\_\_

b)  $3\frac{1}{3} =$  \_\_\_\_\_

c)  $4\frac{3}{4} =$  \_\_\_\_\_

d)  $1\frac{1}{2} =$  \_\_\_\_\_

e)  $6\frac{4}{5} =$  \_\_\_\_\_

f)  $12\frac{7}{8} =$  \_\_\_\_\_

g)  $3\frac{1}{4} =$  \_\_\_\_\_

h)  $17\frac{1}{17} =$  \_\_\_\_\_

i)  $12\frac{8}{9} =$  \_\_\_\_\_

j)  $2\frac{1}{4} =$  \_\_\_\_\_

**Answers to Review**

1.

- a) 1, 2, 4
- b) 1, 2, 5, 10
- c) 1, 3, 7, 21
- d) 1, 2, 3, 6
- e) 1, 2 prime
- f) 1, 2, 4, 8, 16

- g) 1, 2, 4, 5, 10, 20
- h) 1, 2, 4, 8
- i) 1, 5, 25
- j) 1, 3, 9
- k) 1, 3 prime
- l) 1, 2, 3, 6, 9, 18

2.

	<b>Fraction</b>	<b>Factors</b>	<b>Common Factors</b>	<b>G.C.F.</b>
<b>a)</b>	$\frac{2}{8}$	1, 2 1, 2, 4, 8	1, 2	2
<b>b)</b>	$\frac{8}{16}$	1, 2, 4, 8 1, 2, 4, 8, 16	2, 4, 8	8
<b>c)</b>	$\frac{24}{32}$	1, 2, 3, 4, 6, 8, 12, 24 1, 2, 4, 8, 16, 32	2, 4, 8	8
<b>d)</b>	$\frac{9}{12}$	1, 3, 9 1, 2, 3, 4, 6, 12	3	3
<b>e)</b>	$\frac{5}{15}$	1, 5 1, 3, 5, 15	5	5
<b>f)</b>	$\frac{25}{30}$	1, 5, 25 1, 2, 3, 5, 6, 10, 15, 30	5	5
<b>g)</b>	$\frac{4}{12}$	1, 2, 4 1, 2, 3, 4, 6, 12	2, 4	4
<b>h)</b>	$\frac{3}{9}$	1, 3 1, 3, 9	3	3
<b>i)</b>	$\frac{4}{32}$	1, 2, 4 1, 2, 4, 8, 16, 32	2, 4	4
<b>j)</b>	$\frac{3}{15}$	1, 3 1, 3, 5, 15	3	3
<b>k)</b>	$\frac{2}{10}$	1, 2 1, 2, 5, 10	2	2
<b>l)</b>	$\frac{6}{15}$	1, 2, 3, 6 1, 3, 5, 15	3	3

3.

a)  $\frac{2}{3}$

b)  $\frac{1}{3}$

c)  $\frac{3}{7}$

d)  $\frac{1}{8}$

e)  $\frac{3}{10}$

f)  $\frac{1}{3}$

g)  $\frac{1}{2}$

h)  $\frac{1}{6}$

i)  $\frac{5}{9}$

j)  $\frac{1}{16}$

k)  $\frac{1}{6}$

l)  $\frac{1}{4}$

4.

a)  $\frac{1}{2}$

c)  $\frac{4}{5}$

g)  $\frac{1}{7}$

i)  $\frac{2}{5}$

5.

a)  $\frac{1}{2}$

b) lowest terms

c) lowest terms

d)  $\frac{1}{3}$

e)  $\frac{2}{3}$

f)  $\frac{7}{8}$

g) lowest terms

h)  $\frac{1}{5}$

i)  $\frac{5}{7}$

j) lowest terms

k)  $\frac{21}{40}$

l)  $\frac{5}{9}$

m)  $\frac{1}{6}$

n)  $\frac{3}{14}$

o)  $\frac{3}{5}$

6.

a)  $\neq$

b)  $\neq$

c)  $=$

d)  $=$

e)  $=$

f)  $=$

g)  $\neq$

h)  $\neq$

i)  $=$

7.

a) 1

b) 3

c) 5

d) 2

e) 7

f) 13

g) 3

h) 17

i) 13

j) 2



**It is now test time!**

Please get the practice test  
from your instructor.

Once you are ready, you can get  
the unit 2 test from your instructor.

**Good luck!**

