

## 17.1 Fraction Basics - Worksheet 1

1 Convert  $\frac{15}{4}$  from an improper fraction to a mixed number using a diagram.

Diagrams are not forever. But they are important enough to practice a few times.

2 Convert  $\frac{17}{3}$  from an improper fraction to a mixed number using a diagram.

3 Convert  $3\frac{1}{5}$  from a mixed number to an improper fraction using a diagram.

4 Convert  $2\frac{3}{7}$  from a mixed number to an improper fraction using a diagram.

5 Represent  $2\frac{3}{4}$  on a number line.

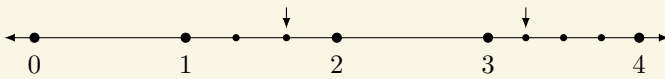
## 17.2 Fraction Basics - Worksheet 2

1 Convert  $\frac{12}{7}$  from an improper fraction to a mixed number using a diagram.

2 Suppose you are given the fraction  $\frac{a}{b}$  where  $a$  and  $b$  are both integers and  $b \neq 0$ . Describe a calculation that would give you the corresponding mixed number without drawing out a diagram.

Do not divide by zero!

3 Determine the values corresponding to the positions indicated in the diagram below.



4 Completely reduce the fractions  $\frac{21}{28}$  and  $\frac{18}{48}$ .

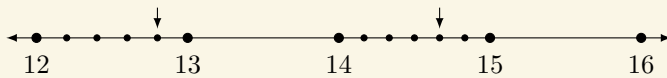
5 Completely reduce the fractions  $\frac{8x^2}{6x^4}$  and  $\frac{15x^5}{35x^2}$ .

### 17.3 Fraction Basics - Worksheet 3

1 Convert  $2\frac{3}{8}$  from a mixed number to an improper fraction using a diagram.

2 Suppose you are given the fraction  $a\frac{b}{c}$  where  $a$ ,  $b$ , and  $c$  are all integers and  $c \neq 0$ . Describe a calculation that would give you the corresponding improper fraction without drawing out a diagram.

3 Determine the values corresponding to the positions indicated in the diagram below.



4 Completely reduce the fractions  $\frac{25}{40}$  and  $\frac{12}{27}$ .

5 Completely reduce the fractions  $\frac{10x^3y^2}{25xy^5}$  and  $\frac{21a^3b^3}{49a^3b^2}$ .

## 17.4 Fraction Basics - Worksheet 4

1 Convert  $\frac{23}{5}$  and  $\frac{25}{7}$  from improper fractions to mixed numbers without drawing a diagram.

2 Convert  $3\frac{2}{9}$  and  $4\frac{4}{5}$  from mixed numbers to improper fractions without drawing a diagram.

3 Completely reduce the fractions  $\frac{35}{60}$  and  $\frac{28m^2n^3}{36mn^8}$ .

4 Check the presentation for errors. If you find one, circle it and describe the mistake in words.

$$\frac{4xy}{12x^2y^3} = \frac{4xy}{3xy^2 \cdot 4xy} = \frac{\cancel{4xy}}{3xy^2 \cdot \cancel{4xy}} = 3xy^2$$

This mistake is fairly common.

5 Check the presentation for errors. If you find one, circle it and describe the mistake in words.

$$\frac{20x^2}{5x^5} = \frac{4 \cdot 5x^2}{x^3 \cdot 5x^2} = \frac{4 \cdot \cancel{5x^2}}{x^3 \cdot \cancel{5x^2}} = 4x^3$$

## 17.5 Fraction Basics - Worksheet 5

1

Completely reduce the fractions  $\frac{4x^2}{6x^4}$  and  $\frac{4(x+2)^2}{6(x+2)^4}$ .

There is no conceptual difference between these two calculations.

2

Completely reduce the fractions  $\frac{12xy^4}{18x^4y^2}$  and  $\frac{12(x+2)(x-3)^4}{18(x+2)^4(x-3)^2}$ .

Do you understand the pattern?

3

Completely reduce the fractions  $\frac{9ab^3}{12a^2b}$  and  $\frac{9 \sin(x) \cos^3(x)}{12 \sin^2(x) \cos(x)}$ .

Note:  $\sin^n(x)$  is a shorthand for  $(\sin(x))^n$  and  $\cos^n(x)$  is a shorthand for  $(\cos(x))^n$ .

4

Completely reduce the fraction  $\frac{x^2+5x+6}{x^2-3x-10}$ .

Hint: Factor, then trust your experience to guide you from there.