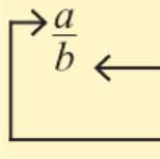



Chapter 6 – Meaning for Fractions

The **part-whole** meaning for the fraction $\frac{a}{b}$ has these three elements:

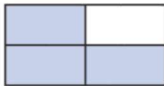
- 
1. The unit, or whole, is clearly in mind. (What equals 1?)
 2. The denominator indicates into how many pieces of equal size the unit is cut (or is thought of as being cut).
 3. The numerator indicates how many such pieces are being considered.

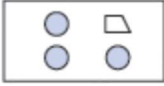
Define –

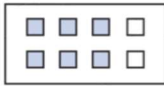
- **Discrete** quantity
- **Continuous** quantity


 **ACTIVITY 1** What Does $\frac{3}{4}$ Mean?

Explain how each of the following diagrams could be used to illustrate the part-whole meaning for $\frac{3}{4}$, making clear what the unit, or whole, is in each case. In which diagrams does $\frac{3}{4}$ refer to a part of a continuous length or region? In which diagrams does it refer to a discrete unit?

a. 

b. 

c. 

d. 

Question – When representing a fraction, do we **always** have to use the same “size” pieces? Discrete? Continuous?



Activity: Draw the following fractions on separate number lines. *Question:* Is this discrete or continuous modeling?

$$\frac{4}{9}$$

$$\frac{11}{10}$$

$$\frac{42}{9}$$

$$-\frac{7}{3}$$

Activity: Draw same fractions using cookies using a cookie pan as the whole. *Question:* Discrete or continuous?

Procedural Knowledge versus Conceptual Knowledge.

Convert $6\frac{3}{8}$ into an improper fraction. Convert $\frac{83}{6}$ into a mixed number. Can you draw a diagram that makes sense of it?

Activity – Use a diagram to show that the following fractions are equivalent. (Circle/bar/etc)

$$\frac{1}{5} \quad \text{and} \quad \frac{4}{20}$$

$$\frac{7}{4} \quad \text{and} \quad \frac{35}{20}$$

$$\frac{12}{3} \quad \text{and} \quad \frac{16}{4} \quad \text{and} \quad \frac{44}{11}$$

$$\frac{84}{105} \quad \text{and} \quad \frac{20}{25}$$

Example: Find a equivalent fractions to $\frac{5}{7}$.

- $n = 2$
- $n = 3$
- $n = 10$
- $n = 22$
- Can you find an equivalent fraction with denominator 42?

Are the following fractions in lowest terms?

$\frac{2}{3}$

$\frac{6}{8}$

$\frac{6}{9}$

$\frac{12}{20}$

$\frac{985}{250}$

$\frac{187}{253}$

$\frac{102}{10}$

6.3 – Converting Between Fractions, Decimals and Percent

<u>Fraction</u>	<u>Decimal</u>	<u>Percent</u>
$\frac{1}{10}$	0.1	10%
$\frac{3}{10}$		
	0.7	
$\frac{1}{4}$	0.25	25%
$\frac{3}{4}$		
	1.25	
$\frac{1}{3}$	0.333 ...	33. $\bar{3}$ %
$\frac{2}{3}$		
	0.111 ...	
	0.222 ...	
	0.00267	
	0.092	
	0.0055	
$\frac{3}{20}$		
$\frac{47}{25}$		
		18%

Rules for converting repeating decimals into fractions.

$$\frac{a}{9} = 0.\overline{a}$$

$$\frac{ab}{99} = 0.\overline{ab}$$

$$\frac{abc}{999} = 0.\overline{abc}$$

Examples: Convert the following into fractions.

- $0.\overline{4}$
- $0.\overline{04}$
- $0.\overline{24}$
- $0.\overline{104}$
- $0.\overline{0004}$
- $0.0\overline{4}$
- $2.12\overline{67}$

Activity – In your groups, answer the following questions!

1. Convert the following into fractions **in simplest form**.

$$0.\overline{2689}$$

$$0.0\overline{25}$$

$$3.\overline{15}$$

2. Convert the following into decimals. (If you are stuck try to write equivalent fraction with 9's in the denominator)

$$\frac{4}{9}$$

$$\frac{3}{11}$$

$$\frac{28}{333}$$