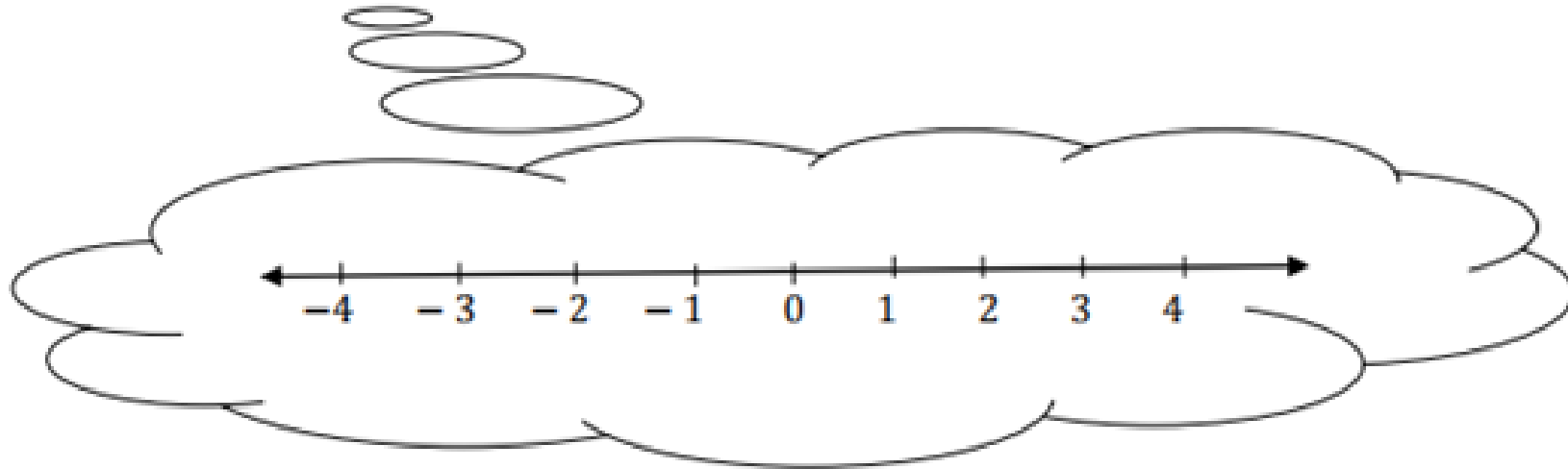


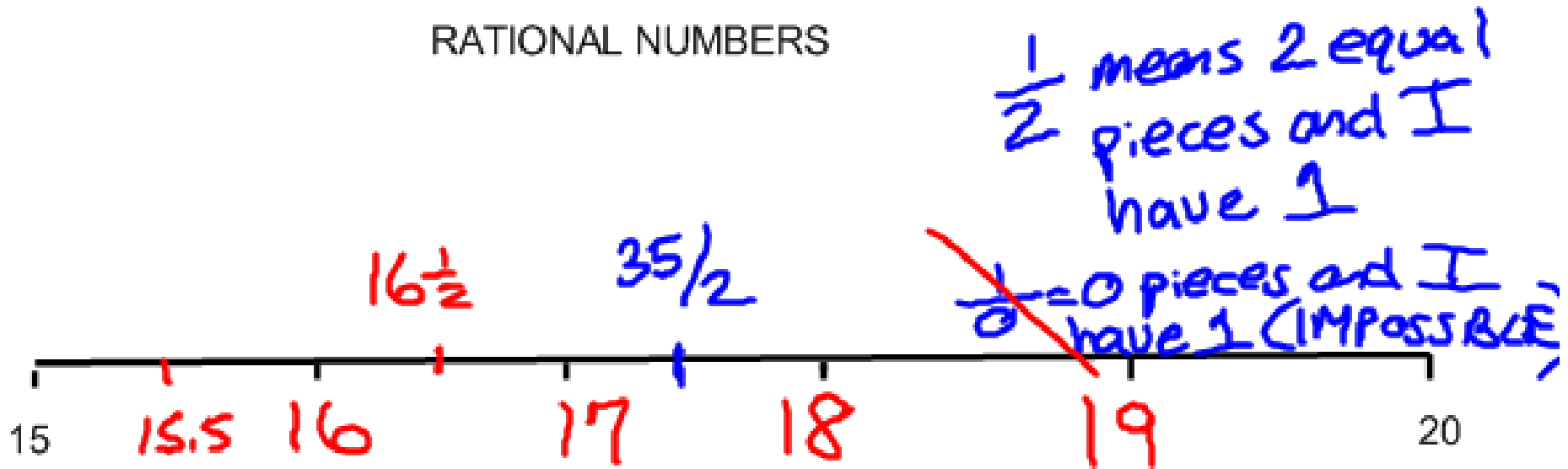
**Integers**,  $I$ , is a set of numbers that include positive and negative numbers and zero.

Imagine a number line



The set of integers does not include decimals or fractions.

# RATIONAL NUMBERS



A RATIONAL NUMBER IS:  
**any number that can be written as a fraction** (as long as the bottom of the fraction isn't 0)  
this includes all decimal numbers that end or have a repeating pattern.

$$17\frac{1}{2} = 17 + \frac{1}{2}$$
$$\frac{34}{2} + \frac{1}{2}$$
$$= 35\frac{1}{2}$$

$$\frac{17 \times 2}{1 \times 2} = \frac{34}{2}$$

ARE THESE NUMBERS RATIONAL?

$$\frac{6}{1} \checkmark$$

$$\frac{3}{4} \checkmark$$

$$\frac{-5}{3} \checkmark$$

$$\frac{7}{0} \times$$

not allowed  
zero  
on bottom

$$\sqrt{16} = 4 \checkmark$$

$$\frac{-7}{-2} \checkmark$$

$$0 \checkmark$$

$$\sqrt{2} \times$$

$$-9 \checkmark$$

$$= 1.414213562\dots$$

$$\pi \times$$

$\checkmark$  ends

$$0.125$$
$$\frac{125}{1000}$$

$\checkmark$  repeating

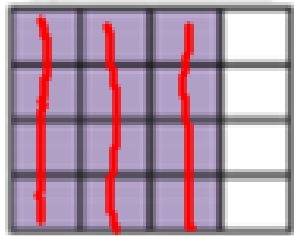
$$0.\overline{3}$$
$$\frac{1}{3}$$

$\checkmark$

$$\frac{1}{5/6}$$

$$\sqrt{1.44} \checkmark$$
$$= 1.2$$

# EQUIVALENT FRACTIONS



$$\frac{12}{16} = \frac{3}{4} \times 3 = \frac{9}{12} \times 2 = \frac{18}{24}$$

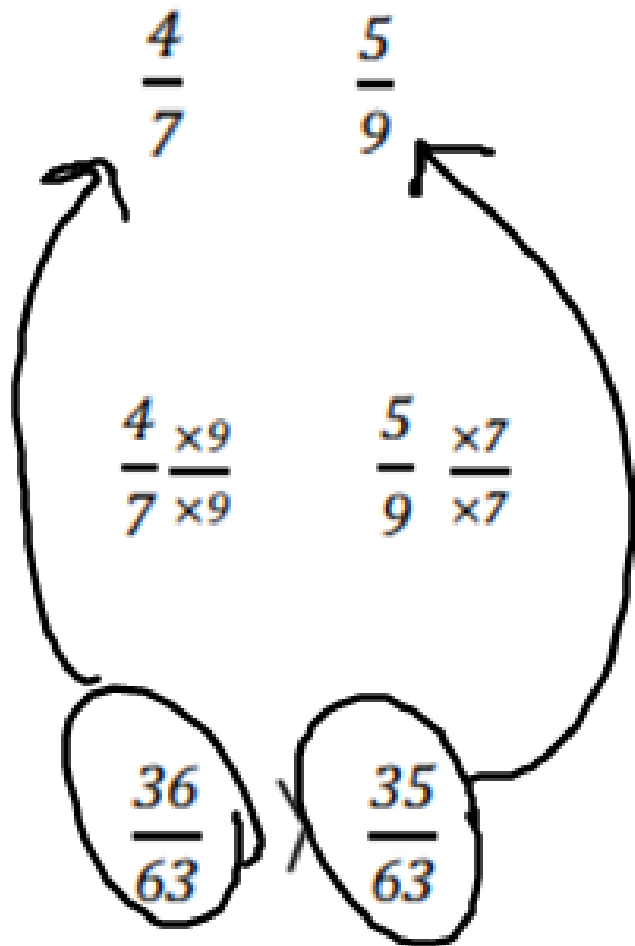
$$\frac{12}{16} \div 4 = \frac{3}{4}$$

$$\frac{3}{4} = \frac{18}{24} = \frac{9}{12} = \frac{12}{16}$$

$$\frac{3}{4} \times 4 = \frac{12}{16}$$

all the same

Use  $>$ ,  $<$ , or  $=$  to determine which rational number is greater, where possible.



therefore

$$\frac{4}{7} > \frac{5}{9}$$

$$\frac{-3}{8} > \frac{-5}{8}$$

$$\frac{2}{7} > \frac{2}{9}$$

$$\frac{2 \times 9}{7 \times 9}$$

$$\frac{2 \times 7}{9 \times 7}$$

$$\frac{18}{63} > \frac{14}{63}$$

$$\frac{2}{7} > \frac{2}{9}$$

## Changing a decimal to a fraction

use the place value of the final decimal place to determine the bottom of the fraction

$$\begin{array}{r} -0.75 \\ -75 \\ \hline 100 \end{array}$$

$$\begin{array}{r} 2.4 \\ 24 \\ \hline 10 \end{array}$$

$$\begin{array}{r} -0.7 \\ -7 \\ \hline 10 \end{array}$$

$$\begin{array}{r} -0.255 \\ -255 \\ \hline 1000 \end{array}$$

repeating decimals have a bottom number one less than the place value.  
~~make sure to use that bottom number to help determine the top number.~~

$$-0.\overline{6}$$

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

$$0.\overline{75}$$

$$= 0.757575\dots$$

$$\frac{75}{99}$$

$$0.\overline{256}$$

$$\frac{256}{999}$$

Remember  $2.3 = \frac{23}{10}$  because  $2 = \frac{20}{10}$  and  $0.3 = \frac{3}{10}$

$$2.\overline{3} = 2 + 0.\overline{3} = \frac{20}{10} + \frac{3}{10} + \frac{3}{10}$$

$$\frac{23}{10}$$



HW: worksheet

# 1, 6, 7, 8, 10, 11