

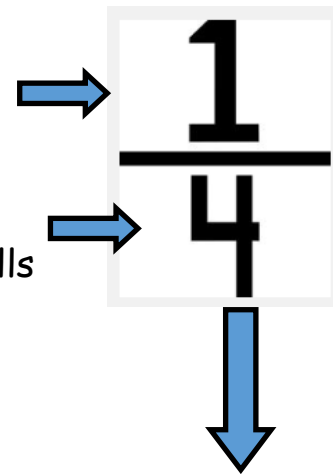
# Unit 7: Fractions

SOL 4.2 a,b,c

Fractions: a number representing a part of a whole shape or a part of a whole group

Numerator: the top number of a fraction. It tells how many pieces are shaded, chosen, or being talked about.

Denominator: the bottom number of a fraction. It tells how many pieces are in the whole shape or group.



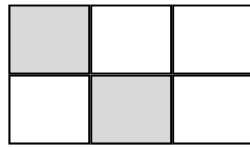
**FRACTIONS ARE DIVISION**



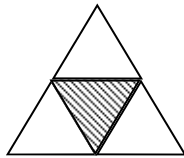
**PROB-**

# Fractions

## Parts of a Whole

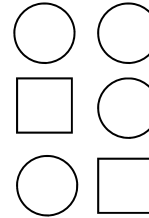


$\frac{2}{6}$  is shaded



$\frac{1}{4}$  is striped

## Parts of a Group



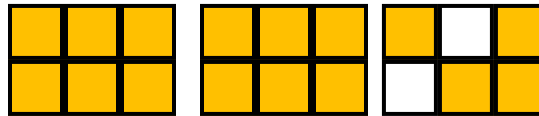
$\frac{2}{6}$  are circles



$\frac{3}{8}$  are cats

## Fractions Greater Than a Whole

$$\frac{16}{6}$$



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

### Improper Fraction

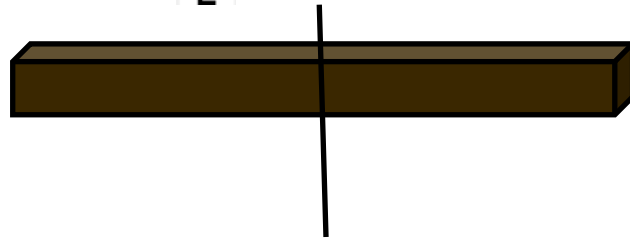
a fraction where the numerator is greater than the denominator

### Mixed Number

a whole number and a fraction

# Fractions

**You have a candy bar and your friend Dipper wants to share it with you. You give him  $\frac{1}{2}$ . You now have a smaller piece to eat.**

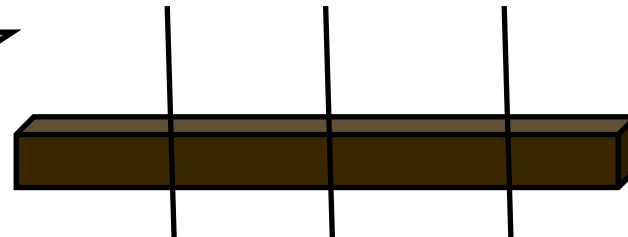


**Dipper's sister also wants a piece of the candy bar, along with her friend, Grenda. Now you have to divide the candy bar into four pieces! You now have an even SMALLER piece to eat! The more parts (or the bigger the denominator) the smaller the fraction or piece it becomes.**

The bigger the denominator the smaller the fraction (piece).



$$\frac{1}{4}$$

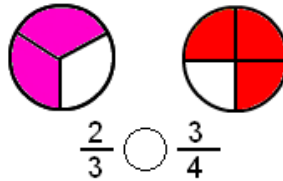


# Comparing Fractions

## Comparing Fractions

To compare fractions, we use  $<$  (less than),  $>$  (greater than), or  $=$  (equal to).

Ways to Compare Fractions:



$\frac{3}{4}$  1. Compare the pictures.  $\frac{2}{3}$  are careful!  $\frac{3}{4}$  Sometimes this can be tricky!

has more shaded in than so,  $\frac{2}{3}$  is greater than  $\frac{3}{4}$

2. Cross Multiplication

$3 \times 3 = 9$

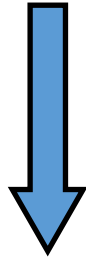
$4 \times 2 = 8$

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

Now, compare the products. 9 is greater than 8, so our answer is  $>$ .

# Ordering Fractions

$$\frac{4}{8}, \frac{6}{8}, \frac{3}{8}, \frac{1}{8}$$



$$\frac{6}{8}, \frac{4}{8}, \frac{3}{8}, \frac{1}{8}$$

**Let's order the following fractions from greatest to least! The denominators are alike or the same. EASY! All we need to do is focus on the numerators and put those in order!**

# Ordering Fractions

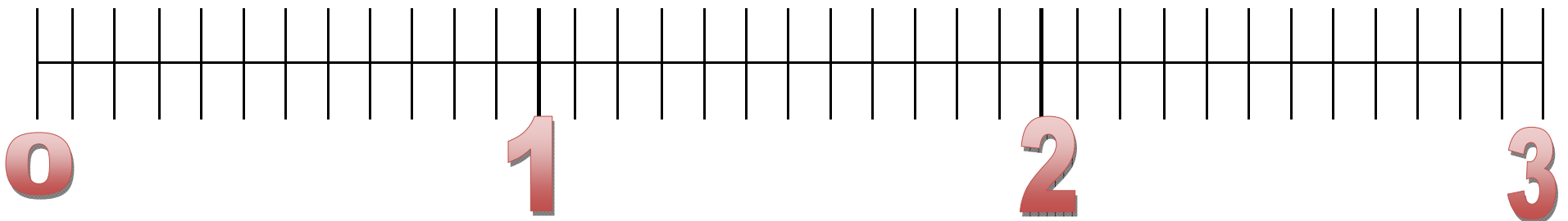
$$8/12, 2/8, 8/6, 2\frac{4}{6}$$

**How do I get these fractions in order?  
The denominators are not the same!**

**Convert the fractions, improper fractions,  
and mixed numbers into decimals!**

$$12 \overline{)8} = .67 \quad 8 \overline{)2} = .25 \quad 6 \overline{)8} = 1.33 \quad 6 \overline{)4} = 2.67 \text{ (Mixed number has the whole number!)}$$

Place the fractions and mixed numbers on the number line.



# Simplifying Fractions

**Simplifying (or *reducing*) fractions means to make the fraction as simple as possible.**

***Why say four-eighths (4/8) when we really mean half (1/2) ?***

**METHOD 1- DIVIDE BY WHOLE NUMBERS STARTING WITH 2**

**STEP 1— Are the denominators and numerators both even?**

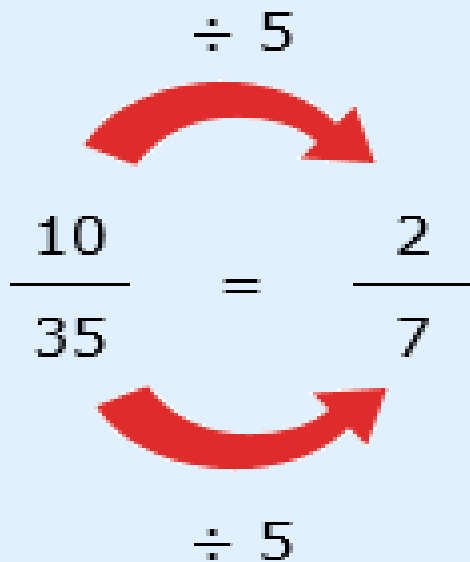
$$\begin{array}{ccc} \frac{4}{8} \div 2 & \implies & \frac{2}{4} \div 2 & \implies & \frac{1}{2} \\ \text{(Four-Eighths)} & & \text{(Two-Quarters)} & & \text{(One-Half)} \end{array}$$



# Simplifying Fractions

Simplify the fraction  $\frac{10}{35}$

**We are still dividing by whole numbers. 35 is not even so we must move on to 3... Nope  
4... Nope  
5... YES!**

$$\frac{10}{35} \div 5 = \frac{2}{7} \div 5$$






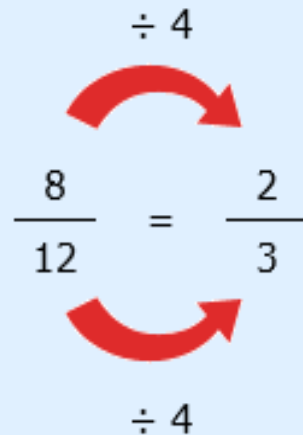
# Simplifying Fractions

## METHOD 2- FIND THE GREATEST COMMON FACTOR

Example: Simplify the fraction  $\frac{8}{12}$  :  
8 : 1, 2, 4, 8  
12: 1, 2, 3, 4, 6, 12

The largest number that goes exactly into both 8 and 12 is 4, so *the Greatest Common Factor is 4.*

Divide both top and bottom by 4:

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


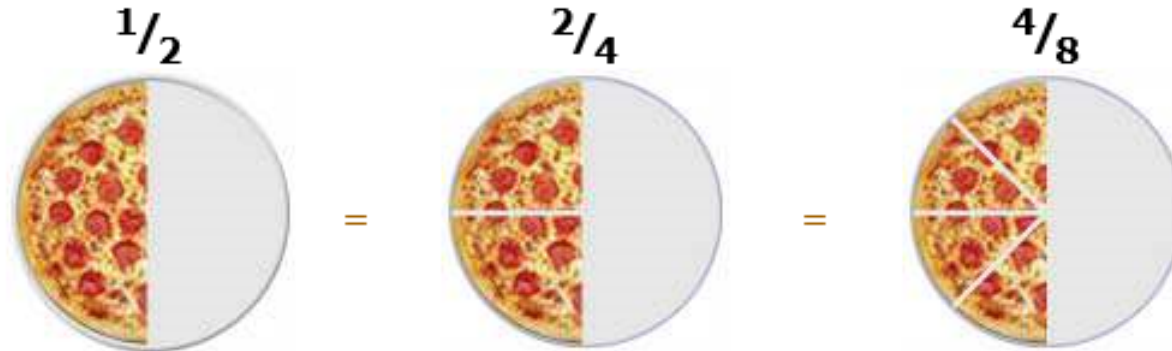
# Equivalent Fractions

*Equivalent Fractions* have the same value, even though they may look different.

These fractions are really the same:

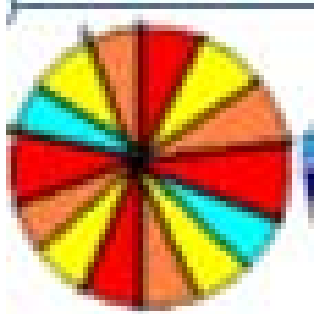
$$\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$$

**To create an equivalent fraction:**  
**multiply or divide the numerator**  
**or denominator with the same**  
**whole number.**



# Examples Decimal Numbers

## fractions to decimals



**tenths**

$$1/10 = 0.1$$

$$2/10 = 0.2$$

$$3/10 = 0.3$$

$$4/10 = 0.4$$

$$5/10 = 0.5$$

$$6/10 = 0.6$$

$$7/10 = 0.7$$

$$8/10 = 0.8$$

$$9/10 = 0.9$$

$$10/10 = 1$$



**fifths**

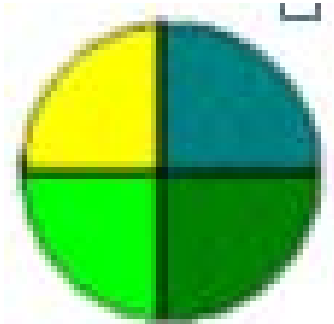
$$1/5 = 0.2$$

$$2/5 = 0.4$$

$$3/5 = 0.6$$

$$4/5 = 0.8$$

$$5/5 = 1$$



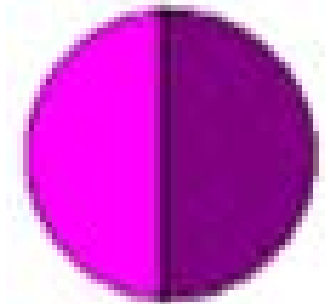
**fourths**

$$1/4 = 0.25$$

$$2/4 = 0.5$$

$$3/4 = 0.75$$

$$4/4 = 1$$



**halves**

$$1/2 = 0.5$$

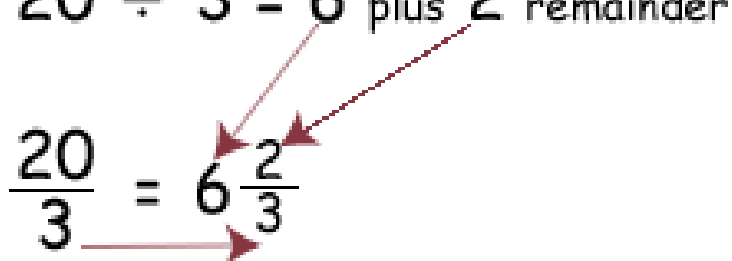
$$2/2 = 1$$

# Converting Improper Fractions into Mixed Numbers

Convert  $\frac{20}{3}$  to a mixed number

Divide the numerator by the denominator

$$20 \div 3 = 6 \text{ plus } 2 \text{ remainder}$$

$$\frac{20}{3} = 6\frac{2}{3}$$


6 becomes the whole number

2 is the numerator of the fraction as shown

3 is the denominator

# Converting Mixed Numbers into Improper Fractions

Example -

Convert  $2 \frac{3}{4}$  to an improper fraction.

$$2 \frac{3}{4} = \frac{(2 \times 4) + 3}{4} = \frac{11}{4}$$

The whole number = 2, the denominator = 4

Multiply together  $2 \times 4 = 8$

Add numerator (3)  $8 + 3 = 11$

The numerator of the improper fraction is 11 and the denominator is 4