Ratios & Rates

Introduction to ratios.

A ratio is: _____

_____

_____

There are 3 ways to write a ratio:

1) $\dfrac{a}{b}$ =   _____

2)   a : b =   _____

3)   a to b =   _____

Example: Write the ratio 11 and 13 in the 3 ways.

_____   _____   _____

Example:

Of the 365 days in a year, it takes 110 days to pay your taxes. What is the ratio of the days worked for taxes to the total number of days in a year?
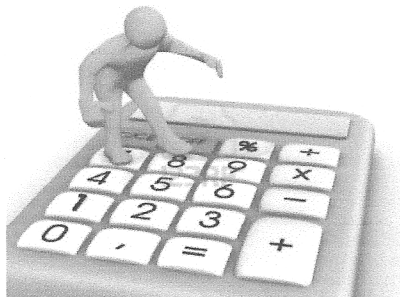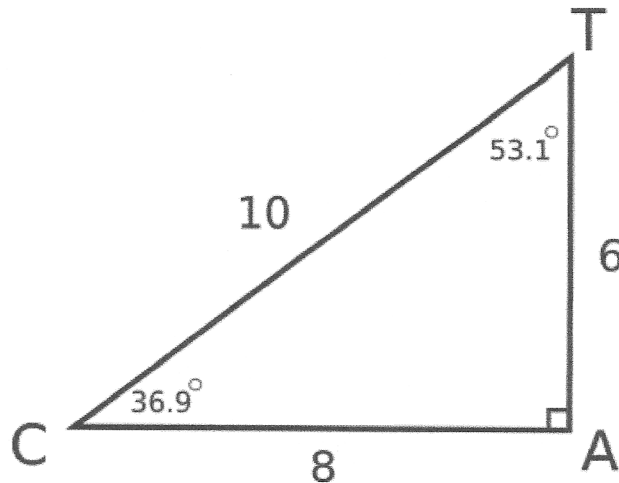
The ratio is :

Example: For the following triangle, find the ratios of :

the shortest leg to the longest leg:

the longest leg to the shortest leg:

To simplify a ratio, we find an equivalent fractions. Usually we are trying to find smaller numbers that have the same ratio.

Example: $\frac{12}{20} = \frac{6}{10} = \frac{3}{5}$

Try finding these ratios:

1) The ratio of girls in your class to boys =

2) The ratio of boys to the whole class =

3) The ratio of student musicians to the whole class =

4) The ratio of students who would choose movies
    that at comedies to students who would choose dramas
    to students who would choose horror =

Introduction to Rates.

A rate is _____

_____

_____

It is important to place the correct number in the numerator and denominator when figuring out rates.
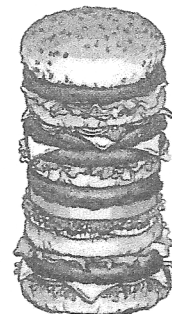
Example 1: If a car is driven 250 miles in 5 hours, what is the rate (ratio) of distance traveled to time spent traveling the distance?

We know that $d = r \cdot t$ so that $r = \dfrac{d}{t}$

Example 2: Frank can eat 4 hamburgers in 20 minutes.
1) What is the rate in hamburgers per minute?
2) In minutes per hamburger?

Introduction to Unit Rates.

A unit rate is _____

_____

_____

We can compare rates if we use the unit rate of each item we are comparing. This allows us to find the "better buy."

Example 1: A store is having a sale on a package of 24, 12 ounce cans of soda for $6.99. What is the unit price in cents per ounce?

We need to find the total ounces and cents, since the question is asking cents per ounce. Total ounces are $12 \cdot 24 = 288$ oz. Now find the unit price.
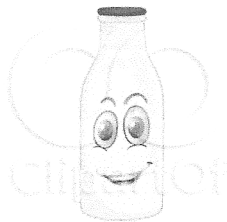
Example 2: There are 2 brands of cream. Smith's is 79 cents for 12 oz. and Brown's is $2.69 for a quart (quart = 32 oz.).

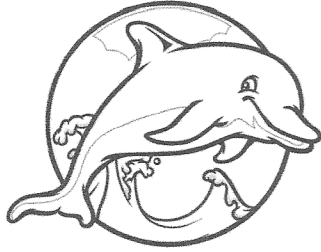**Which has the lower unit price?** (Both must be in cents per oz.)

**Smith's**   **Brown's**

Lets practice Unit Rates:

1) Dolphins take 34 breathes in 4 hours. How many breathes per hour?

2) There are 424 calories in 3 servings. How many calories per serving?

3) The basketball player scored 240 points in 16 games. How many points were scored per game?

4) The recreation center has 7500 sq. ft. of space for 320 children. The local YMCA has 9500 sq. ft. for its 370 child members. Which facility has more square feet of space per child?
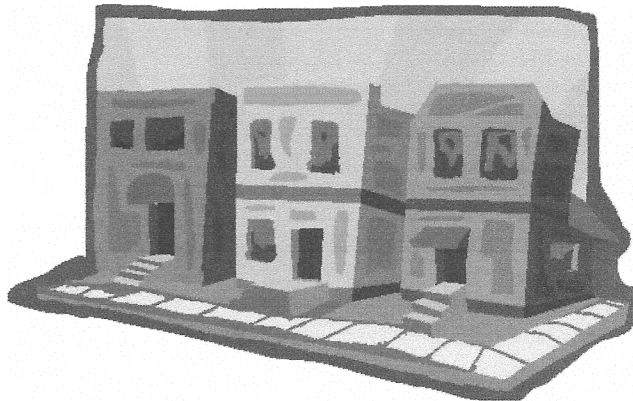
Introduction to Proportions.

A proportion is _____

_____

Example: 2 is to 4   as   _____ is to _____

Write as a proportion using fractions:

To check whether 2 ratios are proportional, use _____ or

_____   _____.

$$\frac{a}{b} = \frac{c}{d}$$

1) "a" & "d" are the   _____

   "b" & "c" are the   _____

2) Set the 2 fractions = to each other

   If the _____ = the _____ you have a proportion.

3) You can also check to see if the fractions are equivalent.

   _____ fractions are proportional.

Example: $\frac{6}{14} = \frac{?}{56}$

Solve by finding a factor to make the fractions equivalent.

Solve by using cross products (means = extremes)