

Unit 7: Ratios, Rates, & Proportions**7.1 Ratios****Key words**

Two-term ratio: *compares two quantities measured in the same units*
"a to b" $a:b$ $\frac{a}{b}$

Three-term ratio: *compares three quantities*

Part-to-part ratio: *"a to b to c" $a:b:c$*
compares different parts of a group to each other

Part-to-whole ratio: *compare one part of a group to the whole group*

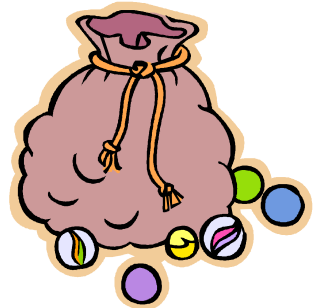
ex. There are 20 marbles in a bag: 10 black, 4 red and 6 purple.

a) Write a two-term ratio comparing black to red marbles

$$10:4 \quad \text{or} \quad \frac{10}{4} \quad * \text{reduce the ratio}$$

b) Is this part to part or ~~part to whole~~?

$$10:4 = 5:2 \quad \frac{10}{4} = \frac{5}{2}$$



c) Write a ratio comparing the number of red marbles to the total number of marbles. What type of ratio is this?

$$4:20 = 1:5 \quad \text{part to whole}$$

d) What marbles are represented by the ratio 6:10?

purple to black

e) Write the three-term ratio comparing the red, purple, and black marbles.

$$4:6:10 = 2:3:5$$

f) Write a part to whole ratio involving all three colors.

$$4:20 = 1:5$$

red to total

$$6:20 = 3:10$$

purple to total

$$10:20 = 1:2$$

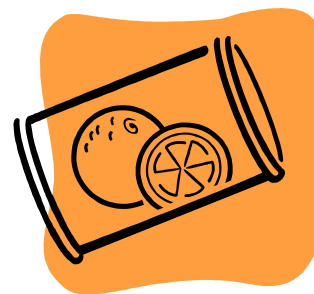
black to total

$$4:6:10:20 = 2:3:5:10$$

red to purple to black to total

ex. Applying Ratios

Tamara has a recipe for fruit punch that calls for three cans of frozen orange juice, 2 cans of raspberry juice and one can of lime juice. For each can of concentrate she must add three cans of water. All the cans are the same size. Tamara makes one recipe of fruit punch.



a) Complete the table

	Orange	Raspberry	Lime	Total
Juice Concentrate (cans)	3	2	1	6
Water (cans)	9	6	3	18
Total punch (cans)				24

b) What is the ratio of orange juice to lime juice concentrate? Express the ratio in two ways.

$$3 \text{ to } 1 \quad 3:1 \quad \frac{3}{1}$$

c) What is the ratio of lime to orange to raspberry juice concentrate?

$$1:3:2$$

d) What is the ratio of water to juice concentrate?

$$18:6 = 3:1$$

e) What is the ratio of orange, raspberry and lime juice concentrate to total punch? Express the ratio as a fraction, decimal and a percent.

$$\underline{\underline{6:24}} = 1:4 \quad \frac{1}{4} \quad 1 \div 4 = 0.25 \quad \times 100 = 25\%$$

f) If you increase the recipe to use 8 cans of raspberry juice, how many cans of orange and lime juice are needed?

$$\begin{array}{c} \text{R} \quad \text{O} \quad \text{L} \\ 2:3:1 = 8:12:4 \\ \swarrow \quad \searrow \\ \text{original} \quad \times 4 \end{array} \quad \begin{array}{l} 12 \text{ cans of OJ} \\ 4 \text{ cans of LJ} \end{array}$$