

Increasing/decreasing numbers by a ratio

By what ratio must a number be multiplied by to increase it by 35%?

$$100\% + 35\% = 135\% = \frac{135}{100} = \frac{27}{20}$$

By what ratio must a number be multiplied by to decrease it by 15%?

$$100\% - 15\% = 85\% = \frac{85}{100} = \frac{17}{20}$$

STEPS)

- 1) let the original number represent 100%.
- 2) If increase add the percent, if decrease subtract the number.
- 3) Write the resulting number as a fraction with a denominator of 100.
- 4) Reduce the fraction.

Given an Equation find the ratio of one quantity to another.

Remember, the ratio of $a:b$ is $\frac{a}{b}$

Ex) If $ax = by$, what is the ratio of x to y ?

STEP 1) Rearrange the equation so one side is $\frac{x}{y}$

$$\frac{ax}{a} = \frac{by}{a}$$

$$\frac{x}{y} = \frac{b}{a}$$

the ratio of x to y is b to a

Ex) Find the ratio of c to d if $c = d$.

$$c = d$$

$$\frac{c}{d} = 1$$

the ratio of c to d is 1

Ex) If $am = b$, find the ratio of b to a .

$$am = b$$

$$m = \frac{b}{a}$$

Ratio of b to a is m