

6.5 Percent of Increase/Decrease

EQ: What is a percent of increase/decrease?

Percent of Change: the percent that something changes from the original.

$$* \text{ percent change} = \frac{\text{amount of change}}{\text{original amount}} *$$

2 types:

Percent Increase: when the amount increases

$$\% \text{ increase} = \frac{\text{new amount} - \text{original}}{\text{original amount}}$$

Percent Decrease: when the amount decreases

$$\% \text{ decrease} = \frac{\text{original} - \text{new amount}}{\text{original amount}}$$

Example 1: Percent Increase

day	hours online
Sat	2
Sun	4.5

What is the percent change from Sat to Sun?

$$\begin{aligned} \% \text{ increase} &= \frac{4.5 - 2}{2} \\ &= \frac{2.5}{2} = 1.25 = 125\% \end{aligned}$$

= 125% increase

Example 2: Percent Decrease

softball

Year	home runs
2012	28
2013	20

Find the percent of change in home runs from 2012 - 2013?

$$\% \text{ decrease} = \frac{28 - 20}{28}$$

$$= \frac{8}{28} = 0.286 = 28.6\%$$

28.6% decrease

Example 3: Percent Error

You estimate that the length of your classroom is 16 feet. The actual length is 21 feet. Find the percent error.

$$\text{percent error} = \frac{\text{amount of error}}{\text{actual error}}$$

$$\begin{aligned} \text{Amount of error} &= 21 - 16 \\ &= 5 \end{aligned} \quad \rightarrow \quad \frac{5}{21} = 0.238 = 23.8\%$$

23.8% error

Example 4: Find the new amount.

(given 1 number and the percent increase or decrease. Find the new number)

Increase

120 books increased
by 55% +

$$120 + [55\% \text{ of } 120]$$

$$120 + 0.55 \cdot 120$$

$$\text{or} \quad \frac{x}{120} = \frac{55}{100}$$

$$120 + 66$$

$$= 186 \text{ books}$$

Decrease

80 members decreased
by 65% -

$$80 - [65\% \text{ of } 80]$$

$$80 - 0.65 \cdot 80$$

$$\text{or} \quad \frac{x}{80} = \frac{65}{100}$$

$$80 - 52$$

$$= 28 \text{ members}$$