

Percentage Summary

- the decimal approach

1. Find a percentage of a number.

e.g. Find 15% of 300

Divide by 100 to give 1%

$$300 \div 100 = 3$$

Multiply by 15 to give 15%

$$3 \times 15 = 45$$

OR

$$0.15 \times 300 = 45$$

($15 \times 300 = 4500$ Then jump the decimal point back 2 places to give 45.)

2. Increase (or decrease) a number by a percentage.

e.g. Increase my wage of \$600 per week by 8%

First find 8% of \$600

Divide by 100, then multiply by 8.

$$600 \div 100 = 6 \quad \text{then} \quad 6 \times 8 = 48$$

Now increase my wage by \$48

$$600 + 48 = \$648$$

My new wage is \$648 per week

If you were asked to decrease the original amount, you subtract the amount you found instead of adding it.

3. What percentage is one quantity of another?

e.g. What percentage is 32 of 40? (There is no easy decimal method)

$$\frac{32}{40} \times \frac{100}{1} = \frac{32}{4} \times \frac{10}{1} = \frac{320}{4} = 80\%$$

Note: the value after the word "of" goes on the bottom of the fraction. In this case 40 is on the bottom of the first fraction.

**4. Find the percentage decrease (or increase).**

e.g. The water storage fell from 480kL to 360kL. Find the percentage decrease?

First find the amount of decrease

$$480 - 360 = 120 \text{ kL decrease}$$

Now use the formula below

$$\frac{\text{amount of decrease}}{\text{original amount}} \times \frac{100}{1} = \% \text{ decrease}$$

$$\frac{120}{480} \times \frac{100}{1} = \frac{1200}{48} = \frac{100}{4} = 25\%$$

For an increase use the formula:

$$\frac{\text{amount of increase}}{\text{original amount}} \times \frac{100}{1} = \% \text{ increase}$$

OR alternatively use the formula

$$\frac{\text{new}}{\text{old}} \times \frac{100}{1} = \text{new \%}$$

With this method you MUST then calculate the % change by finding the difference between your answer and the original 100%.

5. Given a percentage find the whole amount.

e.g. If 12% of my savings is \$ 36, how much is my total savings?

(We need to find 100% of my savings.)

$$12\% \text{ is } \$36$$

Divide by 12 to find 1%

$$1\% \text{ is } \$36 \div 12 = \$3$$

Now, multiply by 100 to find 100%

$$100\% \text{ is } 3 \times 100 = \$300$$

So my total savings is \$300.