Mrs Mountney 's Helpful Hints
-Using a calculator with percentages

Using multipliers
Using % button

Increasing
$$\frac{100 + \%}{100}$$

Decreasing
$$\frac{100 - \%}{100}$$

Using decimal multipliers

Without using a calculator answer the following:

Increase 30 by 20%
Increase 50 by 25%
Increase 400 by 35%
Increase 680 by 42%

Decrease 30 by 20%
Decrease 50 by 25%
Decrease 400 by 35%
Decrease 680 by 42%

Use a calculator to answer the following:

$30 \times 1.20 =$
$50 \times 1.25 =$
$400 \times 1.35 =$
$680 \times 1.42 =$

$30 \times 0.80 =$
$50 \times 0.75 =$
$400 \times 0.65 =$
$680 \times 0.58 =$

> **You should get the same answer.**
> **Why?**

When we **increase** an amount by a percentage we add on to the original amount. Therefore when we increase by 20% we have $100\% + 20\% = 120\%$
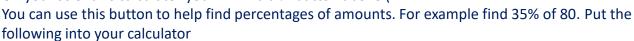
Percent means **per 100** and 120% means 120 per 100, or $\frac{120}{100}$ or $120 \div 100 = 1.20$, which is why we multiply by 1.20.

When we **decrease** an amount by a percentage we subtract from the original amount. Therefore when we decrease by 20% we have $100\% - 20\% = 80\%$.

80% means 80 per 100, or $\frac{80}{100}$ or $80 \div 100 = 0.80$, which is why we multiply by 0.80.

Using the % button

On your scientific calculator you will find a % button above (
You can use this button to help find percentages of amounts. For example find 35% of 80. Put the following into your calculator

$$80 \quad \times \quad 35 \quad \% \quad =$$

You should get the answer 28.
If you want to use this method for increasing or decreasing by an amount then you must remember to add 100 or subtract from 100 to get the correct percentage, for example to increase 50 by 45% you would put the following into your calculator

$$50 \quad \times \quad (\quad 100 + 45 \quad) \quad \% \quad =$$

To decrease by 45% you would put the following into your calculator

$$50 \quad \times \quad (\quad 100 - 45 \quad) \quad \% \quad =$$

You should get the answers 72.5 and 27.5

Mentor 4 Maths