

PERCENTAGES

A percent is just a fraction based on 100

So 17% should be read as 17 per cent and written $\frac{17}{100}$

17 per means divide cent means 100 as in century

Simplifying the fractions

something like 15% is written $\frac{15}{100}$ and cancelled **down** to $\frac{3}{20}$

something like $17\frac{1}{2}\%$ would be written as $\frac{17\frac{1}{2}}{100}$ and cancelled **up** to $\frac{35}{200}$. This can now be cancelled to $\frac{7}{40}$.

Changing a fraction or decimal to a percent

Simply multiply by 100. eg. Write $\frac{2}{5}$ as $\frac{2}{5}$ of 100 = 40

"Per" means divide and "of" means multiply $\frac{2}{5} \times 100 = 40$

a decimal such as 0.35 becomes $0.35 \times 100 = \underline{35\%}$

To work out a percentage of a quantity

eg. 15% of £80 that 's 15 per cent of 80 write: $\frac{15}{100} \times 80$

per cent of

To increase a quantity by 15%

Work out the 15 per cent as above and then **add** it to the original amount

To decrease a quantity by 15%

Work out the 15 per cent as above and then **add** it to the original amount

Or - remember

Multiplying by a number greater than 1 increases a quantity
Multiplying by 1 does not change a quantity
Multiplying by a number less than 1 decreases a quantity

To increase a quantity by 15% simply multiply by 1.15
To decrease a quantity by 15% simply multiply by 0.85

Using this **multiplication factor** method will automatically increase or decrease a certain value

You could continue to increase £80 by 15% by continually multiplying by 1.15

If you put £80 into a building society which paid 15% interest per year
This is known as **Compound Interest** and will mean that after 4 years....

you will have $80 \times 1.15 \times 1.15 \times 1.15 \times 1.15 = \underline{\underline{£139.92}}$ Not bad innit?

If Pinocchio's nose is 8cm and grows by 5% every time he tells a lie.....

His nose will be $8 \times 1.05 \times 1.05 \times 1.05 = 8.4$ cm after 3 lies.

What if interest has already been added or taken away?

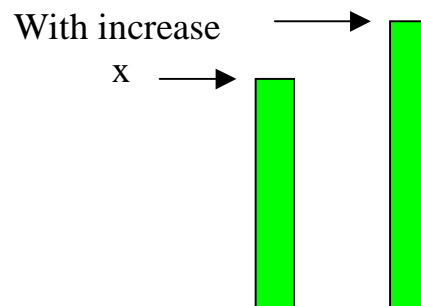
After an increase of 12% my wages have risen to £179.20

Let my original wage be x and write

$$1.12x = 179.20$$

then cross multiply $x = \frac{179.20}{1.12}$

$$\underline{\underline{x = £160}}$$



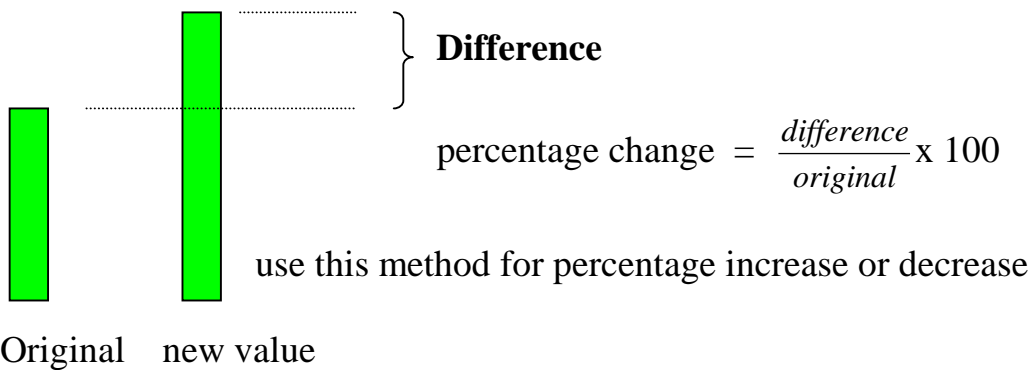
If the wage had been decreased by 12% to 140.8

Write $0.88x = 140.8$

$$x = \frac{140.8}{0.88}$$

$$x = \underline{\underline{\pounds 160}}$$

Percentage change (increase or decrease)



Complete the table:

BUY	SELL	INCREASE/DECREASE	%
£60		INCREASE	9%
£140		DECREASE	12%
£150	£120		
	£136	DECREASE	20%
£240	£280		