Chain Percentages

To increase £50 by 10%, we can calculate 10% of £50 and add the answer.

$$\frac{10}{100} \times £50 = £5$$

£50+£5=£55

We could have obtained the same answer by multiplying £50 by

$$1 + 10\% = 1 + \frac{10}{100} = 1.1$$

$$£50 \times 1.10 = £55$$

This method is especially convenient when an amount increases several times by different percentages.

Suppose £50 is increased in turn by 10%, 15%, 20% and 25% in steps.

To increase by 10% multiply by

$$1 + 10\% = 1 + \frac{10}{100} = 1.1$$

To increase by 15% multiply by

$$1 + 15\% = 1 + \frac{15}{100} = 1.15$$

To increase by 20% multiply by

$$1 + 20\% = 1 + \frac{10}{100} = 1.2$$

To increase by 25% multiply by

$$1 + 25\% = 1 + \frac{10}{100} = 1.25$$

To increase by 10% then 15% then 20% then 25%, multiply by $1.1 \times 1.15 \times 1.20 \times 1.25$

$$£50 \times 1.1 \times 1.15 \times 1.20 \times 1.25 = £94.875$$