

Percent means 'out of 100'

A percentage can always be changed to a fraction 'out of 100'

$$37\% = \frac{37}{100} = 37 \div 100 = 0.37$$

Express a number as a percentage of another

What is £160 out of £800 as a percentage.

$$\frac{\text{Small Number}}{\text{Big Number}} \times 100$$

$$\frac{160}{800} \times 100 = 20$$

£160 out of £800 as a percentage = 20%

Finding a Percentage of an amount with a calculator

Find 42% of £325

Step 1

Change the percent to a decimal

$$\frac{42}{100} = 42 \div 100 = 0.42$$

Step 2

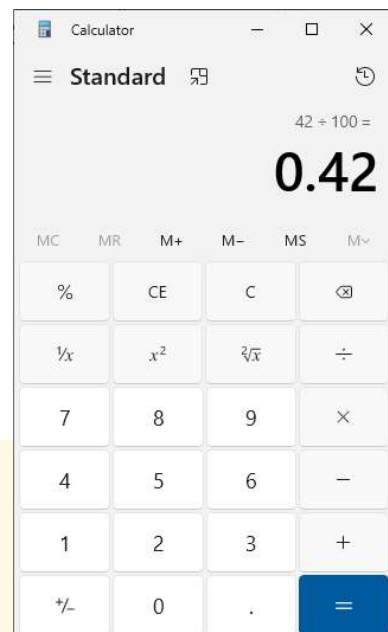
Multiply the decimal by the amount

$$0.42 \times 325 = 136.5$$

Step 3

Write the amount in the correct form with the correct units.

$$42\% \text{ of } \pounds 325 = \pounds 136.50$$



Percentages without a calculator

Find 45% of £325

This involves knowledge of remembering how to divide by 10 and 100.

$$10\% \text{ of } \pounds 325 = \pounds 32.50$$

$$5\% \text{ of } \pounds 325 = \pounds 32.50 \div 2$$

$$\begin{array}{r} 16.25 \\ 2 \overline{) 32.50} \\ \underline{20} \\ 12 \\ \underline{10} \\ 20 \\ \underline{20} \\ 00 \end{array}$$

$$\text{So } 5\% \text{ of } \pounds 325 = \pounds 16.25$$

$$45\% = 4 \text{ lots of } 10\% \text{ and a } 5\%$$

$$45\% \text{ of } \pounds 325 = 4 \times \pounds 32.50 + \pounds 16.25$$

$$\begin{array}{r} 4 \times 32.50 \\ \approx 4 \times 30 \\ = 120 \\ \\ = \pounds 130 \end{array}$$

$$\pounds 130 + \pounds 16.25$$

$$\begin{array}{r} 130.00 \\ + 16.25 \\ \hline 146.25 \end{array}$$

$$= \pounds 146.25$$

Percentage increase and decrease with a calculator

Increase £425 by 13%

Increase by 13% means to find $100\% + 13\% = 113\%$

Find 113% of £425

$$\frac{113}{100} \times 425 = 480.25$$

$$\pounds 425 \text{ increased by } 13\% = \pounds 480.25$$

Decrease £512 by 9%

Decrease by 9% means to find $100\% - 9\% = 91\%$

Find 91% of £512

$$\frac{91}{100} \times 512 = 465.92$$

$$\pounds 512 \text{ decreased by } 9\% = \pounds 465.92$$

Percentage increase and decrease can be done a different way, but these methods help you with finding the original amount.

Finding the original amount

$$\text{Original Amount} \times \text{Multiplier} = \text{Final Amount}$$

A coat is reduced by 32% to £136. Find the original cost of the coat before the sale.

Multiplier

Decrease by 32%

$$100\% - 32\% = 68\%$$

$$\text{Multiplier} = \frac{68}{100} = 0.68$$

$$\text{Original Amount} \times \text{Multiplier} = \text{Final Amount}$$

$$\text{Original Amount} \times 0.68 = \pounds 136$$

$$= \pounds 136 \div 0.68$$

$$= \pounds 200$$