Percentages

You shouldn't have any trouble with the simple types of percentage question.
Watch out for the trickier types and make sure you know the proper method for each of them.

Three Simple Question Types

Type 1 — "Find x% of y"

Turn the percentage into a decimal, then multiply.

EXAMPLE: Find 15% of £46.

1) Write 15% as a decimal: 15% = 15 ÷ 100 = 0.15
2) Multiply £46 by 0.15: 0.15 × £46 = £6.90

Type 2 — "Find the new amount after a % increase/decrease"

Turn the percentage into a decimal, then multiply. Add this on (or subtract from) the original value.

EXAMPLE: A toaster is reduced in price by 40% in the sales. It originally cost £68. What is the new price of the toaster?

1) Write 40% as a decimal: 40% = 40 ÷ 100 = 0.4
2) Multiply to find 40% of £68: 0.4 × £68 = £27.20
3) It's a decrease, so subtract from the original: £68 − £27.20 = £40.80

If you prefer, you can use the multiplier method:
multiplier = 1 − 0.4
= 0.6
68 × 0.6 = £40.80

Type 3 — "Express x as a percentage of y"

Divide x by y, then multiply by 100.

EXAMPLE: Give 40p as a percentage of £3.34.

1) Make sure both amounts are in the same units — convert £3.34 to pence: £3.34 = 334p
2) Divide 40p by 334p, then multiply by 100: (40 ÷ 334) × 100 = 12.0% (1 d.p.)

Three Trickier Question Types

Type 1 — Finding the percentage change

1) This is the formula for giving a change in value as a percentage — LEARN IT, AND USE IT:

$$\text{Percentage 'Change'} = \frac{\text{'Change'}}{\text{Original}} \times 100$$

2) This is similar to Type 3 above, because you end up with a percentage rather than an amount.
3) Typical questions will ask 'Find the percentage increase/profit/error' or 'Calculate the percentage decrease/loss/discount', etc.

EXAMPLE: A trader buys watches for £5 and sells them for £7. Find his profit as a percentage.

1) Here the 'change' is profit, so the formula looks like this: $\text{percentage profit} = \frac{\text{profit}}{\text{original}} \times 100$
2) Work out the actual value of the profit: profit = £7 − £5 = £2
3) Calculate the percentage profit: $\text{percentage profit} = \frac{2}{5} \times 100 = 40\%$