

Daily Maths

Quick revision notes [Open it online](#)

Name: _____

Date: _____

At a glance

Everyday maths: percentages, reverse percentages, interest, ratio, scales, rates, units and pie charts.

1. Percentages
2. Reverse percentages
3. Simple and compound interest
4. Ratio and proportion
5. Rates, currency and units
6. Pie charts

1. Percentages

☐ I revised this

- Percentage of an amount: change the % to a decimal and multiply. 35% of 240 = $0.35 \times 240 = 84$.
- One quantity as a percentage of another: $(\text{part} \div \text{whole}) \times 100$.
- Use a **multiplier** for increases and decreases: +15% $\rightarrow \times 1.15$; -15% $\rightarrow \times 0.85$.
- Percentage change = $\text{change} \div \text{original} \times 100$ (profit and loss % work the same way).

Formulas

percentage change = $(\text{change} \div \text{original}) \times 100$

new = original $\times$ multiplier

Worked example

A price rises from \$40 to \$46. Find the percentage increase.

1. Change = 6.
2. $6 \div 40 = 0.15$.

15%

2. Reverse percentages

☐ I revised this

- You know the amount **after** a percentage change and want the original.
- Original = new amount $\div$ multiplier. After a 20% discount the multiplier is 0.8.
- Never take the percentage of the new amount.

How to do it

1. Write the multiplier for the change (e.g. +15% $\rightarrow 1.15$).
2. Divide the new amount by it.

Worked example

A phone costs \$345 after a 15% price rise. What did it cost before?

1. Multiplier = 1.15.
2. $345 \div 1.15$.

\$300

3. Simple and compound interest

☐ I revised this

- **Simple** interest is the same every year: $I = PRT \div 100$ (P = principal, R = rate %, T = years).
- **Compound** interest is added to the amount each year, so it grows: $A = P(1 + r/100)^n$.
- Total amount with simple interest = $P + I$. Compound interest earned = $A - P$.

Formulas

$I = PRT/100$	simple interest
$A = P(1 + r/100)^n$	compound: amount after n years

Worked example

\$2000 is invested at 5% per year compound interest for 3 years. Find the interest earned.

1. $A = 2000 \times 1.05^3 = 2315.25$.
2. Interest = $2315.25 - 2000$.

\$315.25

4. Ratio and proportion

☐ I revised this

- Simplify a ratio by dividing all parts by the HCF; use the same units first.
- Sharing in a ratio: add the parts, find one part, multiply.
- Map scale 1 : 50 000 means 1 cm on the map = 50 000 cm = 500 m in real life.
- Best value: compare the price of the same amount (per 100 g, per litre) or the amount per \$1.
- Recipes: find the amount for one person (or one unit), then scale up.

Worked example

Share \$360 in the ratio 4 : 5.

1. $4 + 5 = 9$ parts.
2. One part = $360 \div 9 = 40$.
3. $4 \times 40 = 160$ and $5 \times 40 = 200$.

\$160 and \$200

5. Rates, currency and units

☐ I revised this

- Exchange rates: multiply to change into the currency the rate is quoted in, divide to change back.
- Rates: speed (km/h), hourly pay (\$/h), flow (litres/min), fuel use (km/litre), density (g/cm³), population density (people/km²).
- Length: 1 km = 1000 m, 1 m = 100 cm, 1 cm = 10 mm. Mass: 1 kg = 1000 g; 1 tonne = 1000 kg.
- Area and volume scale with the square and cube: 1 m² = 10 000 cm²; 1 m³ = 1 000 000 cm³; 1 litre = 1000 cm³.

Formulas

density = mass $\div$ volume
population density = population $\div$ area

Worked example

\$1 = 280 rupees. Convert 7000 rupees to dollars.

1. Rupees $\rightarrow$ dollars: divide by 280.
2. $7000 \div 280$.

\$25

6. Pie charts

☐ I revised this

- The whole pie is 360° . Angle for a group = frequency $\div$ total $\times 360^\circ$.
- From a pie chart: frequency = angle $\div 360 \times$ total.
- If you know one sector's frequency and angle, find 'degrees per item' and scale.

Worked example

In a survey of 72 students, 18 walk to school. What angle represents walking?

1. $18 \div 72 = 1/4$.

2. $1/4 \times 360^\circ$.

90°

Common mistakes

Don't write	Write instead
$\times$ Reverse %: $64 + 20\%$ of 64	$\checkmark$ Divide by the multiplier: $64 \div 0.8 = 80$
$\times$ Percentage change $\div$ the new value	$\checkmark$ Always divide by the original value
$\times$ Compound interest worked as simple interest	$\checkmark$ Multiply by 1.05 each year: $P \times 1.05^n$
$\times$ $1 \text{ m}^2 = 100 \text{ cm}^2$	$\checkmark$ $1 \text{ m}^2 = 100 \times 100 = 10\,000 \text{ cm}^2$
$\times$ Sharing in 4 : 5 by dividing by 4 and 5	$\checkmark$ Divide by the total number of parts, 9

In the exam

- Money answers: give 2 decimal places (\$315.25, not \$315.3).
- Say clearly what you are comparing in best-value questions (price per 100 g...).
- Read whether the question wants the interest or the total amount.

My notes

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