

National 5 Applications of Maths formula sheet (SQA)

Scotland: what is on the SQA formulae list and what to learn · Checked 21 October 2026

An original MathsDaily revision sheet for SQA National 5 Applications of Mathematics in Scotland, not the official formulae list. SQA prints a short formulae list in both question papers. Each formula below is labelled to show whether it is on that list or one you must learn.

On the SQA list: Printed on the formulae list in both National 5 Applications of Mathematics question papers.

Learn: not on the list: Not printed in the exam. You are expected to know it.

Number and money

Percentages

LEARN: NOT ON THE LIST

Percentage of an amount: $\text{amount} \times r/100$; percentage change = $\text{change} \div \text{original} \times 100$

Find 10% and 1% first to work out percentages without a calculator.

Interest

LEARN: NOT ON THE LIST

Simple interest = $P \times r/100 \times t$; compound interest: $\text{value} = P \times (1 + r/100)^n$

P is the amount, r the yearly rate as a percentage, t or n the number of years.

Pay

LEARN: NOT ON THE LIST

Net pay = gross pay – deductions (income tax, National Insurance, pension); overtime: time and a half = $1.5 \times \text{hourly rate}$

Currency exchange

LEARN: NOT ON THE LIST

Pounds to another currency: multiply by the rate; back to pounds: divide by the rate

For example, at $\text{£1} = \text{€1.15}$, $\text{£200} = \text{€230}$ and $\text{€230} \div 1.15 = \text{£200}$.

Best buy

LEARN: NOT ON THE LIST

Compare the price per unit (per 100 g, per litre) or the amount per £1

Ratio and proportion

LEARN: NOT ON THE LIST

Sharing in a ratio: add the parts, find one part, multiply out; direct proportion: find the value of one, then scale

In inverse proportion, one quantity goes up as the other goes down: 3 workers take 8 days, so 6 workers take 4 days.

Measurement and geometry

Circumference of a circle

On the SQA list

$$C = \pi d$$

Area of a circle

On the SQA list

$$A = \pi r^2$$

Theorem of Pythagoras

On the SQA list

$$a^2 + b^2 = c^2$$

c is the hypotenuse, the longest side, opposite the right angle.

Gradient

On the SQA list

Gradient = vertical height ÷ horizontal distance

Area of rectangles and triangles

LEARN: NOT ON THE LIST

Rectangle: $A = lb$; triangle: $A = \frac{1}{2}bh$

Split composite shapes into rectangles, triangles and parts of circles.

Units

LEARN: NOT ON THE LIST

1 m = 100 cm; 1 km = 1000 m; 1 kg = 1000 g; 1 litre = 1000 ml = 1000 cm³; 1 m³ = 1000 litres

Tolerance

LEARN: NOT ON THE LIST

25 ± 0.5 mm means anything from 24.5 mm to 25.5 mm is acceptable

Scale drawings and bearings

LEARN: NOT ON THE LIST

Real length = drawing length × scale factor; bearings are three figures, measured clockwise from north

The bearing back is the original bearing ± 180°.

Volume

Volume of a cylinder

On the SQA list

$$V = \pi r^2 h$$

Volume of a prism

On the SQA list

$$V = Ah$$

A is the area of the cross-section.

Volume of a cone

On the SQA list

$$V = \frac{1}{3}\pi r^2 h$$

Volume of a sphere

On the SQA list

$$V = \frac{4}{3}\pi r^3$$

Volume of a cuboid

LEARN: NOT ON THE LIST

$$V = lbh$$

Time and speed

Speed, distance and time

LEARN: NOT ON THE LIST

Speed = distance ÷ time; distance = speed × time; time = distance ÷ speed

Convert minutes to hours by dividing by 60: 45 minutes = 0.75 hours.

Time intervals**LEARN: NOT ON THE LIST**

Count on in steps to the next hour, then to the end time; use the 24-hour clock across midnight

Statistics and probability

Standard deviation**On the SQA list**

$s = \sqrt{(\Sigma(x - \bar{x})^2 / (n - 1))}$ or $s = \sqrt{(\Sigma x^2 - (\Sigma x)^2/n) / (n - 1)}$, where n is the sample size

A smaller standard deviation means the data is more consistent.

Averages and range**LEARN: NOT ON THE LIST**

Mean = total $\div$ number of values; median = middle value; mode = most common; range = largest – smallest

See the mean, median, mode and range guide.

Quartiles**LEARN: NOT ON THE LIST**

Q_1 , Q_2 (the median) and Q_3 split ordered data into quarters; interquartile range = $Q_3 - Q_1$;
semi-interquartile range = $(Q_3 - Q_1) / 2$

Quartiles are used to draw box plots.

Probability**LEARN: NOT ON THE LIST**

$P(\text{event}) = \text{number of favourable outcomes} \div \text{total number of outcomes}$; expected frequency =
probability $\times$ number of trials

Scatter graphs**LEARN: NOT ON THE LIST**

Draw a line of best fit through the middle of the points, then use it to estimate values

Describe the correlation as positive, negative or none.

Checklist: formulae to learn

None of these is on the SQA formulae list. Tick each one when you can write it from memory.

Number and money

- ☐ Percentages
- ☐ Interest
- ☐ Pay
- ☐ Currency exchange
- ☐ Best buy
- ☐ Ratio and proportion

Measurement and geometry

- ☐ Area of rectangles and triangles
- ☐ Units
- ☐ Tolerance
- ☐ Scale drawings and bearings

Volume

- ☐ Volume of a cuboid

Time and speed

- ☐ Speed, distance and time
- ☐ Time intervals

Statistics and probability

- ☐ Averages and range
- ☐ Quartiles
- ☐ Probability
- ☐ Scatter graphs

Official sources

[SQA: National 5 Applications of Mathematics Paper 1 formulae list \(X844/75/01, 2022\)](#)

[SQA: National 5 Applications of Mathematics Paper 2 formulae list, 2026](#)

[SQA: past papers and marking instructions](#)

Always check the formulae list printed in a recent SQA National 5 Applications of Mathematics past paper.