



Written for PSLE Standard Mathematics (0008). Items marked Standard Mathematics only are not in PSLE Foundation Mathematics (0038). P1 to P6 shows the level where the syllabus first teaches each one.

NO FORMULA LIST: MEMORISE

Formulas the PSLE Mathematics paper does not give you

There is no formula list in the PSLE Mathematics paper, so these all have to be known by heart. Each one is in the syllabus.

WHOLE NUMBERS

Order of operations P5. Within each step, work from left to right. Practise without a calculator
brackets first, then $\times$ and $\div$, then $+$ and $-$

FRACTIONS

Equivalent fractions

P3. Multiply or divide the numerator and the denominator by the same number

$$\frac{2}{3} = \frac{2 \times 4}{3 \times 4} = \frac{8}{12}$$

Mixed number to improper fraction P4

$$2\frac{1}{3} = \frac{2 \times 3 + 1}{3} = \frac{7}{3}$$

Fraction of a quantity P4 and P5

$$\frac{3}{4} \text{ of } 20 = \frac{3}{4} \times 20 = 15$$

Adding and subtracting unlike fractions

P4 and P5. Change to the same denominator first

$$\frac{1}{2} + \frac{1}{3} = \frac{3}{6} + \frac{2}{6} = \frac{5}{6}$$

Multiplying fractions P5. Multiply the numerators, then multiply the denominators

$$\frac{2}{3} \times \frac{4}{5} = \frac{2 \times 4}{3 \times 5} = \frac{8}{15}$$

Dividing fractions

P6. Turn the number you divide by upside down (4 becomes $\frac{1}{4}$), then multiply. Practise without a calculator

$$\frac{2}{3} \div 4 = \frac{2}{3} \times \frac{1}{4} = \frac{1}{6}, \quad \frac{2}{3} \div \frac{4}{5} = \frac{2}{3} \times \frac{5}{4} = \frac{5}{6}$$

DECIMALS

Fractions and decimals P4 and P5. A fraction is the numerator divided by the denominator

$$0.1 = \frac{1}{10}, \quad 0.01 = \frac{1}{100}, \quad 0.001 = \frac{1}{1000}, \quad \frac{3}{4} = 3 \div 4 = 0.75$$

PERCENTAGE

Part of a whole as a percentage P5

$$\frac{\text{part}}{\text{whole}} \times 100\%$$

Percentage of a quantity

P5. For example, 15% of 80 is $15 \div 100 \times 80 = 12$

$$\frac{\text{percentage}}{100} \times \text{whole}$$

Finding the whole

P6, Standard Mathematics only. For example, if 20% is 30, the whole is $30 \div 20 \times 100 = 150$

$$\text{whole} = \frac{\text{part}}{\text{percentage}} \times 100$$

Percentage increase or decrease P6, Standard Mathematics only. Always divide by the original value

$$\frac{\text{increase or decrease}}{\text{original value}} \times 100\%$$

Discount P5

$$\text{discount} = \frac{\text{percentage discount}}{100} \times \text{usual price}, \quad \text{sale price} = \text{usual price} - \text{discount}$$

GST P5. Use the GST rate given in the question

$$\text{GST} = \frac{\text{GST rate}}{100} \times \text{price before GST}, \quad \text{price with GST} = \text{price before GST} + \text{GST}$$

Annual interest P5. Amount after 1 year = amount saved + interest

$$\text{interest for 1 year} = \frac{\text{interest rate}}{100} \times \text{amount saved}$$

RATIO

Equivalent ratios and simplest form

P6, Standard Mathematics only. Multiply or divide every term by the same number

$$6 : 9 = (6 \div 3) : (9 \div 3) = 2 : 3$$

Dividing a quantity in a given ratio

P6, Standard Mathematics only. For a ratio of 2 : 3 there are 5 parts in total

$$1 \text{ part} = \frac{\text{total}}{\text{total number of parts}}$$

Ratio and fraction P6, Standard Mathematics only

$$A : B = 2 : 3 \text{ means } A = \frac{2}{3} \text{ of } B \text{ and } A = \frac{2}{5} \text{ of the total}$$

RATE

Rate P5. Rate is the amount per unit, for example \$3 per kg. Number of units = total amount $\div$ rate

$$\text{rate} = \frac{\text{total amount}}{\text{number of units}}, \quad \text{total amount} = \text{rate} \times \text{number of units}$$

AVERAGE

Average P6

$$\text{average} = \frac{\text{total value}}{\text{number of items}}, \quad \text{total value} = \text{average} \times \text{number of items}$$

ALGEBRA

Writing and simplifying expressions

P6, Standard Mathematics only

$$3 \times a = 3a, \quad a \div 3 = \frac{a}{3}, \quad 2a + 5a - a = 6a$$

Substitution and simple equations

P6, Standard Mathematics only. Do the same thing to both sides of an equation

if $a = 4$, $3a + 2 = 3 \times 4 + 2 = 14$, $3a + 2 = 14$, $3a = 12$, $a = 4$

MEASUREMENT: UNITS

Length, mass and volume of liquid P3 and P5

$1 \text{ km} = 1000 \text{ m}$, $1 \text{ m} = 100 \text{ cm}$, $1 \text{ kg} = 1000 \text{ g}$, $1 \text{ l} = 1000 \text{ ml}$

Time

P2 (hours and minutes) and P3 (seconds, 24-hour clock)

$1 \text{ h} = 60 \text{ min}$, $1 \text{ min} = 60 \text{ s}$

MEASUREMENT: PERIMETER AND AREA

Rectangle P3

perimeter $= 2 \times (\text{length} + \text{breadth})$, area $= \text{length} \times \text{breadth}$

Square P3

perimeter $= 4 \times \text{length}$, area $= \text{length} \times \text{length}$

Missing side of a rectangle P4

breadth $= \text{area} \div \text{length}$ or breadth $= \text{perimeter} \div 2 - \text{length}$

Side of a square

P4. For example, a square of area 49 cm^2 has sides of 7 cm . The $\sqrt{\quad}$ sign is P6, Standard Mathematics only

side $= \text{perimeter} \div 4$ or side $= \sqrt{\text{area}}$

Area of a triangle

P5. The height is at right angles to the base

$\frac{1}{2} \times \text{base} \times \text{height}$

MEASUREMENT: CIRCLES

Circumference of a circle

P6, Standard Mathematics only. Diameter $= 2 \times \text{radius}$

$\pi \times \text{diameter} = 2 \times \pi \times \text{radius}$

Area of a circle

P6, Standard Mathematics only. Use the value of π the question gives

$\pi \times \text{radius} \times \text{radius}$

Semicircle P6, Standard Mathematics only. The perimeter includes the straight edge

area $= \frac{1}{2} \times \pi \times \text{radius} \times \text{radius}$, perimeter $= \frac{1}{2} \times \pi \times \text{diameter} + \text{diameter}$

Quarter circle P6, Standard Mathematics only. The perimeter includes the two straight edges

area $= \frac{1}{4} \times \pi \times \text{radius} \times \text{radius}$, perimeter $= \frac{1}{4} \times 2 \times \pi \times \text{radius} + 2 \times \text{radius}$

MEASUREMENT: VOLUME

Volume of a cuboid P5 and P6

$\text{length} \times \text{breadth} \times \text{height} = \text{base area} \times \text{height}$

Volume of a cube P5. Finding the edge from the volume, and the $\sqrt[3]{}$ sign, are P6, Standard Mathematics only

$\text{edge} \times \text{edge} \times \text{edge}, \quad \text{edge} = \sqrt[3]{\text{volume}}$

Finding a missing dimension P6, Standard Mathematics only

$\text{height} = \frac{\text{volume}}{\text{base area}}, \quad \text{length} = \frac{\text{volume}}{\text{breadth} \times \text{height}}, \quad \text{area of a face} = \frac{\text{volume}}{\text{the other dimension}}$

Water in a rectangular tank P5. Also $1 \text{ ml} = 1 \text{ cm}^3$

$\text{volume of water} = \text{length} \times \text{breadth} \times \text{height of water}, \quad 1000 \text{ cm}^3 = 1 \ell$

GEOMETRY: ANGLES

Angles on a straight line P5

angles on a straight line add up to 180°

Angles at a point P5

angles at a point add up to 360°

Vertically opposite angles P5

vertically opposite angles are equal

GEOMETRY: TRIANGLES

Angle sum of a triangle

P5. In a right-angled triangle, the other 2 angles add up to 90°

the 3 angles of a triangle add up to 180°

Isosceles triangle P5

2 equal sides, and the 2 angles opposite them are equal

Equilateral triangle P5

3 equal sides, and each angle is 60°

GEOMETRY: QUADRILATERALS

Rectangle and square P4. A square also has 4 equal sides

all 4 angles are 90° , opposite sides are equal and parallel

Parallelogram P5, Standard Mathematics only. Opposite sides are parallel and equal

opposite angles are equal, neighbouring angles add up to 180°

Rhombus P5, Standard Mathematics only. A rhombus is a parallelogram with 4 equal sides

4 equal sides, opposite angles are equal, neighbouring angles add up to 180°

Trapezium P5, Standard Mathematics only

one pair of parallel sides, the 2 angles on each non-parallel side add up to 180°