

The Year 8 Mathematics curriculum in Queensland, Australia, is based on the **Australian Curriculum: Mathematics**. It is organised into **three content strands** that cover the major categories of mathematics and **four proficiency strands** that describe how students should engage with the content.

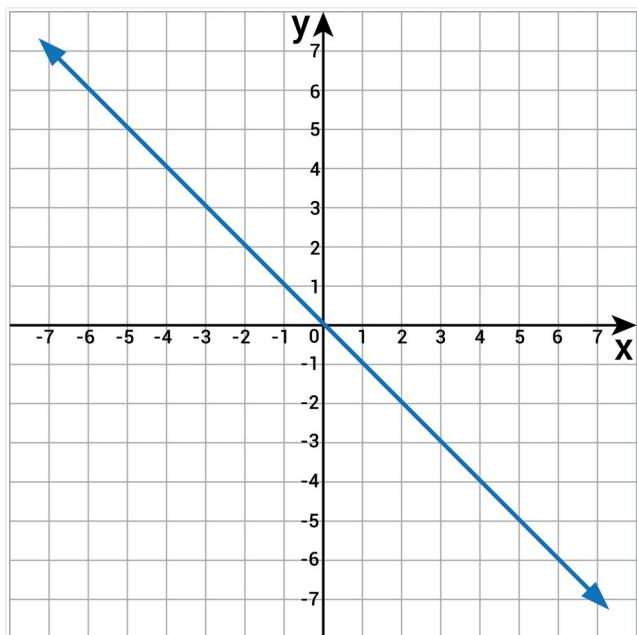
Content Strands (Categories and Scope)

The three content strands define the specific mathematical knowledge and skills taught:

1. Number and Algebra

This strand focuses on extending students' understanding of number systems and introducing more complex algebraic concepts.

- **Number Topics:**
- **Real Numbers:** Recognising and applying properties of **irrational numbers** (like π or $\sqrt{2}$) and working with **terminating and recurring decimals**.
- **Integers and Rational Numbers:** Using the four operations (addition, subtraction, multiplication, and division) with integers and rational numbers.
- **Index Laws:** Applying the index laws to calculations involving **positive integer exponents** (e.g., $a^m \times a^n = a^{m+n}$).
- **Financial Mathematics:** Solving practical problems involving **ratios, rates, percentages, profit and loss**, and financial contexts like GST and discounts.
- **Algebra Topics:**
- **Algebraic Expressions:** Applying algebraic properties to **expand and factorise linear expressions** (e.g., expanding $2(x+3)$ or factorising $3x-9$).
- **Linear Equations and Inequalities:** Solving **linear equations** (with rational solutions) and **one-variable inequalities** both graphically and algebraically.
- **Linear Relations:** Graphing linear relations on the **Cartesian plane** and using mathematical modelling to solve problems with linear relations.

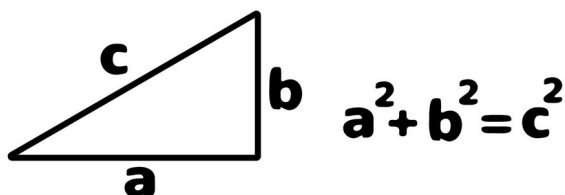


2. Measurement and Geometry

This strand involves applying formulas and reasoning to solve problems related to shapes, size, and position.

- **Measurement Topics:**
- **Area and Perimeter:** Solving problems involving the perimeter and area of **composite shapes** (shapes made up of simpler shapes).
- **Circles:** Using formulas to calculate the **area** and **circumference** of circles.
- **Volume:** Solving problems involving the volume of **right prisms** (e.g., rectangular and triangular prisms, cylinders).
- **Time:** Solving problems involving **duration** using 12- and 24-hour time across **multiple time zones**.
- **Pythagoras' Theorem:** Using **Pythagoras' theorem** ($a^2 + b^2 = c^2$) to solve measurement problems involving unknown lengths in right-angled triangles.

Pythagorean theorem



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- **Geometry Topics:**
 - **Coordinate Geometry:** Using three dimensions to **locate and describe position**.
 - **Properties of Shapes:** Applying the properties of **quadrilaterals** (e.g., parallelograms, rhombuses) to solve problems.
 - **Congruence and Similarity:** Identifying conditions for **congruency** and **similarity** in shapes and using these concepts to prove properties.
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3. Statistics and Probability

This strand focuses on collecting, analysing, and interpreting data, and calculating the likelihood of events.

- **Statistics Topics:**
- **Statistical Investigation:** Conducting statistical investigations and explaining the implications of obtaining data through **sampling**.

- **Data Analysis:** Analysing and describing the **distribution of data** using measures of central tendency (mean, median, mode) and range.