

Head Start: Year 9 and 10 Mathematics

A course designed to build on the foundations of high school mathematics and prepare for senior study.

Course Overview

Head Start: Year 9 and 10 Mathematics (formerly known as Fundamentals 2) is an intensive program designed for students who have completed Head Start: Year 7 and 8 Mathematics, or who have a solid grounding in basic algebra, and are preparing for senior mathematics. It bridges the gap between junior and senior maths, covering the essential techniques that Year 11 and 12 courses assume students already know.

Senior mathematics moves fast. From the first week, courses like Mathematical Methods, Specialist Mathematics, and Extension 1 expect fluency with quadratics, index laws, surds, logarithms, and basic trigonometry. Students who aren't comfortable with these topics don't just struggle—they fall behind while simultaneously trying to learn new content. This course prevents that. Students will master the manipulation of algebraic expressions, develop confidence with exponential and logarithmic functions, and build the trigonometric foundations that calculus depends upon. Each topic is taught with the depth and rigour that senior courses demand.

Head Start: Year 9 and 10 Mathematics is the recommended preparation for our Year 11 and 12 Mathematics and senior calculus courses. It provides the perfect foundation for students enrolling in senior mathematics courses in the ACT, NSW, or IB curricula. Students receive a detailed course book with explanations, practice questions, and worksheets—an excellent reference throughout Years 11, 12, and beyond.

Course Delivery:

- Lecture-style classes
- Small-group tutorials
- Workbooks and additional worksheets
- Examinations

Target Students:

- Advanced Year 8 students
- Year 9 students
- Year 10 students
- Year 11 and 12 students enrolled in Head Start: Year 11 and 12 Mathematics

Key Course Information

Length: 40 Hours total (5 days)
Dates: Monday 25th to Friday 29th January
Times: 9am to 5pm daily
Location: Wise Minds Overflow
Positions: 20 students (First in best dressed)
Price: $800 for the entire week (Including GST)
Can be paid in two equal instalments

Relevant School Subjects

- Year 9, 10 and 11 Mathematics for the ACT, NSW or IB.
- Covers the core content of Years 9 and 10 and acts as a solid bridge between junior and senior mathematics.

Enrolment:

Please email the Course Director below to express your interest and request enrolment. Please note that a deposit is required to confirm your place.

Course Director: Rhys@WiseMindsTutoring.com.au (Ph: 0489089919)
Course Convenor: Lachlan@WiseMindsTutoring.com.au (Ph: 0489071014)

Topic List

1. Review of Numbers and Surds

1. Adding and subtracting fractions
2. Multiplying and dividing fractions
3. Introduction to proportions and using proportions
4. Introduction to surds and surd laws
5. Simplification of surds
6. Rationalising the denominator and numerator
7. Rationalising the denominator using the difference of two squares

2. Index Laws

1. Index notation
2. Index laws 1–5 and the zero power rule
3. Negative indices and their fractional representation
4. Scientific notation
5. Operating with fractional indices and surds
6. Mixed operations with indices and surds

3. Measurement

1. Length and perimeter
2. The perimeter of triangles
3. Area and volume
4. Area of triangles
5. Volume and surface area of 3D shapes
6. Introduction to π
7. Area of a circle
8. Circumference of a circle
9. Volume of a cylinder
10. Volume of cones
11. Volume of spheres
12. Surface area of spheres
13. Applications of measurement

4. Financial Mathematics

1. Introduction to money
2. Introduction to investments
3. Percentage increase and decrease
4. Simple interest
5. Compound interest
6. The problem with credit
7. The benefits of investing early

5. Trigonometry and Pythagoras' Theorem

1. Introduction to triangles and angles
2. The angle sum of a triangle
3. Introduction to Pythagoras' theorem
4. Introduction to sine, cosine and tangent
5. Solving for triangle side lengths
6. Solving for angles
7. Angles of elevation and depression, and bearings
8. The sine rule
9. The cosine rule
10. Graphing trigonometric functions

6. Introduction to Functions and Graphs

1. Introduction to linear relationships
2. How to graph straight lines
3. Introduction to the gradient
4. Introduction to the gradient-intercept form ($y = mx + c$)
5. Solving for the equation of a straight line ($y = mx + c$)
6. Solving for the equation of a straight line (general form)
7. Finding the midpoint of a line segment
8. The definition of parallel lines
9. The definition of perpendicular lines
10. Solving for the length of a line segment

7. Algebraic Techniques

1. Overview of algebraic terminology (terms, variables and coefficients)
2. Expanding brackets
3. Expanding binomials and trinomials
4. Factorising and simplifying algebraic fractions
5. Factorising binomials and trinomials
6. Factorising perfect squares
7. Factorising the difference of two squares
8. Completing the square
9. Advanced algebraic factorisation
10. Factorising with surds and fractional indices

8. Linear Equations

1. Solving simple linear equations
2. Solving equations with multiple brackets and pronumerals
3. Introduction to simultaneous equations
4. Solving simultaneous equations by elimination
5. Solving simultaneous equations by substitution
6. Interpreting simultaneous equations as the intersection of two lines

9. Quadratic Equations

1. Comparing quadratic and linear equations
2. Techniques to solve quadratic equations
3. The x- and y-intercepts of a quadratic
4. Intersection points between a quadratic and a straight line
5. Sketching quadratics
6. Solving worded problems algebraically