

# Year 8

## Number and Algebra

### Number and place value

Content Descriptor	Lesson Names
Use index notation with numbers to establish the index laws with positive integral indices and the zero index	<ul style="list-style-type: none"> <li>• Dividing Indices</li> <li>• Multiplying Indices</li> <li>• Perfect Squares</li> <li>• Powers of Multiplied Terms</li> <li>• Powers of Powers</li> <li>• Practising the Index Laws</li> <li>• The Power of Zero</li> </ul>
Carry out the four operations with rational numbers and integers, using efficient mental and written strategies and appropriate digital technologies	<ul style="list-style-type: none"> <li>• Adding and Subtracting Decimals on a Number Line</li> <li>• Addition</li> <li>• Dividing Decimals</li> <li>• Division</li> <li>• Integers</li> <li>• Long Division</li> <li>• Multiplication</li> <li>• Multiplying Decimals</li> <li>• Negative Integer Addition and Subtraction</li> <li>• Negative Integer Multiplication and Division</li> <li>• Order of Operations</li> <li>• Rational Numbers on the Number Line</li> <li>• Subtraction</li> </ul>

### Real numbers

Content Descriptor	Lesson Names
Investigate terminating and recurring decimals	<ul style="list-style-type: none"> <li>• Decimals</li> <li>• Recurring Decimals</li> <li>• Terminating Decimals and Rounding</li> </ul>
Investigate the concept of irrational numbers, including $\pi$	<ul style="list-style-type: none"> <li>• Irrational Numbers</li> </ul>
Solve problems involving the use of percentages, including percentage increases and decreases, with and without digital technologies	<ul style="list-style-type: none"> <li>• Calculating Percentage Discounts</li> <li>• Discounts</li> <li>• Percentages and Money</li> <li>• Percentages and Populations</li> </ul>
Solve a range of problems involving rates and ratios, with and without digital technologies	<ul style="list-style-type: none"> <li>• Applying Ratios and Rates</li> <li>• Rates</li> </ul>

- Ratios

## Money and financial mathematics

Content Descriptor	Lesson Names
Solve problems involving profit and loss, with and without digital technologies	<ul style="list-style-type: none"> <li>• Calculating Discounts</li> <li>• Calculating Profit and Loss</li> <li>• Discounts</li> <li>• Profit and Loss</li> </ul>

## Patterns and algebra

Content Descriptor	Lesson Names
Extend and apply the distributive law to the expansion of algebraic expressions	<ul style="list-style-type: none"> <li>• Introduction to Expanding</li> <li>• Expanding I</li> <li>• Expanding II</li> </ul>
Factorise algebraic expressions by identifying numerical factors	<ul style="list-style-type: none"> <li>• Introduction to Factorising</li> <li>• Greatest Common Divisor (Highest Common Factor)</li> <li>• Factorising Algebraic Expressions</li> <li>• Factorising Algebraic Expressions with Powers</li> </ul>
Simplify algebraic expressions involving the four operations	<ul style="list-style-type: none"> <li>• Simplifying Addition and Subtraction</li> <li>• Simplifying Multiplication and Division</li> </ul>

## Linear and non-linear relationships

Content Descriptor	Lesson Names
Plot linear relationships on the Cartesian plane with and without the use of digital technologies	<ul style="list-style-type: none"> <li>• Tables of Values</li> <li>• Equation of a Line</li> <li>• Features of Graphs</li> <li>• Gradient of a Line</li> <li>• Linear Patterns and Rules</li> </ul>
Solve linear equations using algebraic and graphical techniques. Verify solutions by substitution	<ul style="list-style-type: none"> <li>• Solving Using Algebraic Methods</li> <li>• Solving Using Graphical Methods</li> </ul>

## Measurement and Geometry

### Using units of measurement

Content Descriptor	Lesson Names
Choose appropriate units of measurement for area and volume and convert from one unit to another	<ul style="list-style-type: none"> <li>• Choosing Appropriate Units of Volume</li> <li>• Converting Between Units of Area</li> </ul>

	<ul style="list-style-type: none"> <li>• Converting Between Units of Area Applications</li> <li>• Converting Units of Volume</li> <li>• Units of Area</li> </ul>
Find perimeters and areas of parallelograms, trapeziums, rhombuses and kites	<ul style="list-style-type: none"> <li>• Perimeter</li> <li>• Perimeters of Kites, Rhombuses, Trapeziums and Parallelograms</li> <li>• Area of Parallelograms</li> <li>• Area of Rhombus and Kites</li> <li>• Area of Trapeziums</li> </ul>
Investigate the relationship between features of circles such as circumference, area, radius and diameter. Use formulas to solve problems involving circumference and area	<ul style="list-style-type: none"> <li>• Parts of a Circle</li> <li>• Circumference of Circles</li> <li>• Using the Circumference of Circles</li> <li>• Calculating the Area of Circles</li> <li>• Using the Area of Circles</li> </ul>
Develop formulas for volumes of rectangular and triangular prisms and prisms in general. Use formulas to solve problems involving volume	<ul style="list-style-type: none"> <li>• Calculating Volume of Rectangular Prisms</li> <li>• Calculating Volume of Triangular Prisms</li> </ul>
Solve problems involving duration, including using 12- and 24-hour time within a single time zone	<ul style="list-style-type: none"> <li>• Duration</li> <li>• Time Zones</li> </ul>

## Geometric reasoning

Content Descriptor	Lesson Names
Define congruence of plane shapes using transformations	<ul style="list-style-type: none"> <li>• Introduction to Congruence</li> <li>• Rotation and Reflection of Plane Shapes</li> <li>• Translation and Congruence of Plane Shapes</li> </ul>
Develop the conditions for congruence of triangles	<ul style="list-style-type: none"> <li>• Conditions for Congruence: ASA, AAS and HL</li> <li>• Conditions for Congruence: SSS and SAS</li> <li>• Working with Congruent Triangles</li> </ul>
Establish properties of quadrilaterals using congruent triangles and angle properties, and solve related numerical problems using reasoning	<ul style="list-style-type: none"> <li>• Congruence of Rhombuses, Trapeziums and Kites</li> <li>• Congruence of Squares, Rectangles and Parallelograms</li> </ul>

## Statistics and Probability

### Chance

Content Descriptor	Lesson Names
Identify complementary events and use the sum of probabilities to solve problems	<ul style="list-style-type: none"> <li>• Calculating Complements</li> <li>• Complementary Events</li> </ul>
Describe events using language of 'at least', exclusive	<ul style="list-style-type: none"> <li>• Describing Probabilities</li> </ul>

'or' (A or B but not both), inclusive 'or' (A or B or both) and 'and'.	<ul style="list-style-type: none"> <li>Using Descriptions of Probability</li> </ul>
Represent events in two-way tables and Venn diagrams and solve related problems	<ul style="list-style-type: none"> <li>Two-Way Tables</li> <li>Using Two-Way Tables</li> <li>Making Your Own Two-Way Tables</li> <li>Venn Diagrams</li> <li>Using Venn Diagrams</li> <li>Making Your Own Venn Diagrams</li> </ul>

## Data representation and interpretation

Content Descriptor	Lesson Names
Investigate techniques for collecting data, including census, sampling and observation	<ul style="list-style-type: none"> <li>Data Collection Methods</li> <li>Survey and Simulation</li> <li>Experiment and Observation</li> <li>Introduction to Data</li> <li>Introduction to Data Collection</li> <li>Collecting Data - Primary &amp; Secondary Sources</li> </ul>
Explore the practicalities and implications of obtaining data through sampling using a variety of investigative processes	<ul style="list-style-type: none"> <li>Survey and Simulation</li> <li>Bias in Data</li> <li>Random Sampling</li> <li>Surveying</li> </ul>
Explore the variation of means and proportions of random samples drawn from the same population	<ul style="list-style-type: none"> <li>Bias in Data</li> <li>Random Sampling</li> <li>Surveying</li> <li>Samples and Populations</li> </ul>
Investigate the effect of individual data values, including outliers, on the mean and median	<ul style="list-style-type: none"> <li>Outliers</li> <li>Clusters and Outliers</li> </ul>