

# Year 8 Overview

The yearly overview provides suggested timings for each block of learning, which can be adapted to suit different term dates or other requirements.



|        | Week 1                                                                | Week 2 | Week 3                                                               | Week 4                                       | Week 5                                   | Week 6 | Week 7                                   | Week 8                    | Week 9                                 | Week 10                                        | Week 11                                           | Week 12                                                 |
|--------|-----------------------------------------------------------------------|--------|----------------------------------------------------------------------|----------------------------------------------|------------------------------------------|--------|------------------------------------------|---------------------------|----------------------------------------|------------------------------------------------|---------------------------------------------------|---------------------------------------------------------|
| Autumn | Ratio, proportion and rates of change<br><b>Ratio</b>                 |        | Ratio, proportion and rates of change<br><b>Proportion and scale</b> |                                              | Algebra<br><b>Algebraic manipulation</b> |        | Algebra<br><b>Coordinates and graphs</b> |                           |                                        | Number<br><b>Multiply and divide fractions</b> |                                                   | Geometry and measures<br><b>Symmetry and reflection</b> |
| Spring | Geometry and measures<br><b>Area, volume and density</b>              |        | Algebra<br><b>Equations and inequalities</b>                         |                                              | Number<br><b>Percentages</b>             |        |                                          | Algebra<br><b>Indices</b> |                                        | Number<br><b>Standard form</b>                 | Statistics<br><b>Interpret and represent data</b> |                                                         |
| Summer | Geometry and measures<br><b>Angles in parallel lines and polygons</b> |        |                                                                      | Probability<br><b>Tables and probability</b> |                                          |        | Geometry and measures<br><b>Circles</b>  |                           | Statistics<br><b>Graphs and charts</b> |                                                | Algebra<br><b>Sequences</b>                       | Consolidation                                           |

# Year 8 Autumn Half Term 1



## Block 1 – Weeks 1 and 2

### Ratio

- Use and simplify ratios
- Share amounts in a ratio
- Solve ratio problems
- Link ratios and fractions

## Block 2 – Weeks 3 and 4

### Proportion and scale

- Use direct proportion
- Convert between measures and currencies, including using graphs
- Use scale factors and scale diagrams
- Solve proportional reasoning problems

## Block 3 – Weeks 5 and 6

### Algebraic manipulation

- Distinguish between formulae, expressions, identities and equations
- Form and use expressions, formulae and identities
- Use directed number with algebra
- Expand single brackets
- Factorise into a single bracket

## Notes/Links/Interleaving

- Link FDP understanding from Year 7 to ratio and proportion
- Emphasise multiplicative reasoning through scaling and measures
- Use bar models and diagrams to support proportional thinking
- Allow students to use a calculator where appropriate
- Reinforce algebraic notation when simplifying and factorising
- Apply directed number with algebra
- Students will explore directly proportional relationships through Hooke's law and Ohm's law in science.

## Extend steps

### Ratio

- Express ratios in the form  $1 : n$  and  $n : 1$

### Algebraic manipulation

- Expand double brackets
- Factorise quadratic expressions

# Year 8 Autumn Half Term 2



## Block 4 – Weeks 7, 8 and 9

### Coordinates and graphs

- Plot and interpret coordinates in four quadrants
- Understand and use equations of a straight line, including lines parallel to the axes
- Identify gradients and intercepts

## Block 5 – Weeks 10 and 11

### Multiply and divide fractions

- Multiply and divide a fraction by an integer
- Multiply and divide a fraction by a fraction
- Understand and use reciprocals
- Calculate with improper fractions and mixed numbers

## Block 6 – Week 12

### Symmetry and reflection

- Recognise line symmetry in polygons and other shapes
- Identify rotational symmetry
- Reflect shapes in horizontal, vertical and diagonal lines
- Describe reflections using mathematical notation

## Notes/Links/Interleaving

- Build on Year 7 sequences and graph work when introducing linear graphs
- Revisit calculations with directed numbers
- Reinforce FDP fluency and fractions of amounts when multiplying and dividing fractions
- Revisit converting improper fractions and mixed numbers
- Compare and contrast rotational symmetry with line symmetry
- Revisit properties of shapes and build on equations of straight lines when reflecting

## Extend steps

### Coordinates and graphs

- Link  $y = mx$  to direct proportion
- Find the midpoint of a line segment
- Solve problems with coordinates and graphs
- Quadratic graphs

### Multiply and divide fractions

- Multiply and divide algebraic fractions

### Symmetry and reflection

- Reflect a shape given the equation of a line, Describe a reflection

# Year 8 Spring Half Term 1



## Block 1 – Weeks 1 and 2

### Area, volume and density

- Recognise and name 2-D and 3-D shapes
- Calculate the area of 2-D shapes
- Calculate the volume of cubes and cuboids
- Convert metric units of mass and capacity
- Understand and use density, mass and volume

## Block 2 – Weeks 3 and 4

### Equations and inequalities

- Solve linear equations
- Solve equations with brackets and fractions
- Solve equations with unknowns on both sides
- Understand and solve inequalities including on number lines
- Form and solve equations and inequalities

## Block 3 – Weeks 5, 6 and 7

### Percentages

- Convert between percentages and decimals
- Find percentage increase and decrease
- Use multipliers to solve percentage problems
- Express one quantity as a percentage of another
- Find original amounts and percentage change

## Notes/Links/Interleaving

- Connect proportional reasoning to percentages and density
- Revisit measure conversion skills and rounding from Year 7
- Revisit the use of directed number
- Solve equations in the context of earlier blocks e.g. shapes, angles etc.
- Choose when to use mental, written or calculator methods
- Students work with density calculations and calculate percentages of amounts in a variety of scientific contexts

## Extend steps

### Equations and inequalities

- Solve inequalities with unknowns on both sides

# Year 8 Spring Half Term 2



## Block 4 – Weeks 8 and 9

### Indices

- Use index notation
- Simplify expressions with indices
- Apply index laws
- Use powers and roots

## Block 5 – Week 10

### Standard form

- Understand and use positive and negative powers of 10
- Convert between numbers in ordinary and standard form
- Compare numbers in standard form
- Use a calculator with standard form

## Block 6 – Weeks 11 and 12

### Interpret and represent data

- Interpret different types of data
- Understand and calculate averages and range
- Understand outliers
- Compare distributions
- Use and interpret frequency tables and grouped data

## Notes/Links/Interleaving

- Revisit the use of directed numbers
- Reinforce powers of 10 and place value when introducing indices and standard form
- Use calculators alongside mental estimation strategies
- Revisit finding the averages and range from Year 7
- Link to data collection and representation in other areas of the curriculum
- Students will apply their understanding of standard form in science and use a calculator when solving problems

## Extend steps

### Indices

- Powers of powers
- Negative indices
- Fractional indices

### Interpret and represent data

- Mean and mode from a grouped frequency table

# Year 8 Summer Half Term 1



## Block 1 – Weeks 1, 2 and 3

### Angles in parallel lines and polygons

- Apply angle facts
- Understand and find angles in parallel lines
- Solve problems with angles
- Use properties of polygons
- Find interior and exterior angles of polygons

## Block 2 – Weeks 4, 5 and 6

### Tables and probability

- Understand and use probability language and notation
- Calculate probabilities of single events
- Use the fact the sum of probabilities of an event is 1
- Compare theoretical and experimental probability
- List outcomes and use sample spaces for 1 or more events
- Find probabilities using sample spaces for 1 or more events
- Find probabilities using two-way tables and frequency trees

## Notes/Links/Interleaving

- Revisit angle facts and geometric reasoning from Year 7
- Revisit forming and solving equations
- Use diagrams and dynamic geometry software to support reasoning with parallel lines
- Reinforce FDP equivalence and fraction arithmetic when working with probability
- Allow students to use a calculator where appropriate
- Encourage explanation and justification alongside answers

## Extend steps

### Angles in parallel lines and polygons

- Prove simple geometric facts

# Year 8 Summer Half Term 2



## Block 3 – Weeks 7 and 8

### Circles

- Understand and use circle vocabulary and notation
- Find the circumference and area of a circle and parts of a circle
- Find area and lengths using arcs and sectors
- Solve problems with circles and compound shapes

## Block 4 – Weeks 9 and 10

### Graphs and charts

- Draw and interpret graphs and charts
- Choose appropriate representations
- Compare and interpret data
- Identify misleading graphs and charts

## Block 5 – Week 11

### Sequences

- Continue and describe linear and non-linear sequences
- Use term-to-term rules
- Generate sequences algebraically
- Find and use nth term rules

## Notes/Links/Interleaving

- Link fractional parts of a circle to proportional reasoning
- Choose when to use mental, written or calculator methods
- Build on graph interpretation skills when working with charts and sequences
- Compare different graphical representations and discuss reliability
- Revisit the use of directed numbers
- Reinforce algebraic thinking through nth term patterns
- Students collect discrete and continuous data in science experiments and choose an appropriate representation

## Extend steps

### Sequences

- Generate a sequence given a complex algebraic rule