

In partnership with



CENTURY

STRIDE INTO *THE FUTURE* OF ASSESSMENT

Teacher Companion Guide

Shapes



Table of Contents

2	Overview and Rationale
3	Concept Map and Key Features
4	S1 Dimensions: units of length, volume and area
5	S2 Shapes
6	S3 Angle facts
7	S4 Area by counting squares
8	S5 Volume by counting cubes
9	S6 Angles on a line and at a point
10	S7 Angles on parallel lines
11	S8 Polygons
12	S9 Triangles
13	S10 Quadrilaterals
14	S11 Interior and exterior angles
15	S12 Perimeter of rectangles
16	S13 Area of rectangles/squares
17	S14 Perimeter of rectilinear compound shapes
18	S15 Area of triangles
19	S16 Volumes: cubes, cuboids
20	S17 Area of compound shapes
21	S18 Areas of trapezia and parallelograms
22	S19 Volumes: prisms and cylinders
23	S20 Reflection symmetry within a shape
24	S21 Rotation symmetry within a shape
25	S22 Congruence, similarity and corresponding features
26	S23 Reflection
27	S24 Rotation
28	S25 Translation
29	S26 Enlargement
30	S27 Conservation of properties of shapes post transformation
31	S28 Enlargement from a centre
32	S29 Similarity: Scale factors and simple integer scale factors
33	S30 Properties of circles
34	S31 Area of circles
35	S32 Circumference of circles
36	Contributors

Overview

Stride is a new offering from AQA which is designed to empower students and quickly identify and close their knowledge gaps in mathematics. Designed to help students starting their GCSEs – either for the first time or as a resit – the tests are accessible for all and adapt to students' knowledge, delivering the right amount of challenge.

Our new maths tests will allow teachers to pinpoint gaps in their students' conceptual knowledge - saving them time and empowering students, who will understand how to improve. They're fully funded for schools and colleges, easy to use for teachers and engaging for students.

The five short tests, created with the [Key Stage 1 and 2](#) and [Key Stage 3](#) guidance in mind, focus on key areas of maths that experts have identified as the most impactful for GCSE success. They come with personalised learning and next steps to allow students to develop in both knowledge and confidence.

Rationale

We know that maths is a hierarchical subject, with knowledge being built upon foundational maths which underpins the new concept. We have analysed data from hundreds of thousands of exam questions and found that even though content is first encountered in the early stages of a learner's schooling, a significant proportion of learners answer questions on the foundations of maths incorrectly.

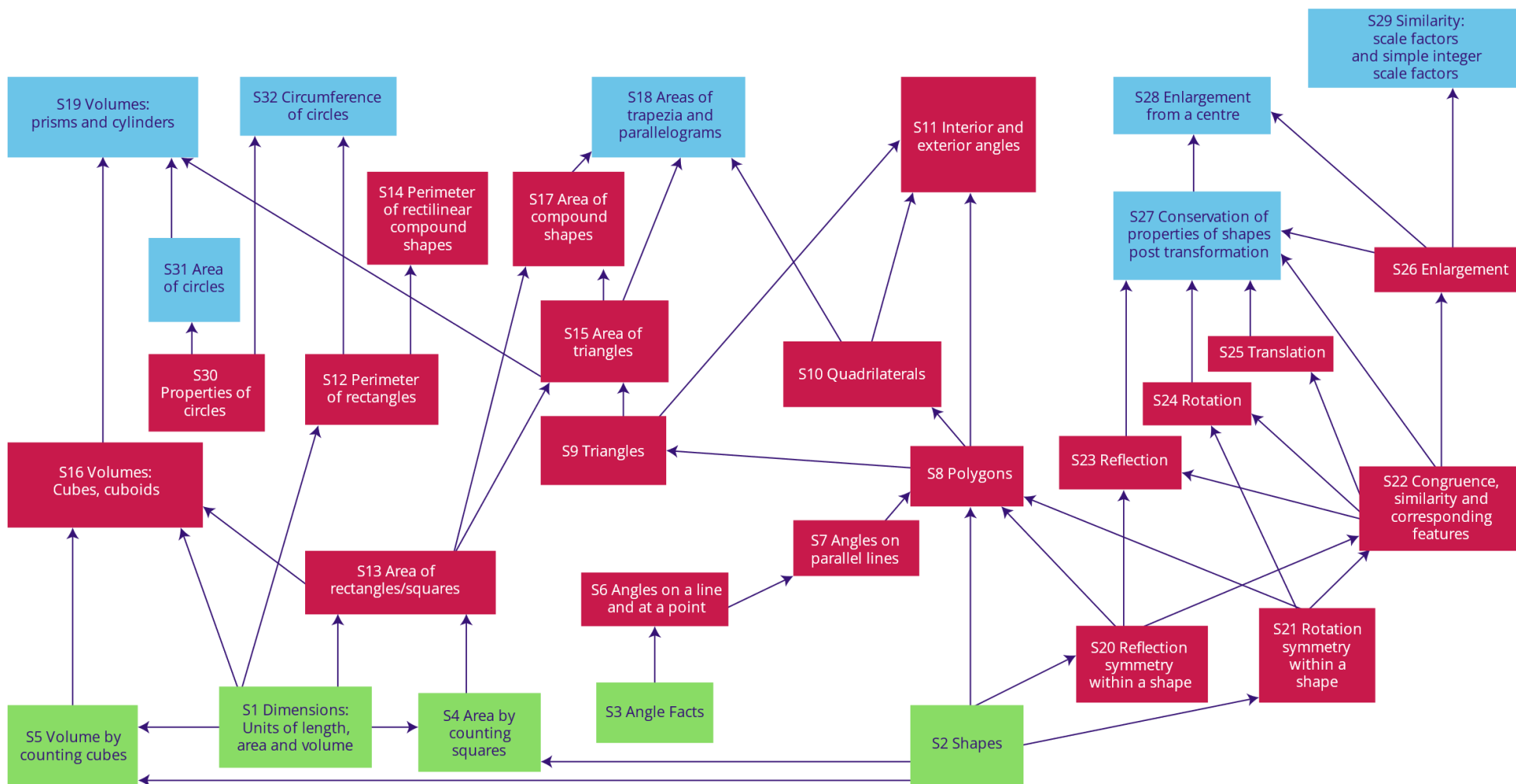
With this in mind, we want to empower teachers to take control of their classrooms and provide a nurturing environment in which gaps within key prerequisite understanding are identified and corrective instruction is deployed, filling the gaps and ensuring that more complex content can be taught, safe in the knowledge that learners have the underlying knowledge required to be successful in their lessons, and thrive in the GCSE examinations.

Key features

The Shapes Concept Map, shown on the next page, shows the importance of S8 Polygons with a significant number of predecessors, bringing this knowledge together and progressing S9 Triangles, S10 Quadrilaterals and S11 Interior and Exterior Angles. Knowledge of the properties of quadrilaterals (S10) facilitates problem solving at GCSE.

The idea of congruence (and similarity) is key when working with the four transformations (S23, S24, S25, S26) and it's clear that learners must have significant expertise with S2 Shapes to succeed with the ideas of perimeter, area and volume which are prevalent in the Shapes knowledge space.

5. Shapes



S1 Dimensions: units of length, volume and area

What is being tested	Learners are being tested on their understanding of measures in differing numbers of dimensions, recalling common units.
Learning Objectives	<p>S1.1 Identify the units that represent length</p> <p>S1.2 Recall the definition of length</p> <p>S1.3 Identify the units that represent area</p> <p>S1.4 Identify the units that represent volume</p> <p>S1.5 Recall the definition of volume</p> <p>S1.6 Know that volume is the amount of space occupied by a 3D figure in cubic units</p>
Predecessors	None
Successors	<p>S4 Area by counting squares</p> <p>S5 Volume by counting cubes</p> <p>S12 Perimeter of rectangles</p> <p>S13 Area of rectangles/squares</p> <p>S16 Volumes: Cubes, cuboids</p>
KS2 & KS3 Guidance	Learners encounter units for length in Year 2 (page 52, KS1 and KS2 guidance), area in Year 5 (page 269, KS1 and KS2 guidance) and volume in upper KS2, extending on this knowledge in Year 8 (page 183, KS3 guidance).
Century Tech Platform References	<p>3-Digit: Units of Measure [PM5.01]</p> <p>3-Digit: Length [PM5.02]</p> <p>Area by Counting [PM5.20]</p> <p>Volume of Shapes 1 [PM13.06]</p>

S2 Shapes

What is being tested	Learners are being tested on their ability to identify common 2D shapes and 3D solids.
Learning Objectives	<p>S2.1 Identify basic 3D shapes (cube and cuboid, cone, cylinder and pyramid)</p> <p>S2.2 Categorise objects according to their dimensionality</p> <p>S2.3 Identify basic 2D shapes (circle, triangle, square etc)</p> <p>S2.4 Match polygons to their number of sides</p>
Predecessors	None
Successors	<p>S4 Area by counting squares</p> <p>S5 Volume by counting cubes</p> <p>S8 Polygons</p> <p>S20 Reflection symmetry within a shape</p> <p>S21 Rotation symmetry within a shape</p>
KS2 & KS3 Guidance	Learners begin to recognise shapes and solids in Year 1 (page 42, KS1 and KS2 guidance).
Century Tech Platform References	<p>Naming 2D Shapes [MF26.06]</p> <p>Naming 3D Shapes [MF26.10]</p>

S3 Angle facts

What is being tested	Learners are being tested on their ability to describe an angle as a fraction of a whole revolution.
Learning Objectives	<p>S3.1 Recall the definition of angle</p> <p>S3.2 Recall the number of degrees equivalent to a full turn</p> <p>S3.3 Recall the number of degrees equivalent to a half of a full turn</p> <p>S3.4 Recall the number of degrees equivalent to a quarter of a full turn</p> <p>S3.5 Match the terms acute, obtuse and reflex angles with their definitions (improve definitions)</p> <p>S3.6 Identify the correct notation of an angle (single correct answer, remove reverse notation)</p>
Predecessors	None
Successors	S6 Angles on a line and at a point
KS2 & KS3 Guidance	Learners begin to consider angles as parts of a full turn in Year 3 (page 134, KS1 and KS2 guidance).
Century Tech Platform References	<p>Types of Angles 1: Diagrams [MF26.03]</p> <p>Types of Angles 2: Numbers [MF26.04]</p>

S4 Area by counting squares

What is being tested	Learners are being tested on their understanding of area, and their ability to find areas by counting squares.
Learning Objectives	<p>S4.1 Find the area of a rectangle by counting squares</p> <p>S4.2 Find the area of a simple 2D shape by counting squares</p> <p>S4.3 Recall the definition of area</p> <p>S4.4 Find the area of a 2D shape by counting squares and half squares</p> <p>S4.5 Know that the area of a square of side 1cm is 1 square centimetre</p>
Predecessors	<p>S1 Dimensions: Units of length, area and volume</p> <p>S2 Shapes</p>
Successors	S13 Area of rectangles/squares
KS2 & KS3 Guidance	Learners begin to calculate area in Year 5 (page 269, KS1 and KS2 guidance).
Century Tech Platform References	Area by Counting Squares [MF31.01]

S5 Volume by counting cubes

What is being tested	Learners are being tested on their understanding of volume, and their ability to find volumes by counting cubes.
Learning Objectives	<p>S5.1 Calculate volume of a cuboid by counting cubes</p> <p>S5.2 Find how many more cubes are needed to fill the cuboid</p> <p>S5.3 Find how many more cubes are needed to make a cuboid</p> <p>S5.4 Identify the volume of a cube of side 1cm</p> <p>S5.5 Find the volume of a shape made from cubes</p>
Predecessors	<p>S1 Dimensions: Units of length, area and volume</p> <p>S2 Shapes</p>
Successors	S16 Volumes: Cubes, cuboids
KS2 & KS3 Guidance	Learners begin to work with volume in upper KS2, extending on this knowledge in Year 8 (page 183, KS3 guidance).
Century Tech Platform References	Counting Cubes [MF34.01]



S6 Angles on a line and at a point

What is being tested	Learners are being tested on their ability to recall common angle facts and apply these to calculate missing angles.
Learning Objectives	<p>S6.1 Recall how many degrees there are at a point</p> <p>S6.2 Recall that vertically opposite angles are equal</p> <p>S6.3 Recall the number of degrees on a straight line</p> <p>S6.4 Recall the definition of perpendicular</p> <p>S6.5 Calculate the size of an unknown angle at a point</p> <p>S6.6 Calculate the size of an unknown angle on a straight line</p>
Predecessors	S3 Angle Facts
Successors	S7 Angles on parallel lines
KS2 & KS3 Guidance	Learners begin to recognise relationships with angles that meet at a point, and at a point on a straight line, in KS2 and build on this knowledge in Year 8 (page 195, KS3 guidance).
Century Tech Platform References	<p>Straight Line Angles 1: Multiples of 5° [MF27.01]</p> <p>Straight Line Angles 2 [MF27.02]</p> <p>Angles Around a Point 1: Multiples of 5° [MF27.04]</p> <p>Angles Around a Point 2 [MF27.05]</p> <p>Vertically Opposite Angles [MF27.07]</p>

S7 Angles on parallel lines

What is being tested	Learners are being tested on their understanding of the relationship between angles when parallel lines are crossed by a transversal.
Learning Objectives	<p>S7.1 Recall the definition of parallel</p> <p>S7.2 Determine the value of a corresponding angle on the given diagram</p> <p>S7.3 Identify corresponding angles on parallel lines</p> <p>S7.4 Identify alternate angles on parallel lines</p> <p>S7.5 Calculate missing angles on parallel lines</p> <p>S7.6 Calculate missing angles on parallel lines with 2 transversals</p>
Predecessors	S6 Angles on a line and at a point
Successors	S8 Polygons
KS2 & KS3 Guidance	Learners begin to recognise relationships with angles in parallel lines in Year 8 (page 195, KS3 guidance).
Century Tech Platform References	<p>Alternate Angles [MF27.08]</p> <p>Corresponding Angles [MF27.09]</p> <p>Co-interior Angles [MF27.10]</p> <p>Angles in Parallel Lines 1 [MF27.11]</p> <p>Angles in Parallel Lines 2 [MF27.12]</p>

S8 Polygons

What is being tested	Learners are being tested on their ability to distinguish between regular and irregular polygons.
Learning Objectives	<p>S8.1 Identify drawings of polygons</p> <p>S8.2 Identify irregular and regular polygons</p> <p>S8.3 Recall the definition of a regular polygon</p> <p>S8.4 Know the features of a polygon</p> <p>S8.5 Know that squares are regular quadrilaterals</p> <p>S8.6 Know that equilateral triangles are regular triangles</p>
Predecessors	<p>S2 Shapes</p> <p>S7 Angles on parallel lines</p> <p>S20 Reflection symmetry within a shape</p> <p>S21 Rotation symmetry within a shape</p>
Successors	<p>S9 Triangles</p> <p>S10 Quadrilaterals</p> <p>S11 Interior and exterior angles</p> <p>S22 Congruence, similarity and corresponding features</p>
KS2 & KS3 Guidance	Learners begin to distinguish between regular and irregular polygons in Year 4 (page 197, KS1 and KS2 guidance).
Century Tech Platform References	Naming 2D Shapes [MF26.06]

S9 Triangles

What is being tested	Learners are being tested on their ability to recall common angle facts in special triangles and apply these to calculate missing angles.
Learning Objectives	<p>S9.1 Recall the sum of angles in any triangle</p> <p>S9.2 Match drawings of types of triangles and their names</p> <p>S9.3 Identify the properties of angles in equilateral triangles</p> <p>S9.4 Identify the properties of sides in isosceles triangles</p> <p>S9.5 Calculate a missing angle in a scalene triangle</p> <p>S9.6 Calculate a missing angle in an isosceles triangle</p>
Predecessors	S8 Polygons
Successors	<p>S11 Interior and exterior angles</p> <p>S15 Area of triangles</p>
KS2 & KS3 Guidance	Learners begin to recognise relationships with angles in triangles in Year 8 (page 195, KS3 guidance).
Century Tech Platform References	<p>Types of Triangles 1: Diagrams [MF26.07]</p> <p>Types of Triangles 2: Words [MF26.08]</p> <p>Angles in a Triangle 1 [MF28.01]</p> <p>Angles in a Triangle 2: Isosceles Triangles [MF28.02]</p>

S10 Quadrilaterals

What is being tested	Learners are being tested on their ability to recognise special quadrilaterals and apply angle facts to calculate missing angles.
Learning Objectives	<p>S10.1 Match drawings of different quadrilaterals and their names</p> <p>S10.2 Know the equal sides properties of quadrilaterals</p> <p>S10.3 Know the parallel sides properties of quadrilaterals</p> <p>S10.4 Know the angle properties of quadrilaterals</p> <p>S10.5 Know the diagonal properties of quadrilaterals</p>
Predecessors	S8 Polygons
Successors	<p>S11 Interior and exterior angles</p> <p>S18 Areas of trapezia and parallelograms</p>
KS2 & KS3 Guidance	Learners begin to appreciate the properties of special quadrilaterals in Year 8 (page 195, KS3 guidance).
Century Tech Platform References	Types of Quadrilateral [MF26.09]

S11 Interior and exterior angles

What is being tested	Learners are being tested on their understanding of the relationship between interior and exterior angles in polygons, using the angle sum of polygons to calculate missing angles.
Learning Objectives	<p>S11.1 Identify interior and exterior angles</p> <p>S11.2 Recall what the sum of exterior angles of a polygon equals to</p> <p>S11.3 Know the sum of the interior and exterior angles at a vertex is 180 degrees</p> <p>S11.4 Recall the sum of the interior angles in a 3,4,5, 6 sided polygon</p> <p>S11.5 Calculate a missing exterior angle based on the interior angles of a triangle</p> <p>S11.6 Calculate a missing interior angle in a quadrilateral</p>
Predecessors	<p>S8 Polygons</p> <p>S9 Triangles</p> <p>S10 Quadrilaterals</p>
Successors	None
KS2 & KS3 Guidance	Learners begin to recognise relationships with interior and exterior angles in polygons in Year 8 (page 195, KS3 guidance).
Century Tech Platform References	<p>Angles in a Triangle 1 [MF28.01]</p> <p>Angles in Quadrilaterals [MF28.05]</p> <p>Interior Angles 1: Sum of Interior Angles [MF28.07]</p> <p>Interior Angles 2: Angles in Regular Shapes [MF28.08]</p> <p>Interior Angles in Irregular Shapes [MF28.09]</p> <p>Exterior Angles [MF28.10]</p>

S12 Perimeter of rectangles

What is being tested	Learners are being tested on their understanding of perimeter, using this knowledge to calculate missing lengths.
Learning Objectives	<p>S12.1 Know that the perimeter of a 2D shape is the total of the length of its sides</p> <p>S12.2 Find the perimeter of a rectangle</p> <p>S12.3 Write the formula for the perimeter of a rectangle</p> <p>S12.4 Calculate the length of one side of a rectangle when given one length and the perimeter</p> <p>S12.5 Identify the formula for the perimeter of a rectangle</p> <p>S12.6 Know that rectangles with the same area can have different perimeters</p>
Predecessors	S1 Dimensions: Units of length, area and volume
Successors	<p>S14 Perimeter of rectilinear compound shapes</p> <p>S32 Circumference of circles</p>
KS2 & KS3 Guidance	Learners first encounter perimeter in Year 4 (page 197, KS1 and KS2 guidance).
Century Tech Platform References	Perimeter of Rectangles [MD12.01]

S13 Area of rectangles/squares

What is being tested	Learners are being tested on their understanding of area, calculating the area of rectangles and squares.
Learning Objectives	<p>S13.1 Calculate the area of a rectangle using the formula length \times width</p> <p>S13.2 Match rectangles to their areas (both lengths given)</p> <p>S13.3 Calculate the side of a square given the area</p> <p>S13.4 Calculate the length of one side of a rectangle given the area</p> <p>S13.5 Match rectangles to their lengths (Area and one length given)</p>
Predecessors	<p>S1 Dimensions: Units of length, area and volume</p> <p>S4 Area by counting squares</p>
Successors	<p>S15 Area of triangles</p> <p>S16 Volumes: Cubes, cuboids</p> <p>S17 Area of compound shapes</p>
KS2 & KS3 Guidance	Learners begin to calculate area in Year 5 (page 269, KS1 and KS2 guidance).
Century Tech Platform References	<p>Area of Rectangles [PM13.02]</p> <p>Area and Perimeter [PM13.05]</p>

S14 Perimeter of rectilinear compound shapes

What is being tested	Learners are being tested on their understanding of perimeter, calculating the perimeter of compound rectilinear shapes.
Learning Objectives	<p>S14.1 Identify the missing lengths of compound shapes</p> <p>S14.2 Calculate perimeter of compound 2D shapes using the given required lengths</p> <p>S14.3 Calculate perimeter of compound 2D shapes when not all required lengths are given</p>
Predecessors	S12 Perimeter of rectangles
Successors	None
KS2 & KS3 Guidance	Learners extend their knowledge of perimeter to compound shapes in Year 6 (page 322, KS1 and KS2 guidance).
Century Tech Platform References	Perimeter of Rectilinear Shapes [MD12.02]

S15 Area of triangles

What is being tested	Learners are being tested on their understanding of area, drawing on their ability to calculate the area of rectangles and squares to calculate the area of triangles.
Learning Objectives	<p>S15.1 Know the relationship between area of a triangle and rectangle</p> <p>S15.2 Identify the height of a triangle</p> <p>S15.3 Identify the formula of the area of a triangle</p> <p>S15.4 Calculate the area of a triangle using the formula</p> <p>S15.5 Calculate the height of a triangle, given its area and base</p>
Predecessors	<p>S9 Triangles</p> <p>S13 Area of rectangles/squares</p>
Successors	<p>S17 Area of compound shapes</p> <p>S18 Areas of trapezia and parallelograms</p> <p>S19 Volumes: prisms and cylinders</p>
KS2 & KS3 Guidance	Learners extend their knowledge of area to triangles in Year 6 (page 322, KS1 and KS2 guidance).
Century Tech Platform References	<p>Area of Right Angled Triangles [MF31.04]</p> <p>Area of Triangles [MF31.05]</p>

S16 Volumes: cubes, cuboids

What is being tested	Learners are being tested on their understanding of volume, calculating the volume of cuboids and cubes.
Learning Objectives	<p>S16.1 Calculate the volume of a cuboid made of cubes</p> <p>S16.2 Calculate volume of a cube using $l \times l \times l$ (unit given)</p> <p>S16.3 Calculate volume of a cuboid using $l \times w \times h$</p> <p>S16.4 Calculate the length of the side of a cube, given the volume</p> <p>S16.5 Calculate the length of a missing side of a cuboid, given its volume and 2 sides</p>
Predecessors	<p>S1 Dimensions: Units of length, area and volume</p> <p>S5 Volume by counting cubes</p> <p>S13 Area of rectangles/squares</p>
Successors	S19 Volumes: prisms and cylinders
KS2 & KS3 Guidance	Learners encounter volume in upper KS2, extending on this knowledge in Year 8 (page 183, KS3 guidance).
Century Tech Platform References	Volume of Cubes and Cuboids [MF34.02]

S17 Area of compound shapes

What is being tested	Learners are being tested on their understanding of area, drawing on their ability to calculate the area of rectangles, squares and triangles to calculate the area of compound shapes.
Learning Objectives	<p>S17.1 Identify divisions of a compound shape that can be used to calculate its area</p> <p>S17.2 Calculate the area of a compound shape (rectangle + rectangle)</p> <p>S17.3 Calculate the area of a compound shape (rectangle + triangle)</p> <p>S17.4 Calculate the area of a 2D compound shape by splitting the area and adding the parts (rectangle + triangle)</p>
Predecessors	<p>S13 Area of rectangles/squares</p> <p>S15 Area of triangles</p>
Successors	S18 Areas of trapezia and parallelograms
KS2 & KS3 Guidance	Learners extend their knowledge of area to compound shapes in Year 6 (page 322, KS1 and KS2 guidance).
Century Tech Platform References	Area of Composite Shapes 1: Adding [MF31.06]

S18 Areas of trapezia and parallelograms

What is being tested	Learners are being tested on their understanding of area, drawing on their ability to calculate the area of rectangles to calculate the area of parallelograms and trapezia.
Learning Objectives	<p>S18.1 Identify the height of a parallelogram</p> <p>S18.2 Identify the height of a trapezium</p> <p>S18.3 Identify the formula of the area of a parallelogram</p> <p>S18.4 Calculate the area of a parallelogram using the formula</p> <p>S18.5 Identify the formula of the area of a trapezium</p> <p>S18.6 Calculate area of a trapezium using the formula</p>
Predecessors	<p>S10 Quadrilaterals</p> <p>S15 Area of triangles</p> <p>S17 Area of compound shapes</p>
Successors	None
KS2 & KS3 Guidance	Learners begin to calculate the area of parallelograms in KS2, extending their knowledge to trapezia in Year 7 (page 73, KS3 guidance).
Century Tech Platform References	<p>Area of Squares, Rectangles and Parallelograms [MF31.03]</p> <p>Area of Trapeziums [MF31.07]</p>



S19 Volumes: prisms and cylinders

What is being tested	Learners are being tested on their understanding of volume, drawing on their understanding of the properties of prisms to calculate the volume of prisms and cylinders.
Learning Objectives	<p>S19.1 Identify prisms</p> <p>S19.2 Know the properties of prisms</p> <p>S19.3 Calculate volume of a simple prism (given cross-sectional area)</p> <p>S19.4 Calculate the length of a prism, given its volume and base area</p> <p>S19.5 Identify the formula for the volume of a cylinder</p> <p>S19.6 Calculate volume of a cylinder</p>
Predecessors	<p>S15 Area of triangles</p> <p>S16 Volumes: Cubes, cuboids</p> <p>S31 Area of circles</p>
Successors	None
KS2 & KS3 Guidance	Learners extend their knowledge of volume to prisms and cylinders in Year 8 (page 183, KS3 guidance).
Century Tech Platform References	<p>Volume of Prisms 1: Given Area [MF34.04]</p> <p>Volume of Prisms 2: Triangular Prisms [MF34.05]</p> <p>Volume of Prisms 3: Mixed Exercise [MF34.06]</p> <p>Volume of Cylinders [MF34.07]</p>

S20 Reflection symmetry within a shape

What is being tested	Learners are being tested on their understanding of reflection symmetry.
Learning Objectives	<p>S20.1 Categorise the properties of lines of symmetry in shapes</p> <p>S20.2 Match shapes with their number of lines of symmetry</p> <p>S20.3 Recall the definition of line symmetry</p> <p>S20.4 Know the line symmetry properties of triangles</p> <p>S20.5 Know the line symmetry properties of quadrilaterals</p>
Predecessors	S2 Shapes
Successors	<p>S8 Polygons</p> <p>S22 Congruence, similarity and corresponding features</p> <p>S23 Reflection</p>
KS2 & KS3 Guidance	Learners begin to appreciate reflection symmetry in Year 4 (page 201, KS1 and KS2 guidance).
Century Tech Platform References	<p>Reflective Symmetry [MF29.02]</p> <p>Quadrilateral Facts [MF29.03]</p>

S21 Rotation symmetry within a shape

What is being tested	Learners are being tested on their understanding of rotational symmetry.
Learning Objectives	<p>S21.1 Identify order of rotational symmetry of a given shape</p> <p>S21.2 Know the rotational symmetry properties of quadrilaterals</p> <p>S21.3 Know the rotational symmetry properties of triangles</p> <p>S21.4 Recall the definition of rotational symmetry</p> <p>S21.5 Know a regular polygon has rotational symmetry equal to its number of sides</p> <p>S21.6 Know that the lowest order of rotational symmetry is 1</p>
Predecessors	S2 Shapes
Successors	<p>S8 Polygons</p> <p>S22 Congruence, similarity and corresponding features</p> <p>S24 Rotation</p>
KS2 & KS3 Guidance	Learners encounter rotational symmetry in Year 9 (page 214, KS3 guidance).
Century Tech Platform References	<p>Rotational Symmetry [MF29.01]</p> <p>Quadrilateral Facts [MF29.03]</p> <p>Polygon Facts [MF29.04]</p>

S22 Congruence, similarity and corresponding features

What is being tested	Learners are being tested on their understanding of congruence and similarity.
Learning Objectives	<p>S22.1 Recall the definition of transformation</p> <p>S22.2 Categorise characteristics of congruent shapes</p> <p>S22.3 Define similar shapes</p> <p>S22.4 Identify corresponding sides and angles</p> <p>S22.5 Identify shapes that are congruent</p> <p>S22.6 Identify similar shapes</p>
Predecessors	S21 Rotation symmetry within a shape
Successors	<p>S23 Reflection</p> <p>S24 Rotation</p> <p>S25 Translation</p> <p>S26 Enlargement</p> <p>S27 Conservation of properties of shapes post transformation</p>
KS2 & KS3 Guidance	Learners begin to appreciate congruence and similarity in Year 9 (page 214, KS3 guidance).
Century Tech Platform References	<p>Congruence [MF29.06]</p> <p>Congruent Triangles [MF29.07]</p> <p>Introduction to Similarity [MF43.01]</p>

S23 Reflection

What is being tested	Learners are being tested on their ability to apply reflection as a transformation, drawing on their understanding of reflection symmetry.
Learning Objectives	<p>S23.1 Identify the line of reflection when a shape is reflected</p> <p>S23.2 Identify the image of a shape when transformed by a reflection</p> <p>S23.3 Know that a reflection needs a mirror line</p> <p>S23.4 Know that a reflection changes a shape's sense</p> <p>S23.5 Reflect a simple 2D shape in a mirror line</p> <p>S23.6 Identify the equation of the line of reflection of a given shape and its reflected image</p> <p>S23.7 Draw the image of a shape when it is transformed by a reflection around $y = x$ line</p> <p>S23.8 Draw the image of a shape when it is transformed by a reflection around a specified line</p>
Predecessors	<p>S20 Reflection symmetry within a shape</p> <p>S22 Congruence, similarity and corresponding features</p>
Successors	S27 Conservation of properties of shapes post transformation
KS2 & KS3 Guidance	Learners begin to appreciate reflection symmetry in Year 4 (page 201, KS1 and KS2 guidance).
Century Tech Platform References	<p>Introduction to Reflection [MF40.01]</p> <p>Finding the Line of Reflection [MF40.02]</p> <p>Coordinates in Reflection [MF40.03]</p>

S24 Rotation

What is being tested	Learners are being tested on their ability to apply rotation as a transformation, drawing on their understanding of rotational symmetry.
Learning Objectives	<p>S24.1 Identify an anticlockwise direction</p> <p>S24.2 Identify a clockwise direction</p> <p>S24.3 Recognise different angles of rotation</p> <p>S24.4 Identify the image of a shape when it is transformed by a rotation</p> <p>S24.5 Identify the image of a shape when rotated around the origin</p> <p>S24.6 Know that a rotation needs a centre and an angle</p> <p>S24.7 Know that a rotation changes orientation and not sense</p> <p>S24.8 Identify the image of a shape when rotated around a specified centre of rotation in co-ordinate format</p> <p>S24.9 Find a centre of rotation</p>
Predecessors	<p>S21 Rotation symmetry within a shape</p> <p>S22 Congruence, similarity and corresponding features</p>
Successors	S27 Conservation of properties of shapes post transformation
KS2 & KS3 Guidance	Learners encounter the idea of rotation in KS2 and extend this idea in Year 7 (page 112, KS3 guidance).
Century Tech Platform References	<p>Rotation with Centre (0,0) [MF40.15]</p> <p>Rotation with Centre (x,y) [MF40.16]</p>

S25 Translation

What is being tested	Learners are being tested on their ability to apply translation as a transformation.
Learning Objectives	<p>S25.1 Identify a translated shape from its description</p> <p>S25.2 Know that a translation preserves a shape's orientation and sense</p> <p>S25.3 Know which is the original shape and which is the image in a translation</p> <p>S25.4 Know that a translation needs horizontal and vertical components</p> <p>S25.5 Describe a translation from a diagram</p>
Predecessors	S22 Congruence, similarity and corresponding features
Successors	S27 Conservation of properties of shapes post transformation
KS2 & KS3 Guidance	Learners encounter the idea of translation in KS2 and extend this idea in Year 7 (page 112, KS3 guidance).
Century Tech Platform References	<p>Translating a Point [MF40.04]</p> <p>Translating a Shape [MF40.05]</p>

S26 Enlargement

What is being tested	Learners are being tested on their ability to apply enlargement as a transformation, drawing on their understanding of similar shapes.
Learning Objectives	<p>S26.1 Identify the image of a shape when it is transformed by an enlargement</p> <p>S26.2 Identify the scale factor of enlargement of two similar shapes</p> <p>S26.3 Enlarge a shape on a grid by a simple integer scale factor</p> <p>S26.4 Enlarge a shape on a grid by a simple fractional scale factor</p>
Predecessors	S22 Congruence, similarity and corresponding features
Successors	<p>S27 Conservation of properties of shapes post transformation</p> <p>S28 Enlargement from a centre</p> <p>S29 Similarity: scale factors and simple integer scale factors</p>
KS2 & KS3 Guidance	Learners encounter the idea of enlargement in KS2 and extend this idea in Year 7 (page 112, KS3 guidance).
Century Tech Platform References	Enlarging Shapes [MF40.07]



S27 Conservation of properties of shapes post transformation

What is being tested	Learners are being tested on their understanding of transformations, drawing on their understanding of congruence and similarity.
Learning Objectives	<p>S27.1 Identify the transformations that preserve the properties of congruence</p> <p>S27.2 Recognise that enlarging a shape does not change the size of angles but changes the length of the sides</p> <p>S27.3 Match types of transformation with their descriptions</p> <p>S27.4 Match transformations to their diagrams</p>
Predecessors	<p>S22 Congruence, similarity and corresponding features</p> <p>S23 Reflection</p> <p>S24 Rotation</p> <p>S25 Translation</p> <p>S26 Enlargement</p>
Successors	S28 Enlargement from a centre
KS2 & KS3 Guidance	Learners begin to appreciate the four transformations in KS2 and extend this knowledge in Year 7 (page 112, KS3 guidance).
Century Tech Platform References	<p>Describing Translations [MF40.06]</p> <p>Describing Enlargements with an Integer Scale Factor [MF40.13]</p> <p>Describing Rotation [MF40.17]</p> <p>Describing Transformations [MF40.18]</p>

S28 Enlargement from a centre

What is being tested	Learners are being tested on their ability to apply enlargement as a transformation, applying this knowledge to enlargements from different centres.
Learning Objectives	<p>S28.1 Describe the properties (scale factor and centre of enlargement) when given two similar shapes</p> <p>S28.2 Know that an enlargement needs a centre and a scale factor</p> <p>S28.3 Identify the centre of enlargement given two similar shapes</p> <p>S28.4 Enlarge a shape on a grid by a simple positive integer scale factor given the centre of enlargement</p>
Predecessors	<p>S26 Enlargement</p> <p>S27 Conservation of properties of shapes post transformation</p>
Successors	S29 Similarity: scale factors and simple integer scale factors
KS2 & KS3 Guidance	Learners begin to appreciate the centre of enlargement in Year 7 (page 115, KS3 guidance).
Century Tech Platform References	<p>Enlargements with $0 < SF < 1$ [MF40.08]</p> <p>Enlargement with Centre (0,0) [MF40.09]</p> <p>Enlargement with Centre (x,y) [MF40.10]</p>

S29 Similarity: Scale factors and simple integer scale factors

What is being tested	Learners are being tested on their ability to apply their knowledge of similarity.
Learning Objectives	<p>S29.1 Recall that corresponding lengths in similar shapes are in the same ratio</p> <p>S29.2 Recognise how to calculate the scale factor that links two similar shapes</p> <p>S29.3 Calculate the scale factor that links two similar shapes</p> <p>S29.4 Calculate missing lengths in similar shapes using a scale factor</p>
Predecessors	<p>S26 Enlargement</p> <p>S28 Enlargement from a centre</p>
Successors	None
KS2 & KS3 Guidance	Learners explore scale factors in KS2 and extend on this idea in Year 7 (page 112, KS3 guidance).
Century Tech Platform References	<p>Introduction to Similarity [MF43.01]</p> <p>Similar Polygons: Finding the Scale Factor [MF43.02]</p> <p>Similar Polygons: Missing Sides given Scale Factor [MF43.03]</p> <p>Similar Polygons: Missing Sides [MF43.04]</p> <p>Similar Triangles 1: Same Orientation [MF43.05]</p> <p>Similar Triangles 2: Different Orientations [MF43.06]</p>

S30 Properties of circles

What is being tested	Learners are being tested on their understanding of the properties of a circle.
Learning Objectives	<p>S30.1 Match diameter, radius, circumference with their graphical representations</p> <p>S30.2 Know the relationship between radius and diameter</p> <p>S30.3 Recognise the calculation to find the radius from the diameter</p> <p>S30.4 Define the relationship between circumference and diameter of a circle</p>
Predecessors	None
Successors	<p>S31 Area of circles</p> <p>S32 Circumference of circles</p>
KS2 & KS3 Guidance	Learners begin to explore the properties of circles in Year 8 (page 183, KS3 guidance).
Century Tech Platform References	Naming the Parts of a Circle [MF29.05]

S31 Area of circles

What is being tested	Learners are being tested on their ability to calculate the area of circles.
Learning Objectives	<p>S31.1 Calculate area of a circle with given radius using π given as 3.14</p> <p>S31.2 Identify the formula to calculate the area of a circle</p> <p>S31.3 Calculate the radius of a circle, given the area</p> <p>S31.4 Recognise how to calculate a diameter from an area</p>
Predecessors	S30 Properties of circles
Successors	S19 Volumes: prisms and cylinders
KS2 & KS3 Guidance	Learners extend upon their knowledge of area, calculating the area of circles in Year 8 (page 189, KS3 guidance).
Century Tech Platform References	<p>Area of a Circle Using the Radius (Using 3.14) [ME12.13]</p> <p>Area of a Circle Using the Diameter (Using 3.14) [ME12.14]</p> <p>Area of a Circle (Using 3.14) [ME12.15]</p>

S32 Circumference of circles

What is being tested	Learners are being tested on their ability to calculate the circumference of circles.
Learning Objectives	<p>S32.1 Identify the calculation for circumference with a given radius</p> <p>S32.2 Identify the formula to calculate the circumference of a circle</p> <p>S32.3 Identify the calculation for approx diameter of a circle with given circumference</p> <p>S32.4 Calculate circumference of a circle with given diameter using π given as 3.14</p>
Predecessors	<p>S12 Perimeter of rectangles</p> <p>S30 Properties of circles</p>
Successors	None
KS2 & KS3 Guidance	Learners extend their knowledge of perimeter to include the circumference of a circle in Year 8 (page 185, KS3 guidance).
Century Tech Platform References	<p>Circumference Using the Diameter (Using 3.14) [ME12.10]</p> <p>Circumference Using the Radius (Using 3.14) [ME12.11]</p> <p>Circumference (Using 3.14) [ME12.12]</p>

Contributors

AQA

We're an independent education charity, providing high quality assessments that are fair, reliable, and support students in their educational journey.

Our qualifications expertise dates back to 1903, when our predecessor boards were founded by five leading universities. Today, we're the largest provider of academic qualifications taught in schools and colleges.

We set and mark the papers for over half of all GCSEs and A-levels taken every year. But exams are only part of the story – we also make sure the content of our qualifications support great teaching.

Our qualifications are designed to suit a range of abilities and include GCSEs, AS and A-levels, the Extended Project Qualification and Technical Awards. Our qualifications are internationally recognised and taught in more than 40 countries around the world and they're highly valued by employers and universities.

We're led by our Executive Team and governed by a Board of Trustees drawn from schools, colleges, higher education, children's services and the business community.

Century Tech

CENTURY is the online teaching and learning tool that combines artificial intelligence with the latest research in learning science and neuroscience. It creates constantly adapting personalised pathways for every student and powerful intervention data for teachers.

Our intelligent intervention tool works in three ways:

- The artificial intelligence engine creates personalised learning pathways that plug gaps in knowledge and remedy misconceptions.
- Easy-to-use data dashboards aid teacher-led interventions. Students who need additional support or challenge are quickly identified.
- Teachers are provided with thousands of high-quality resources for use in a variety of learning models including homework, classwork or revision.

Find out more at www.century.tech