

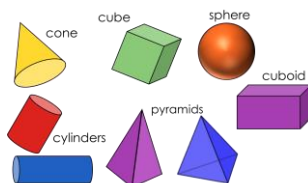


Geometry - properties of shape: Overview

Concepts: Identifying shapes and their properties, **Classifying shapes**, Drawing/Constructing shapes, **Angles**



This shape has straight sides.



The square has 4, vertices, 4 straight sides and four lines of symmetry.



The cube has six square faces, 8 vertices, 12 edges.



The triangle has one right angle and two angles that are smaller than a right angle.

Reception

- Explore characteristics of and begin to sort 3-D and 2-D shapes
- Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can
- Select, rotate and manipulate shapes to develop spatial reasoning skills

Year 1

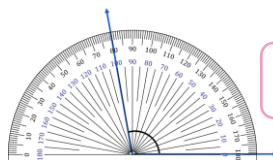
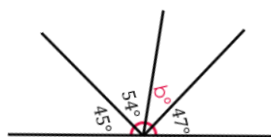
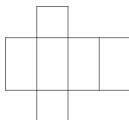
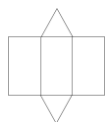
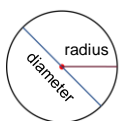
- Recognise and name common 2-D and 3-D shapes
- **Sort 2-D and 3-D shapes with increasingly accurate mathematical vocabulary.**

Year 2

- Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line
- Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces
- Identify 2-D shapes on the surface of 3-D shapes
- **Compare and sort common 2-D and 3-D shapes and everyday objects**

Year 3

- Identify horizontal and vertical lines and pairs of perpendicular and parallel lines
- Recognise 3-D shapes in different orientations and describe them
- **Draw 2-D shapes and make 3-D shapes using modelling materials**
- **Recognise angles as a property of shape or a description of a turn**
- **Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn;**
- **Identify whether angles are greater than or less than a right angle**



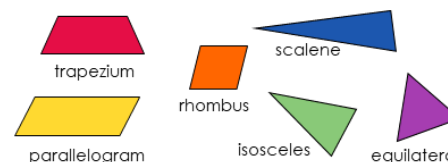
This angle measures 140°.

Year 6

- Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
- **Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons**
- Recognise, describe and build simple 3-D shapes, including making nets
- Draw 2-D shapes using given dimensions and angles
- Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

Year 5

- Identify 3-D shapes, including cubes and other cuboids, from 2-D representations
- Use the properties of rectangles to deduce related facts and find missing lengths and angles
- **Distinguish between regular and irregular polygons based on reasoning about equal sides and angles**
- Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
- Draw given angles, and measure them in degrees (°)
- Identify: angles at a point and one whole turn (total 360°) angles at a point on a straight line and half a turn (total 180°) other multiples of 90°



Year 4

- Identify lines of symmetry in 2-D shapes presented in different orientations
- **Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes**
- Complete a simple symmetric figure with respect to a specific line of symmetry
- Identify acute and obtuse angles and compare and order angles up to two right angles by size



Geometry - properties of shape: Concept breakdown

Note: Statutory Curriculum requirements are in **bold**

| Reception → Year 1 → Year 2 → Year 3 → Year 4 → Year 5 → Year 6 | | | | | | | |
|---|--|--|--|---|--|---|--|
| Identifying shapes and their properties | | | | | | | |
| 2-D shape | <p>Pupils explore characteristics of 2-D shapes, using appropriate everyday and mathematical language to describe them Unit 13</p> <p>Pupils should have opportunities built into continuous provision to compose and decompose shapes so that they recognise a shape can have other shapes within it, just as numbers can</p> | <p>Recognise and name common 2-D shapes [for example, rectangles (including squares), circles and triangles] Unit 3</p> <p>Pupils begin to justify their identification of a 2-D shape by describing the properties e.g. the shape has three straight sides and three vertices Unit 3</p> | <p>Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line Unit 11</p> | <p>Identify horizontal and vertical lines and pairs of perpendicular and parallel lines Unit 10</p> <p>Pupils continue to develop understanding of lines of symmetry within 2-D shapes Unit 10</p> | <p>Identify lines of symmetry in 2-D shapes presented in different orientations Unit 11</p> <p>Pupils identify different triangles for example, isosceles, equilateral, scalene) and quadrilaterals (for example, parallelogram, rhombus, trapezium). Unit 11</p> | <p>Use the properties of rectangles to deduce related facts and find missing lengths and angles Unit 12</p> <p>Pupils continue to consolidate the identification of specific types of triangle and quadrilateral introduced in Year 4 and are introduced to properties of a circle in preparation for Year 6 Unit 12</p> | <p>Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius Unit 8</p> |
| 3-D Shape | <p>Pupils explore characteristics of 3-D shapes, using appropriate everyday and mathematical language to describe them. Unit 6</p> <p>Pupils should have opportunities built into continuous provision to select rotate and manipulate shapes to develop their spatial reasoning skills</p> | <p>Recognise and name common 3-D shapes, [for example, cuboids (including cubes), pyramids and spheres] Unit 3</p> <p>Pupils begin to justify their identification of a 3-D shape by describing the properties e.g. the shape has square flat faces Unit 3</p> | <p>Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces Unit 11</p> <p>Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid Unit 11</p> | <p>Recognise 3-D shapes in different orientations and describe them Unit 10</p> | <p>Pupils continue to explore the properties of 3-D shapes, applying their understanding to solve problems Unit 14</p> | <p>Identify 3-D shapes, including cubes and other cuboids, from 2-D representations Unit 12</p> | <p>Recognise, describe and build simple 3-D shapes, including making nets Unit 8</p> |



Geometry - properties of shape: Concept breakdown

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| | Reception | → | Year 1 | → | Year 2 | → | Year 3 | → | Year 4 | → | Year 5 | → | Year 6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Compare, classify and sort shapes | | | | | | | | | | | | | |
| Compare, classify and sort 2-D and 3-D shapes | Sort 2-D and 3-D shapes based upon their properties e.g. straight or curved sides, flat faces or curved surfaces Unit 13 | | Pupils continue to sort 2-D and 3-D shapes with increasingly accurate mathematical vocabulary Unit 3 | | Compare and sort common 2-D and 3-D shapes and everyday objects using precise mathematical vocabulary Unit 3 | | | | Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes Unit 11 | | Distinguish between regular and irregular polygons based on reasoning about equal sides and angles Unit 12 | | Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons Unit 7 |
| Drawing or constructing shapes | | | | | | | | | | | | | |
| Draw and construct 2-D/3-D shapes | In continuous provision, pupils should be encouraged to copy simple shapes from a 3-D representation | | | | Pupils will be introduced to drawing 2-D shapes when completing shape patterns, but there is no expectation here of creating an accurate drawing. Unit 3 | | Draw 2-D shapes and make 3-D shapes using modelling materials; Unit 10 | | Complete a simple symmetric figure with respect to a specific line of symmetry Unit 11 | | Pupils begin to explore construction of simple 3-D shapes including making nets Unit 12 | | Recognise, describe and build simple 3-D shapes, including making nets Unit 8 Draw 2-D shapes using given dimensions and angles Unit 8 |



Geometry - properties of shape: Concept breakdown

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|---|-----------|---|--------|---|--|---|--|---|--|---|---|---|--|
| | Angles | | | | | | | | | | | | |
| Understanding angles | | | | | <i>Pupils identify right angles in shapes</i> Unit 11 | | Recognise angles as a property of shape or a description of a turn Unit 10 | | | | Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles Unit 7 | | Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles Unit 7 |
| Classifying, comparing and measuring angles | | | | | | | Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; Unit 10 Identify whether angles are greater than or less than a right angle; beginning to use the language of acute and obtuse Unit 10 | | Identify acute and obtuse angles and compare and order angles up to two right angles by size Unit 11 | | Draw given angles, and measure them in degrees (°) Unit 7 Identify: angles at a point and one whole turn (total 360°) angles at a point on a straight line and 2 1 a turn (total 180°) other multiples of 90° Unit 7 | | <i>Pupils continue to apply their understanding in comparing and measuring angles in degrees when constructing 2-D shapes and classifying polygons</i> Unit 8 |