



# Year 5 properties of shapes

## Prior Knowledge

- Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line (Y2)
- Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces (Y2)
- Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them (Y3)
- Recognise angles as a property of shape or a description of a turn (Y3)
- Identify right angles, recognise that 2 right angles make a half-turn, 3 make three quarters of a turn and 4 a complete turn; identify whether angles are greater than or less than a right angle (Y3)
- Identify horizontal and vertical lines and pairs of perpendicular and parallel lines (Y3)
- Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes (Y4)
- Identify acute and obtuse angles and compare and order angles up to 2 right angles by size (Y4)
- Identify lines of symmetry in 2-D shapes presented in different orientations (Y4)
- Complete a simple symmetric figure with respect to a specific line of symmetry (Y4)

Properties of shapes		Working Towards	Within	Expected	Above
	Identify 3-D shapes, including cubes and other cuboids, from 2-D representations				
	Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles				
	Draw given angles, and measure them in degrees (°) Identify: <ul style="list-style-type: none"> <li>angles at a point and 1 whole turn (total 360°)</li> <li>angles at a point on a straight line and half a turn (total 180°)</li> <li>other multiples of 90°</li> </ul>				
	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				
Highlights: _____ _____ _____					



## Glossary

### Year 5 Properties of Shape Word Mat

<b>cube</b> A cube has 6 square faces. 	<b>cylinder</b> A cylinder has two circular faces. 	<b>cuboid</b> A cuboid has 6 rectangular faces. 	<b>cone</b> A cone has a circular face. 										
<b>triangular-based pyramid</b> A triangular-based pyramid has 4 triangular faces. One of the triangular faces is on the bottom. 	<b>square-based pyramid</b> A square-based pyramid has 4 triangular faces. It has a square face on the bottom. 	<b>Regular and Irregular Shapes</b> <table border="1"> <thead> <tr> <th>Regular</th> <th>Irregular</th> </tr> </thead> <tbody> <tr> <td> Square</td> <td> Rectangle</td> </tr> <tr> <td> Triangle</td> <td> Triangle</td> </tr> <tr> <td> Pentagon</td> <td> Pentagon</td> </tr> <tr> <td> Hexagon</td> <td> Hexagon</td> </tr> </tbody> </table>		Regular	Irregular	Square	Rectangle	Triangle	Triangle	Pentagon	Pentagon	Hexagon	Hexagon
Regular	Irregular												
Square	Rectangle												
Triangle	Triangle												
Pentagon	Pentagon												
Hexagon	Hexagon												
<b>A rectilinear shape is one which is bound by straight lines and can be divided into rectangles or triangles in order to find its area.</b> 													
<b>Parallel</b> 		<b>Perpendicular</b> 											
<b>Equal</b> 													

### triangular prism

A triangular prism has 2 triangular faces. It has 3 rectangular faces.

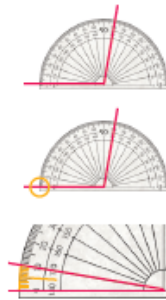


Angles are measured in degrees ( $^{\circ}$ ).

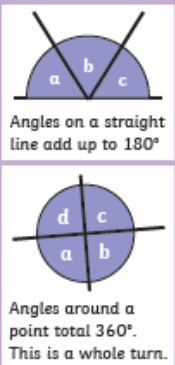
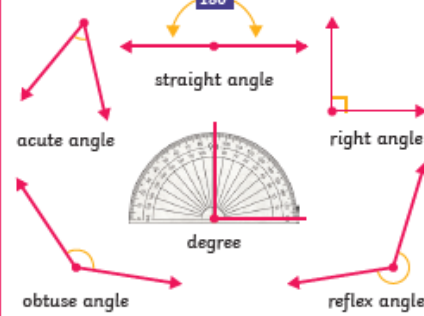


### How to Use a Protractor

- 1 Place the cross of circle at the point (vertex) of the angle that you are measuring.
- 2 Read from the zero on the outer scale of your protractor.
- 3 Count the degree lines carefully.



### Angles



Name	Surfaces		Edges		Vertices	Picture
	Flat	Curved	Flat	Curved		
cube	6	0	12	0	8	
cuboid	6	0	12	0	8	
square-based pyramid	5	0	8	0	5	
tetrahedron	4	0	6	0	4	
triangular prism	5	0	9	0	6	
pentagonal prism	7	0	15	0	10	
hexagonal prism	8	0	18	0	12	
octagonal prism	10	0	24	0	16	
octahedron	8	0	12	0	6	



A cone has an apex. This is because a vertex is the point where two straight edges meet and a cone has no straight edges.



## Resources

A range of 2D and 3D shapes  
ruler  
protractor



## Future Learning

### Year 6

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