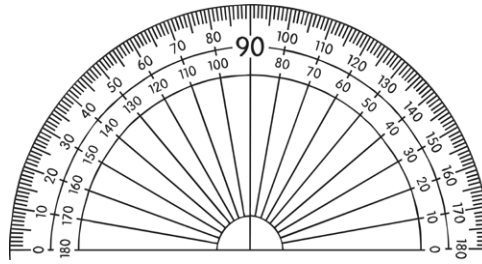


Name:

## Maths Assessment Year 6: Geometry - Properties of Shapes

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You will need a protractor (angle measurer) and ruler for this task.



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

Name:

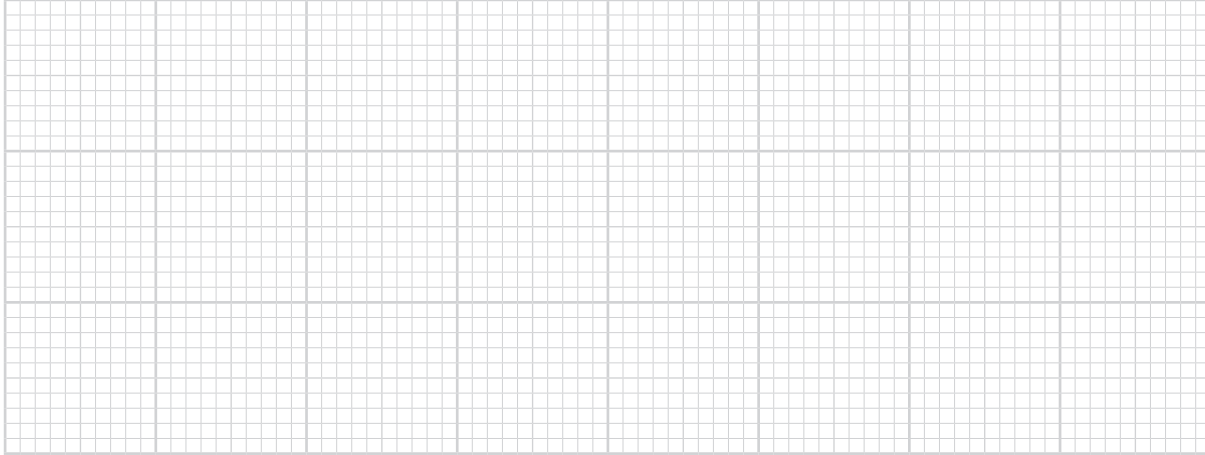
Date:



## Maths Assessment Year 6: Geometry - Properties of Shapes

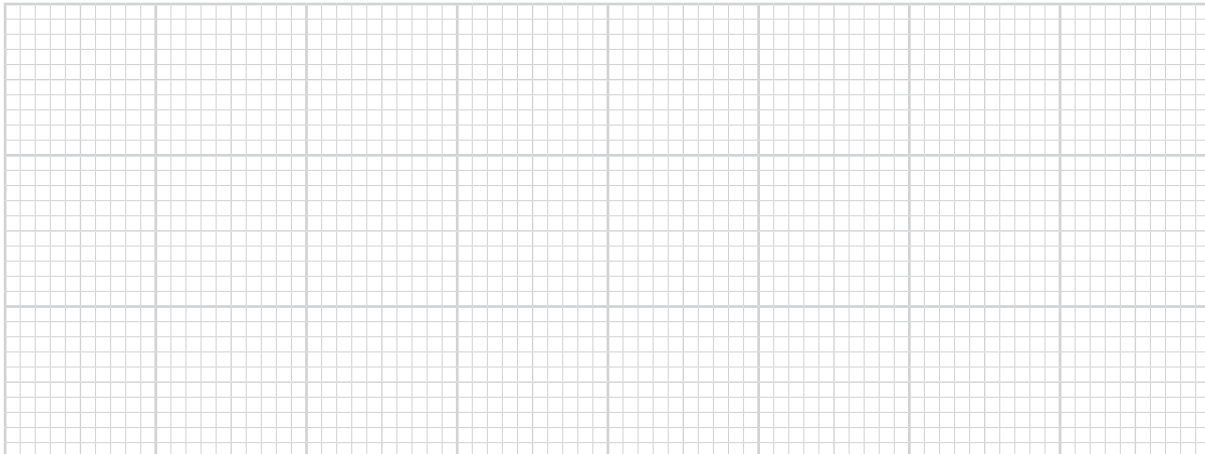
1. Draw 2D shapes using given dimensions and angles.

- a) Draw a regular pentagon, where each edge measures 3cm and each internal angle measures  $108^\circ$ .



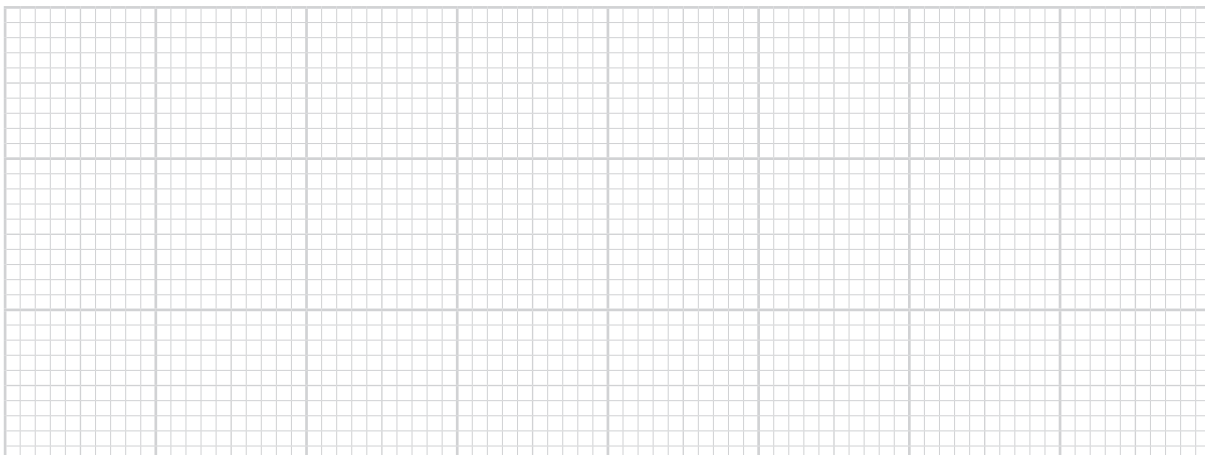
1 mark

- b) Draw a right-angled triangle with a horizontal edge that measures 4cm and a vertical edge that measures 5cm.



1 mark

- c) Draw a parallelogram, where each edge measures 4cm, two internal angles each measure  $100^\circ$  and two internal angles each measure  $80^\circ$ .



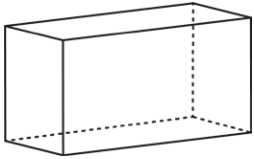
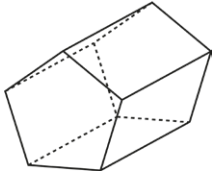
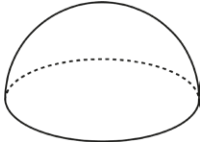
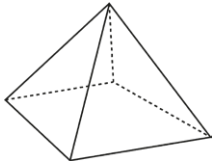
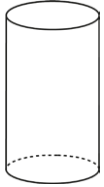
1 mark



Total for this page

2. Recognise, describe and build simple 3D shapes, including making nets.

a) Name these shapes:

b) Describe the properties of these 3D shapes:

	number of curved surfaces	number of flat faces	number of edges	number of vertices
cube				
cuboid				
tetrahedron				
triangular prism				
square-based pyramid				



5 marks



5 marks



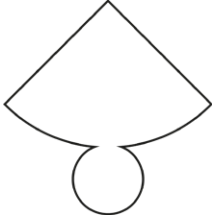
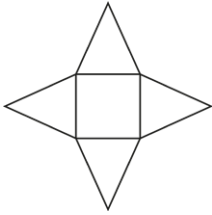
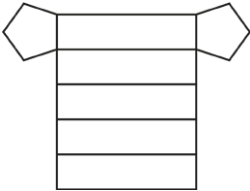
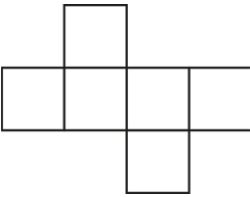
Total for this page

c) Name these shapes:

properties	name of shape
1 flat face, 1 curved surface, 1 edge, 1 vertex	
2 flat faces, 1 curved surface, 2 edges, 0 vertices	
0 flat faces, 1 curved surface, 0 edges, 0 vertices	

3 marks

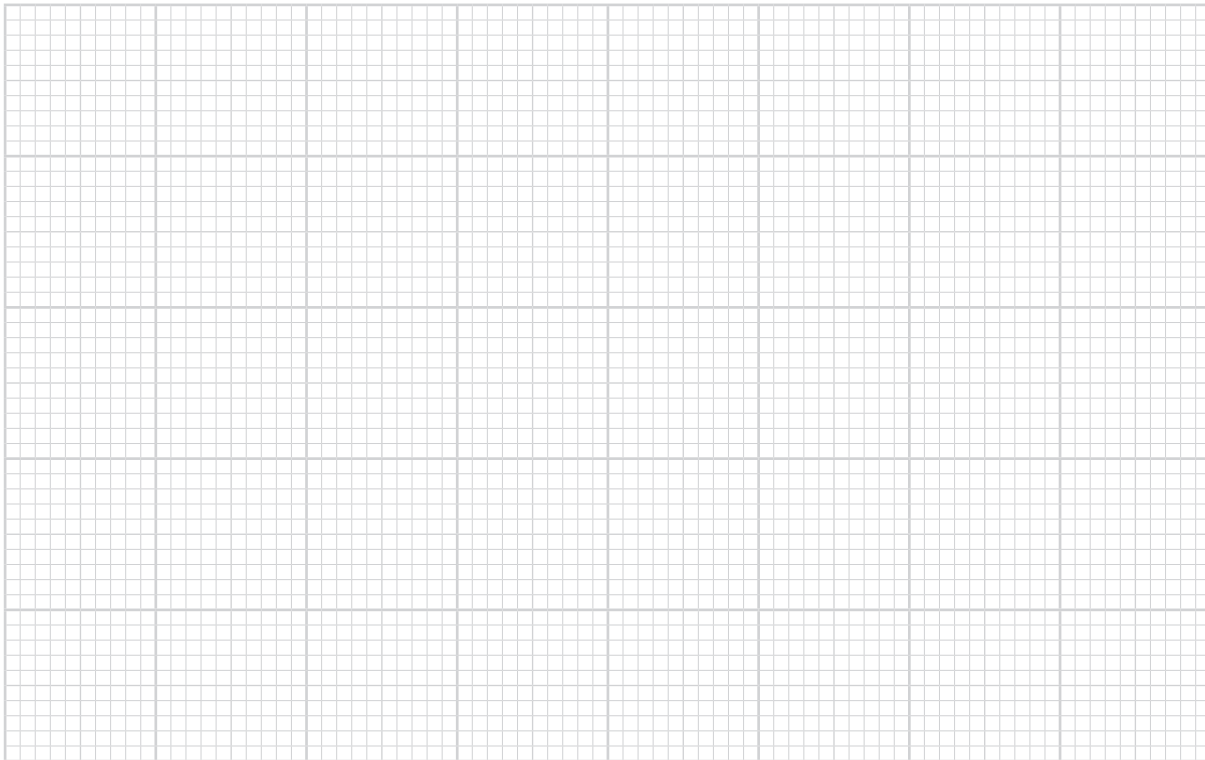
d) Below are nets of 3D shapes. Write the name of the shape that can be made using each net:

4 marks

Total for this page

e) Draw a cuboid net, where each rectangular face measures 3cm by 2cm:



1 mark

3. Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons.

a) Write the names of these shapes in the correct places in this Carroll diagram:

- square                      rectangle                      right-angled triangle                      regular pentagon  
 equilateral triangle                      regular octagon                      semi-circle                      parallelogram

	polygon	not a polygon
at least one right angle		
no right angles		



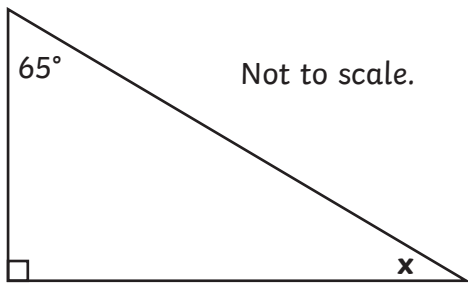
1 mark



Total for this page

b) Calculate the internal angle labelled  $x$  in this right-angled triangle.

Show your working out.

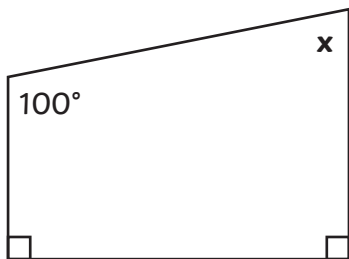


$x = \dots\dots\dots^\circ$

2 marks

c) Calculate the internal angle labelled  $x$  in this irregular quadrilateral.

Show your working out.



$x = \dots\dots\dots^\circ$

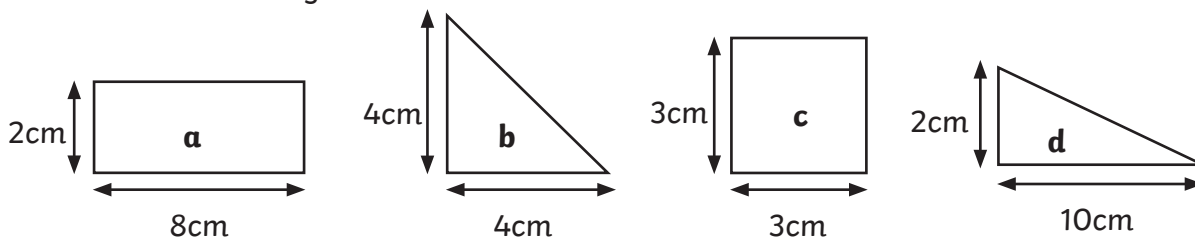
2 marks

d) The sum of the internal angles in a regular hexagon is  $720^\circ$ . Calculate the measurement of one internal angle in a regular hexagon.

Show your working out.

2 marks

e) Put these shapes in order based on their area, from smallest to largest, by writing their letters in the grid below:



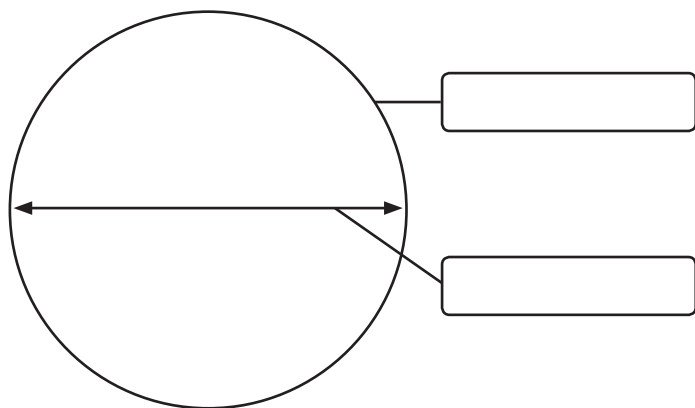
smallest			largest

1 mark

Total for this page

4. Illustrate and name parts of circles and know that the relationship between diameter and radius.

a) Label the parts of this circle:



1 mark

b) On the circle above, illustrate and label the radius.



1 mark

c) The radius of a circle is 5.2cm. Calculate its diameter. ....



1 mark

d) The diameter of a circle is 11cm. Calculate its radius. ....

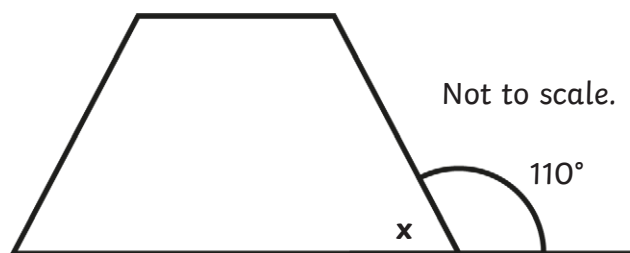


1 mark

5. Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

a) Calculate the internal angle labelled  $x$  in this shape using the information given.

Show your working out.



$x = \dots\dots\dots^\circ$

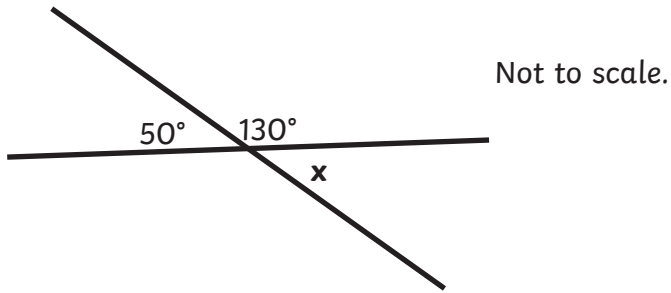


2 marks



Total for this page

b) What is the measurement of the angle labelled  $x$ ?

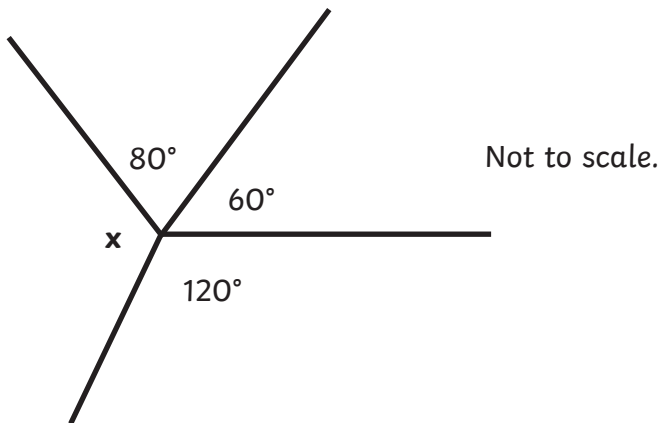


$x = \dots\dots\dots^\circ$

1 mark

c) What is the measurement of the angle labelled  $x$ ?

Show your working out.

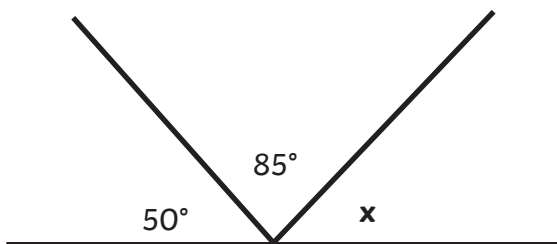


$x = \dots\dots\dots^\circ$

2 marks

d) Calculate the missing angle.

Show your working out.

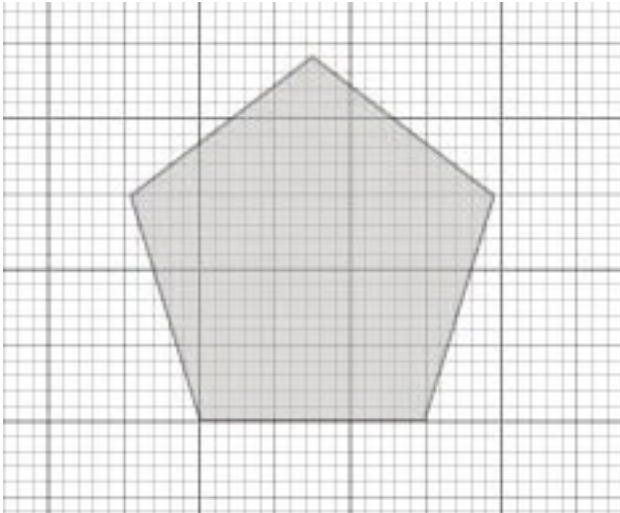
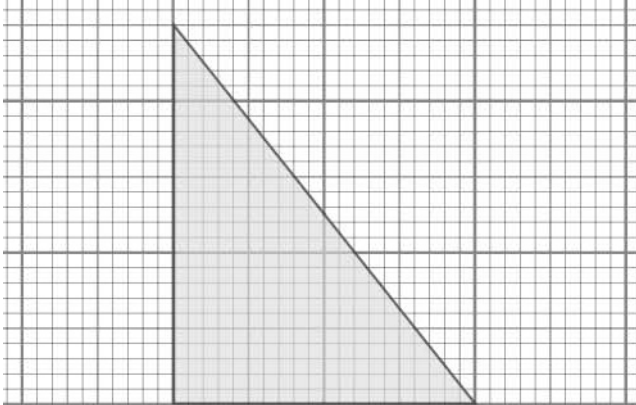
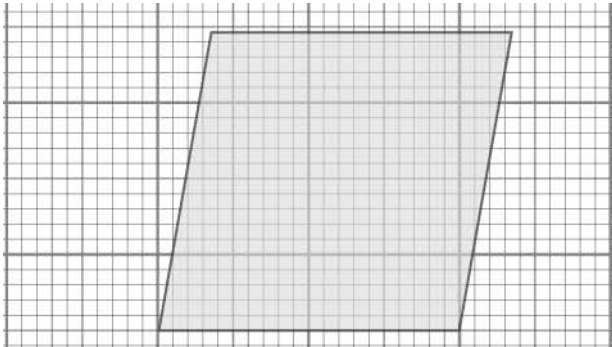


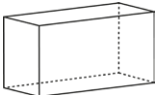
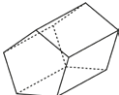
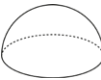
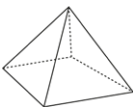

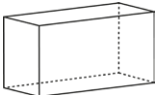
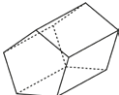
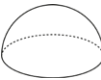
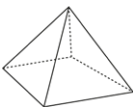

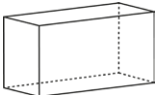
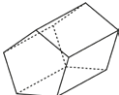
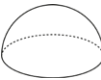
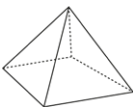

$x = \dots\dots\dots^\circ$

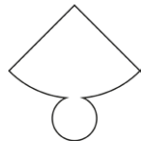
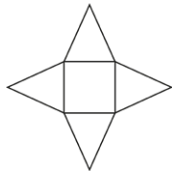
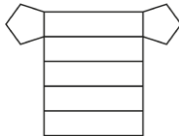
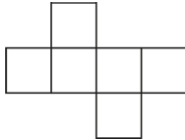
2 marks

Total for this page



question	answer	marks	notes
1. Draw 2D shapes using given dimensions and angles.			
a		1	
b		1	
c		1	

question	answer	marks	notes																														
2. Recognise, describe and build simple 3D shapes, including making nets.																																	
a	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">cuboid</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">pentagonal prism</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">hemisphere</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">square based pyramid</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">cylinder</td> </tr> </table>		cuboid		pentagonal prism		hemisphere		square based pyramid		cylinder	5	1 mark for each correct shape name. Accept incorrect spellings, where the intention is clear.																				
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b	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Number of curved faces</th> <th style="text-align: center;">Number of flat faces</th> <th style="text-align: center;">Number of edges</th> <th style="text-align: center;">Number of vertices</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"><b>cube</b></td> <td style="text-align: center;">0</td> <td style="text-align: center;">6</td> <td style="text-align: center;">12</td> <td style="text-align: center;">8</td> </tr> <tr> <td style="text-align: center;"><b>cuboid</b></td> <td style="text-align: center;">0</td> <td style="text-align: center;">6</td> <td style="text-align: center;">12</td> <td style="text-align: center;">8</td> </tr> <tr> <td style="text-align: center;"><b>tetrahedron</b></td> <td style="text-align: center;">0</td> <td style="text-align: center;">4</td> <td style="text-align: center;">6</td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: center;"><b>triangular prism</b></td> <td style="text-align: center;">0</td> <td style="text-align: center;">5</td> <td style="text-align: center;">9</td> <td style="text-align: center;">6</td> </tr> <tr> <td style="text-align: center;"><b>square based pyramid</b></td> <td style="text-align: center;">0</td> <td style="text-align: center;">5</td> <td style="text-align: center;">8</td> <td style="text-align: center;">5</td> </tr> </tbody> </table>		Number of curved faces	Number of flat faces	Number of edges	Number of vertices	<b>cube</b>	0	6	12	8	<b>cuboid</b>	0	6	12	8	<b>tetrahedron</b>	0	4	6	4	<b>triangular prism</b>	0	5	9	6	<b>square based pyramid</b>	0	5	8	5	5	One mark each shape that has all the properties correctly completed.
	Number of curved faces	Number of flat faces	Number of edges	Number of vertices																													
<b>cube</b>	0	6	12	8																													
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c	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Properties</th> <th style="width: 50%;">Name of shape</th> </tr> </thead> <tbody> <tr> <td>1 flat face, 1 curved face, 1 edge, 1 vertex</td> <td style="text-align: center;"><b>cone</b></td> </tr> <tr> <td>2 flat faces, 1 curved face, 2 edges, 0 vertices</td> <td style="text-align: center;"><b>cylinder</b></td> </tr> <tr> <td>0 flat faces, 1 curved face, 0 edges, 0 vertices</td> <td style="text-align: center;"><b>sphere</b></td> </tr> </tbody> </table>	Properties	Name of shape	1 flat face, 1 curved face, 1 edge, 1 vertex	<b>cone</b>	2 flat faces, 1 curved face, 2 edges, 0 vertices	<b>cylinder</b>	0 flat faces, 1 curved face, 0 edges, 0 vertices	<b>sphere</b>	3	1 mark for each correct shape name. Accept incorrect spellings, where the intention is clear.																						
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question	answer		marks	notes	
d		cone	4	1 mark for each shape correctly identified.	
		square based pyramid			
		pentagonal prism			
		cube			
e	1 marks for a plausible cuboid net drawn, which follows the specified measurements. Include nets drawn with or without 'tabs'.		1		
<b>3. Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons.</b>					
a		Polygon	Not a polygon	1	1 mark for all shapes correctly positioned.
	At least one right angle	square, rectangle, right angled triangle,			
	No right angles	regular pentagon, equilateral triangle, regular octagon, parallelogram	semi-circle		
b	$65 + 90 = 155$ $180 - 155 = 25$ $x = 25^\circ$		2	2 marks for correct answer. 1 mark for an appropriate calculation, but incorrect answer.	
c	$90 + 90 + 100 = 280$ $360 - 280 = 80$ $x = 80^\circ$		2		
d	$720 \div 6 = 120$ $120^\circ$		2		
e	b	c	a	d	1
	smallest		largest		

question	answer	marks	notes
<b>4. Illustrate and name parts of circles and know that the relationship between diameter and radius.</b>			
a	<p>The diagram shows a circle with a vertical radius line from the center to the top edge, labeled 'radius'. A horizontal diameter line passes through the center from the left edge to the right edge, labeled 'diameter'. A line points to the outer edge of the circle, labeled 'circumference'.</p>	1	
b	Radius is illustrated and labelled appropriately.	1	
c	10.4cm	1	
d	5.5cm	1	
<b>5. Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.</b>			
a	$180 - 110 = 70$ $x = \mathbf{70^\circ}$	2	2 marks for correct answer. 1 mark for an appropriate calculation, but incorrect answer.
b	$x = \mathbf{50^\circ}$	1	
c	$80 + 60 + 120 = 260$ $360 - 260 = 100$ $x = \mathbf{100^\circ}$	2	2 marks for correct answer. 1 mark for an appropriate calculation, but incorrect answer.
d	$85 + 50 = 135$ $180 - 135 = 45$ $x = \mathbf{45^\circ}$	2	2 marks for correct answer. 1 mark for an appropriate calculation, but incorrect answer.
		Total 40	