

**Year 7 Mathematics 2015**

**2D and 3D Space**

**Total marks: 70** **Name**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***All drawings must be completed using a pencil and a ruler where appropriate.***

***You may lose marks for untidy work.***

1. Why are the following figures below not triangles? Give **one** reason for each of them.

*Answer:* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1]

*Answer:* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1]

*Answer:* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1]

1. Complete the table below.

|  |  |
| --- | --- |
| Number of sides | Name of polygon |
| 5 sides |  |
| 6 sides |  |
| 7 sides |  |
| 8 sides |  |
| 9 sides |  |
| 10 sides |  |

[6]

1. Name the following triangles.

|  |  |
| --- | --- |
| a.   \_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1]  | b. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1] |
| c. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1]  | d.\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1]  |

1. Find the value of each pronumeral. Give a reason for each answer (the reason cannot be a calculation).

|  |  |
| --- | --- |
| a.70°30°*a*° *Angle:* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ *Reason:* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_[2] | b. 50°80°*b°**Angle:* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ *Reason:* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_[2]  |
| c.5 cm*d* cm50°50°*Side length:* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ *Reason:* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_[2] | d. *Angle:* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ *Reason:*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_[2] |

1. Name the following quadrilaterals.

|  |  |
| --- | --- |
| a. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1]  | b.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1]  |
| c. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1]  | d.\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1]  |
| e. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1]  |

1. Draw below a fully labelled diagram of a rhombus. Your finished diagram will show all the properties of a **rhombus**. *Use a pencil and a ruler.*

 

 [4]

1. Find the value of each pronumeral.

|  |  |
| --- | --- |
| a.62°45°107°a°\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1] | c.b°74°88°\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [2] |
| d°\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1] | RECTRECT below is a rectangle\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , \_\_\_\_\_\_\_\_\_\_\_\_\_\_ [2] |

1. For the **square** based pyramid below:

 

P

Q

R

S

T

* 1. List **all** of the vertices

 *Answer (a):* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [2]

* 1. write down the number of edges

*Answer (b):* \_\_\_\_\_\_\_ [2]

* 1. write down the names of its faces

*Answer (c):* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [2]

* + 1. Name the following solids.

|  |  |  |
| --- | --- | --- |
| a.  | b.  | c. |

|  |  |  |
| --- | --- | --- |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1] | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1] | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1] |

* + 1. Which of the above solids has a uniform cross-section?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [1]

1. Draw the net of the following solid on the grid provided (you do not need to include tabs in your diagram).

|  |  |
| --- | --- |
|  |  |

[3]

1. On the grid below draw a 3D drawing of a cuboid 4 units long and 2 units high.

|  |
| --- |
|  |

[3]

1. Draw the front, side and top views of the following shape on the square dot grid below.

 

|  |  |  |
| --- | --- | --- |
| Front | Side | Top |

[3]

* 1. On the square dot grid below, draw the front view, top view (or plan) and the right-side view of the solid shown in isometric view below. *F points to the front of the solid.*

|  |
| --- |
| [3] |

* 1. On the triangle dot grid below, draw the isometric view of the solid below as it appears **looking from** directly **behind** it.

|  |
| --- |
|  [3] |

1. Use the views given to draw a three-dimensional isometric drawing of the solid below.



Top

Front

Left



[3]

1. The following shape can be transformed into a square by making **one** straight cut and then moving the piece to a new position. Show how this can be done.

 

[2]

1. A rectangle has length 4 cm longer than its width. Its perimeter is 78 cm. Find the width of the rectangle.

*Note: perimeter is the distance round the outside of a shape.*

*Width:* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [2]

1. The equal sides of an isosceles triangle are 3 cm longer than the third side. If the perimeter is 18.9 cm find the length of the third side.

*Length of third side:* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [2]

**THE END**