Exercise 1

1. Name these shapes :-

   ![Shapes a, b, c, d, e, f, g]

2. Identify all the **2 Dimensional** mathematical shapes in these figures :-

   ![Figures a, b, c, d, e, f, g]

3. Write down the special name for a **polygon** :-
   (a) with 5 sides       (b) with 6 sides       (c) with 8 sides       (d) with 10 sides.

4. What is the special name for a polygon with 4 sides ?

5. How many diagonals does the polygon with 6 sides have ?
   *(Draw the polygon and put in its diagonals).*

6. Describe each of these shapes FULLY :-

   ![Shapes a, b, c]

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Exercise 2

1. Write down the special name for the following types of triangles:
   (a) a triangle where all 3 sides are different sizes.
   (b) a triangle with only 2 of its sides equal in length.
   (c) a triangle with all 3 of its sides equal in length.

2. State which type of triangle each of the following is:
   (a)  
   (b)  
   (c)  
   (d)  

3. Calculate the PERIMETER of each of these triangles:
   (a)  
   (b)  
   (c)  

4. In each of the following triangles, the perimeter is given. Calculate the LENGTHS of the missing sides:
   (a) Perimeter = 28 cm  
   (b) Perimeter = 27 cm  
   (c) Perimeter = 32 cm  

5. This kite figure consists of an isosceles and a equilateral triangle.
   Find the perimeter of the kite.
Exercise 3

We can carefully and fully describe a triangle as follows:

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME it using 3 letters</td>
<td>DESCRIBE it as:</td>
<td>Followed by:</td>
</tr>
<tr>
<td>(i) acute-angled</td>
<td>(i) isosceles triangle</td>
<td></td>
</tr>
<tr>
<td>(ii) right-angled</td>
<td>(ii) equilateral triangle</td>
<td></td>
</tr>
<tr>
<td>(iii) obtuse-angled</td>
<td>(iii) scalene triangle</td>
<td></td>
</tr>
</tbody>
</table>

Example: Triangle XWY is an OBTUSE angled ISOSCELES triangle.

Do the same for each of these → Name it and describe it fully.

1.  
   2.  
   3.  
   4.  
   5.  
   6.

Exercise 4

1. (a) Draw this square tile measuring 3 boxes by 3 boxes and colour or lightly shade it.
   (b) By completely surrounding the shape with similar squares, show that the square tiles.

2. Show clearly how this kite shape will tile the surface.
3. Decide which of the following shapes will tile.
   For those that do, show how they do so by surrounding the given tile.
   (a) \[
   \begin{array}{c}
   \text{shape a} \\
   \end{array}
   \]
   (b) \[
   \begin{array}{c}
   \text{shape b} \\
   \end{array}
   \]
   (c) \[
   \begin{array}{c}
   \text{shape c} \\
   \end{array}
   \]

4. \[
   \begin{array}{c}
   \text{shape d} \\
   \end{array}
   \]
   (a) Trace or copy this shape onto a small piece of card and cut it out carefully.
   (b) Show how to tile the surface by using this shape as a template to cover a small area of paper with the shape.

**Exercise 5**

1. (a) Draw round a 2p or 10p coin to create a circle.
   (b) Draw in a RADIUS and mark it R.
   (c) Draw in a DIAMETER and mark it D.
   (d) In your figure write the word CIRCUMFERENCE around the circumference.

2. This is a sketch of a circle whose diameter is 24 cm.
   What must the length of its radius be?

3. The radius of another circle is 30 centimetres.
   What must the length of its diameter be?

4. Shown is a sketch of 4 touching circles surrounded by a rectangular box.
   The radius of each circle is 8 cm.
   Calculate what the length and breadth of the box must be.
   *(Do not use a ruler).*
Exercise 6

1. (a) Trace (or copy) this V-shape onto a small piece of card, mark a dot on it as shown and carefully cut it out.

(b) Draw round your "template" onto your jotter. By putting a pin (or compass point) through the black dot, spin your shape by 90° (approx) and draw round it again.

(c) Repeat twice more to create this design.

2. Try doing the same with this tile.

Revision Exercise

1. Write down the special names for each of these two polygons.

2. Name all the mathematical shapes you can see in this figure.

3. Calculate the perimeter of this triangle.
4. Describe each of the following triangles by using an expression from both lists shown opposite:

(a) [Diagram of a right-angled triangle]
(b) [Diagram of an acute-angled triangle]
(c) [Diagram of an obtuse-angled triangle]

5. Copy the following shape onto squared paper. Show that the shape tiles by completely surrounding the shape with identical tiles.

6. The radius of this circle is 41.5 cm. Write down the length of its DIAMETER.

7. This shape consists of a rectangle measuring 6 metres by 8 metres, with two semi-circular ends.

Calculate the length of the shape. (Do NOT measure it with a ruler).