

SHARP

Worksheet 10: Construction of Geometric Figures

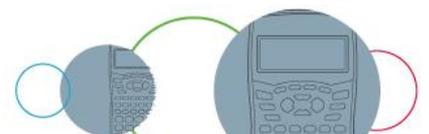
Grade 9 Mathematics

For this worksheet, you will need a compass, ruler and protractor.

1. Using your protractor draw the following:
 - a) an angle of 30°
 - b) an angle of 45°
 - c) an angle of 60°
 - d) an angle of 90°

2. Now, without a protractor and using your compass and ruler, draw the following angles:
 - a) an angle of 30°
 - b) an angle of 45°
 - c) an angle of 60°
 - d) an angle of 90°

3. Construct a triangle, ABC, with the base (AB) of the triangle 6cm, and the sides, AC and BC equal to 4cm.
 - a) Measure each of the angles in $\triangle ABC$.
 - i) What do you notice?
 - ii) What rule can you make using the information you have gathered?
 - b) Extend the line AB by another 3cm, to D.
 - i) Measure \widehat{DBC} .
 - ii) What do you notice?
 - iii) What rule can you make using the information you have?



4. Construct two triangles:

$$\triangle DEF - DE = 3\text{cm}, EF = 4\text{cm and } DF = 5\text{cm}.$$

$$\triangle GHJ - HJ = 4\text{cm}, \hat{H}G = 90^\circ, \text{ and } GJ = 3\text{cm}.$$

- a) What do you notice about these two triangles?
- b) In what other ways could you construct these triangles so that they are the same?

5. Construct a rectangle, the long sides should be 5cm and the short sides should be 3cm.

- a) Measure the length of the diagonals.
 - i) What do you notice?
 - ii) What can we say about diagonals in rectangles?
 - iii) Name and draw other quadrilaterals where this property also occurs.
- b) Measure the angles that the diagonals make.
 - i) What do you notice?
 - ii) What can we say about the angles diagonals in rectangles make?
 - iii) Name and draw other quadrilaterals where this property also occurs.
 - iv) How are the angles of a diagonal in a square different to the angles of diagonals in a rectangle?

6. Construct a square with sides 3cm, a regular pentagon with sides 3cm and a regular hexagon with sides 3cm.

- a) Measure the interior angles of the square, pentagon and hexagon.
- b) What is the sum of the interior angles of the square, pentagon and hexagon?
- c) What do you notice about this sum?

