Unit 11 · Construction

HARDER WORKSHEET

Full marks 20

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 20

1 Five sides into three [4]

Construct the following. Keep every arc. Show your working.

A house-shaped figure $ABCDE$ is a rectangle $ABCE$, with $AB = 5$ cm and $BC = 3.5$ cm, with a triangle CDE on top, $CD = DE = 4$ cm. Construct it, then construct a triangle of the same area. Measure your triangle and find its area.



Answer: _____

2 Spot the error [3]

Find the mistake in the construction and correct it.

To construct a parallelogram with a side of 5 cm equal in area to $\triangle ABC$, Bina drew ST through A parallel to BC, cut $BP = 5$ cm with P on ST, and completed the parallelogram $PBCQ$ on the whole base BC.

3 Work backwards [3]

Solve the following problem. Show your working.

A triangle *PBE* was constructed equal in area to a parallelogram *ABCD* of area 24 cm^2, by producing *BC* to *E*. *BE* is 10 cm. How long is *BC*, and how far apart are *BC* and *AD*?

Answer: _____

4 In a real setting [4]

Construct, measure and solve. Show your working.

A plot of land is drawn to the scale 1 cm to 10 m as quadrilateral *ABCD* with $AB = 6$ cm, $BC = 5$ cm, $CD = 4$ cm, $DA = 4.5$ cm and the diagonal $AC = 7$ cm. Construct it, construct a triangle of the same area, and use it to find the area of the plot in square meters.

Answer: _____

5 Is the claim true? [2]

Answer the following question. Give a reason.

Suman says: "Given $\triangle ABC$, I can always construct a triangle DBC of the same area with DB as short as I like." Is he right?

6 Make your own [2]

Answer the following question.

Explain how to construct an **isosceles** triangle with the same area as a rectangle 6 cm by 4 cm.

7 Think [2]

Think, then answer.

Any straight-sided figure can be turned into a triangle, and then a square, of the same area with ruler and compass. Can a circle? What was proved, and when?