Unit 10 · Triangle and Quadrilaterals

HARDER WORKSHEET

Full marks 22

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 22

1 Find the areas [3]

Solve the following problem. Show your working.

$ABCD$ is a parallelogram of area 60 cm^2 and P is the midpoint of BC. Find the areas of $\triangle APD$, $\triangle ABP$ and $\triangle PCD$.

Answer: _____

2 Show it [3]

Prove the following. Write each statement with its reason.

In $\triangle ABC$, D is the midpoint of BC and E is the midpoint of AD. Prove that area of $\triangle BEC = ½$ area of $\triangle ABC$.

3 Spot the error [3]

Find the mistakes in the working and correct them.

In parallelogram $ABCD$, $AB = 10$ cm, $BC = 6$ cm, and AB and DC are 5 cm apart. E is a point on DC. Hari wrote: "Area of $ABCD = 10 \times 6 = 60$ cm^2. $\triangle ABE$ is on the same base between the same parallels, so its area is also 60 cm^2."

4 Work backwards [3]

Solve the following problem. Show your working.

A parallelogram and a triangle stand on the same base of 8 cm and between the same parallels. The parallelogram's area is 24 cm^2 more than the triangle's. Find both areas and the distance between the parallel lines.

Answer: _____

5 In a real setting [4]

Solve the following problem. Show your working.

A rectangular field is 120 m long (west to east) and 64 m wide. The boundary between Ram's land (to the west) and Sita's runs from a stone A on the north edge, 40 m from the north-west corner, to a tree P, 80 m from the west edge and 32 m from the south edge, and on to a stone B on the south edge, 70 m from the south-west corner. They want one straight boundary from A to a point Q on the south edge, with no change in either share. How far from the south-west corner is Q? Check that Ram's share is the same before and after.

Answer: _____

6 Is the claim true? [2]

Answer the following question. Give a reason.

Mina says: "If a triangle and a parallelogram have the same base and the same area, the triangle is twice as tall as the parallelogram." Is she right?

7 Make your own [2]

Answer the following question.

Choose the bases of a parallelogram and a triangle, drawn between the same two parallel lines 4 cm apart, so that the triangle's area is three quarters of the parallelogram's. Give both areas.

8 Think [2]

Think, then answer.

Through A, the top of $\triangle ABC$, a line is drawn parallel to BC. A point D moves along it, farther and farther from A. What happens to the area of $\triangle DBC$, and to its perimeter?