Unit 11 · Construction

WORKSHEET

Full marks 22

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

1 Key words [3]

Fill in each blank with a word from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

alternate	**bisector**	**corresponding**	**diagonal**	**half**	**height**	**sketch**	**twice**

Before constructing, draw a rough _____ and write the given measures on it. To draw a line through A parallel to BC, make $\angle BAS$ equal to $\angle ABC$: they are _____ angles. Figures on the same base whose tops lie on that line have the same _____. A parallelogram equal in area to a triangle stands on _____ the triangle's base; a triangle equal to a parallelogram stands on _____ its base. To find the midpoint of a side, draw its perpendicular _____.

2 Multiple choice [5]

Choose the correct option for each of the following questions.

i. $\triangle ABC$ is drawn and ST is drawn through A parallel to BC. Which triangle has the same area as $\triangle ABC$? [1]

a. any triangle with a side equal to BC

b. $\triangle DBC$, for any point D on ST

c. $\triangle ABD$, for any point D on BC

d. only a triangle congruent to $\triangle ABC$

ii. A triangle has a base BC of 8 cm. A parallelogram of the same area, between the same parallels, should stand on a base of [1]

a. 16 cm **b.** 4 cm

c. 8 cm **d.** 2 cm

iii. Parallelogram $ABCD$ is drawn with $AB = 5$ cm. To construct a triangle of the same area with its base along AB produced, the base should be [1]

a. 2.5 cm **b.** 5 cm

c. 10 cm **d.** 15 cm

iv. To turn quadrilateral $PQRS$ into a triangle of the same area with the corner R removed, you draw a line through R parallel to [1]

a. PQ **b.** PR

c. SQ **d.** RS

v. Parallelogram $ABCD$ has $AB = 4$ cm and lies between parallels 5 cm apart. You want a parallelogram on AB with the same area and a side AP. Which length of AP is impossible? [1]

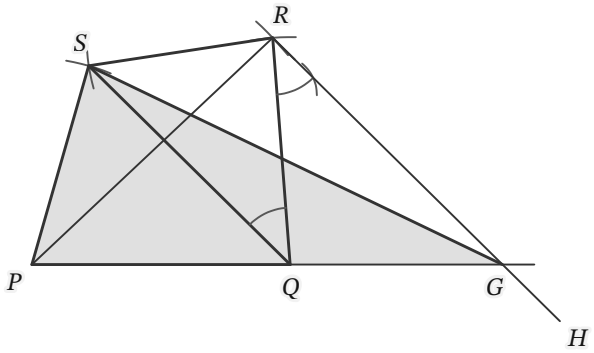
a. 4 cm **b.** 5 cm

c. 6 cm **d.** 9 cm

3 Short answers [4]

Answer the following questions.

a. In the figure, $\triangle QGS$ has the same area as $\triangle QRS$. Why? [2]

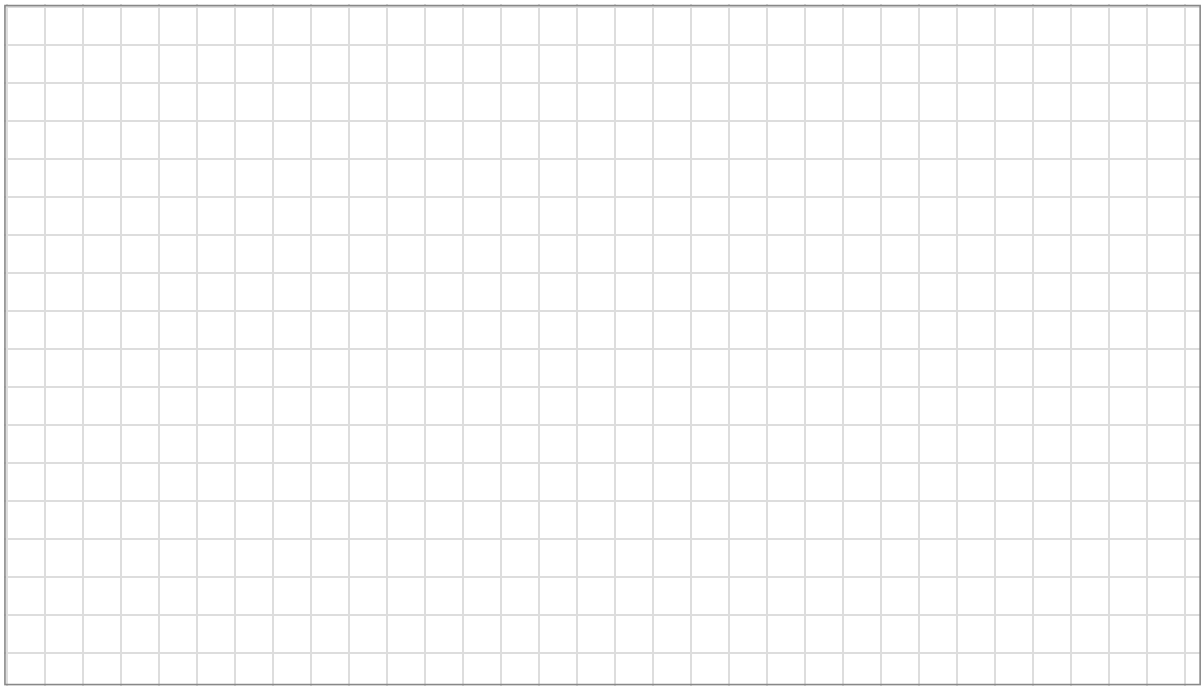


b. To construct a rectangle equal in area to $\triangle ABC$, you bisect BC at D and build the rectangle $DCFE$ on DC, up to the line through A parallel to BC. Why on DC, half of BC, and not on the whole of BC? [2]

4 Constructions [8]

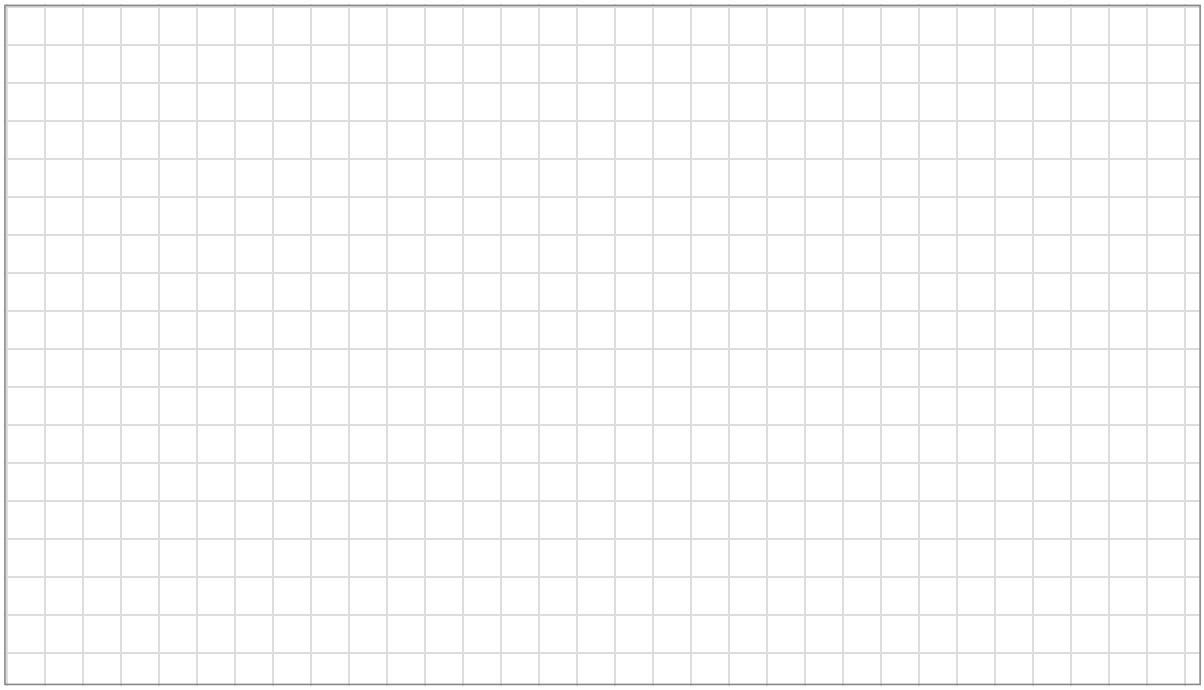
Construct the following. Keep every arc, and write the relation between the areas.

a. Construct parallelogram $ABCD$ with $AB = 5$ cm, $BC = 4.5$ cm and $\angle ABC = 60°$. Then construct a parallelogram $ABQP$ of the same area with $\angle ABQ = 90°$. Write the relation between their areas, with a reason. [4]



Answer: _____

b. Construct $\triangle PQR$ with $QR = 6$ cm, $PQ = 5$ cm and $PR = 5.5$ cm. Then construct a parallelogram with an angle of $60°$ and the same area as $\triangle PQR$. Write the relation between their areas, with a reason. [4]



Answer: _____

5 Think [2]

Think, then answer.

How would you turn a five-sided figure *ABCDE* into a triangle of the same area, with ruler and compass?

6 Activity: Check by measuring (not marked)

Do one of your constructions again carefully. Measure each figure's base and height (the distance between the parallel lines, at right angles) and work out its area.

Figure	Base, cm	Height, cm	Area, cm^2
the given figure			
the new figure			

How close are the two areas? Why might they differ a little?