Unit 10 · Triangle and Quadrilaterals

WORKSHEET

Full marks 26

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 26

1 Key words [3]

Match each word in Column A with its meaning in Column B. Write the letter in the box. One meaning in Column B is not needed. Each match carries 0.5 mark.

Column A		Column B
1. same base	☐	**a.** the longest side of a triangle
2. between the same parallels	☐	**b.** joins a corner to the midpoint of the opposite side, halving the triangle
3. congruent	☐	**c.** the distance between the two parallel lines
4. median	☐	**d.** one side of each figure is the same segment
5. diagonal of a parallelogram	☐	**e.** the bases on one line, the opposite sides or corners on a line parallel to it
6. height	☐	**f.** cuts it into two triangles of equal area
		g. the same shape and the same size

2 Multiple choice [5]

Choose the correct option for each of the following questions.

i. Parallelogram $ABCD$ has an area of 40 cm^2, and E is any point on DC. What is the area of $\triangle ABE$? [1]

a. 10 cm^2 **b.** 20 cm^2

c. 40 cm^2 **d.** It depends on where E is.

ii. A parallelogram stands on a base of 8 cm between two parallel lines 5 cm apart. Its slanting side is 6 cm. What is its area? [1]

a. 48 cm^2 **b.** 40 cm^2

c. 30 cm^2 **d.** 20 cm^2

iii. A rectangle 6 cm by 4 cm and a parallelogram stand on the same 6 cm base, between the same parallels. What is the area of the parallelogram? [1]

a. 24 cm^2

b. 12 cm^2

c. 48 cm^2

d. It can't be found without its slanting side.

iv. Triangles ABC and ABD have equal areas and stand on the same base AB, on the same side of it. What follows? [1]

a. $AC = BD$ **b.** $CD \parallel AB$

c. The triangles are congruent. **d.** $AD \parallel BC$

v. Between the same two parallel lines, a triangle stands on a base of 10 cm and a parallelogram on a base of 5 cm. How do their areas compare? **[1]**

a. They are equal.

b. The triangle is half the parallelogram.

c. The triangle is twice the parallelogram.

d. The triangle is a quarter of the parallelogram.

3 Very short answers [2]

Write very short answers to the following questions.

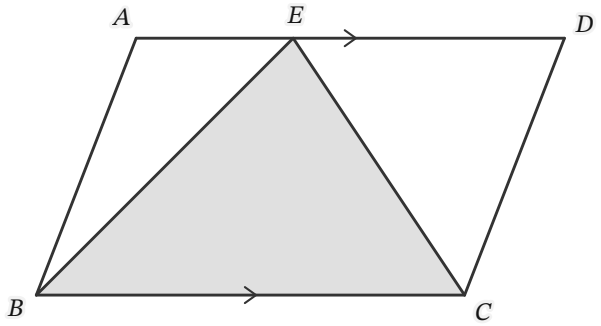
a. Write the relation between the areas of two triangles standing on the same base and lying between the same parallel lines. **[1]**

b. PR is a diagonal of parallelogram $PQRS$. What fraction of the parallelogram is $\triangle PQR$? **[1]**

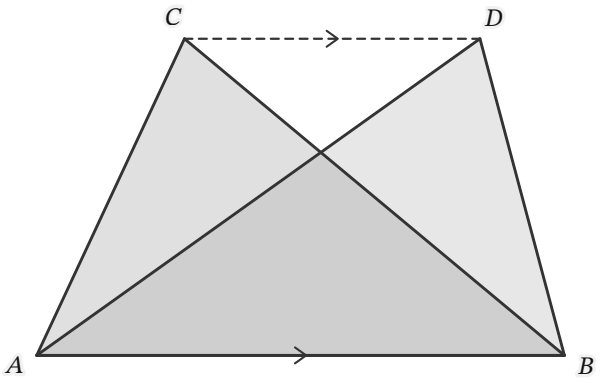
4 Short answers [6]

Answer the following questions.

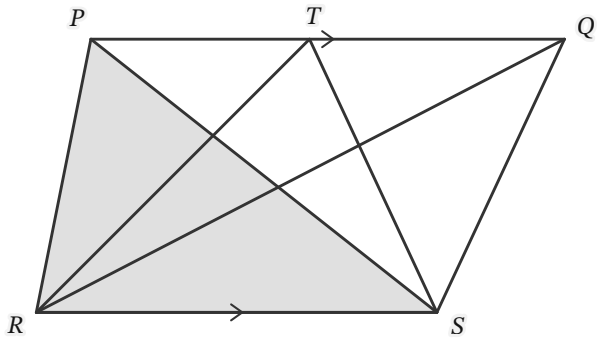
a. In the figure, $ABCD$ is a parallelogram of area 72 cm^2 and E is a point on AD. Find the area of $\triangle BEC$, and the total area of $\triangle ABE$ and $\triangle CDE$. **[2]**



b. In the figure, $\triangle ABC$ and $\triangle ABD$ stand on the base $AB = 6$ cm and $CD \parallel AB$. The area of $\triangle ABC$ is $15\ cm^2$. Find the area of $\triangle ABD$ and the distance between AB and CD. **[2]**



c. In the figure, P, T and Q lie on a line parallel to RS. $RS = 8$ cm and the area of $\triangle TRS$ is $28\ cm^2$. Find the area of $\triangle QRS$ and the distance between the two parallel lines. **[2]**

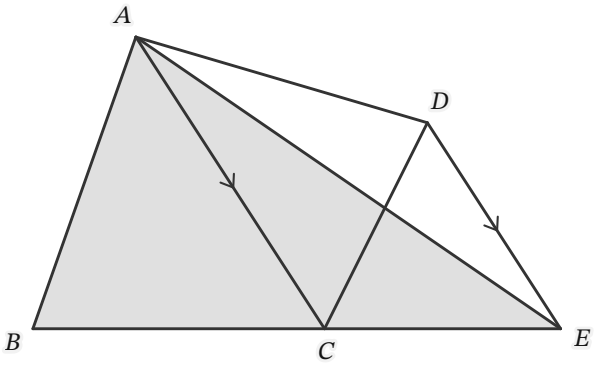


Science Playground, Katunje, Bhaktapur
https://science-playground.com/learn/grade-10-math/triangle-and-quadrilaterals

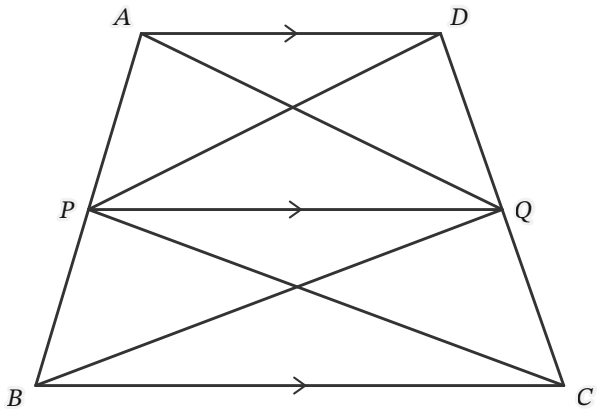
5 Long answers [8]

Prove the following. Write each statement with its reason.

a. In the figure, $ABCD$ is a quadrilateral and $DE \parallel AC$ meets BC produced at E. Prove that area of quadrilateral $ABCD$ = area of $\triangle ABE$. [4]



b. In the figure, $ABCD$ is a trapezium with $AD \parallel PQ \parallel BC$, P on AB and Q on DC. Prove that area of $\triangle AQB$ = area of $\triangle DPC$. **[4]**



6 Think **[2]**

Think, then answer.

Rita says: "Two triangles with the same area must stand on the same base and between the same parallels." Is she right? Give an example.

7 Activity: Count the squares

(not marked)

On squared paper, draw two lines 4 squares apart along the grid. On the lower line mark a base AB of 6 squares. Draw a rectangle, a slanting parallelogram and two different triangles, all on AB with their tops on the upper line. Count (or work out) each figure's area in squares.

Figure	Area in squares
rectangle on AB	
slanting parallelogram on AB	
first triangle on AB	
second triangle on AB	

What do you notice?