

## CHAPTER-9

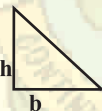

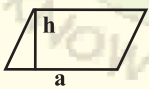
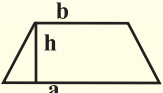
# Areas of Parallelograms and Triangles

### Task-1: Worksheet-1

Nature of task	Pre-content
Learning objective	To recall formulae of area of all types of quadrilaterals.
Execution of task	Worksheet can be distributed to the students with 10 minutes time to complete it.
Duration	10 minutes
Criteria for assessment	No assessment in terms of grading required here. Task can be used for diagnostic purpose only.
Followup	By discussion of questions in worksheet followed by oral questions.

### Worksheet-1

Q1.

FIGURE	Area
	
	
	
	



Q2. Fill in the blanks:

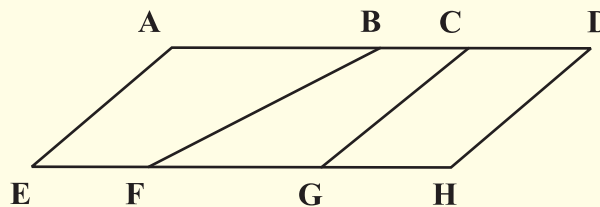
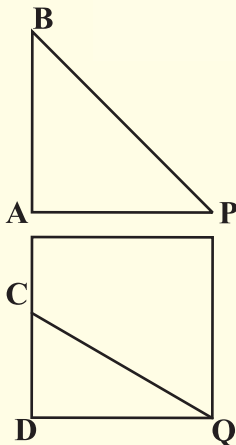
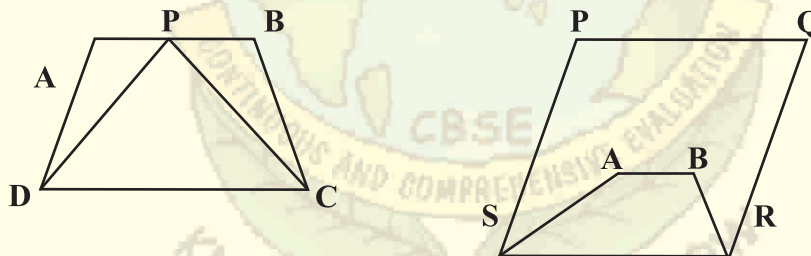
- a) Congruent figures have same \_\_\_\_\_.
- b) A diagonal divides a parallelogram in two \_\_\_\_\_ triangles.

**Task-2: Worksheet-2**

Nature of task	Content
Learning objective	To identify the figures on the same base and between same parallels and to name their.
Execution of task	Worksheet can be distributed to the students with 10 minutes time to complete it.
Duration	10 minutes
Criteria for assessment	No assessment in terms of grading required here. Task can be used for diagnostic purpose only.
Followup	Discussion of questions in worksheet on blackboard/ geoboard.

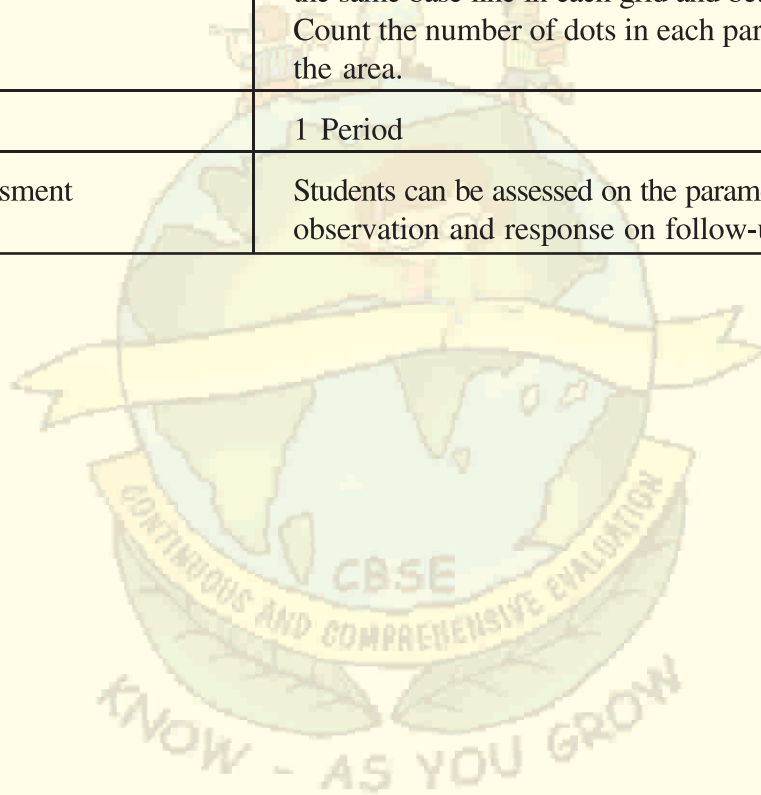
**Suggestive questions for Worksheet-2**

Q1. Which of the following figures lie on the same base and between the same parallels? In each case write the common base and the parallel lines.



**Task-3: Hands on activity**

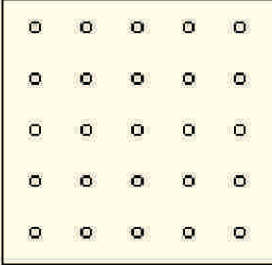
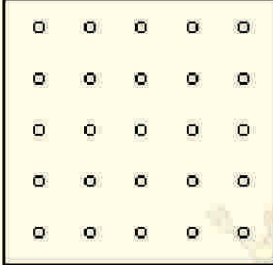
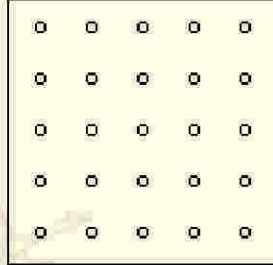
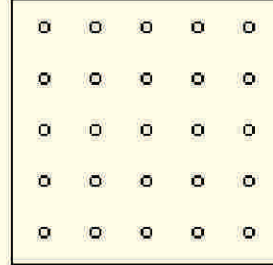
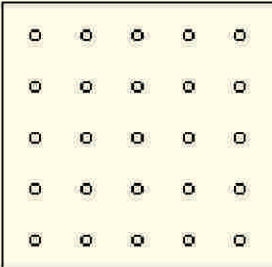
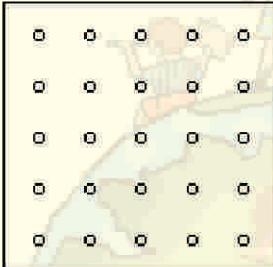
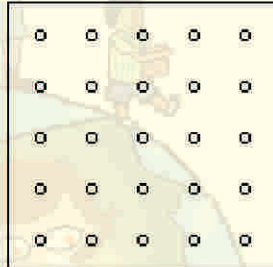
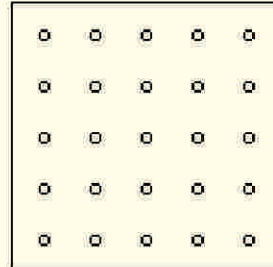
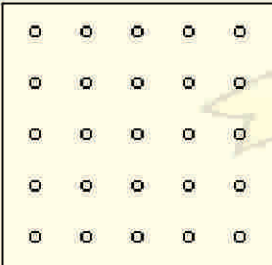

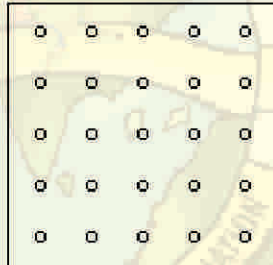
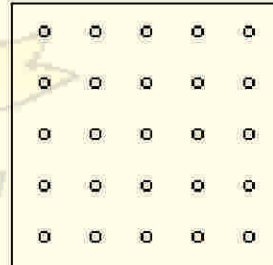
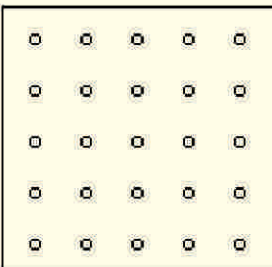
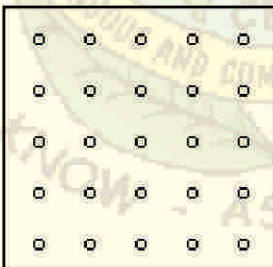
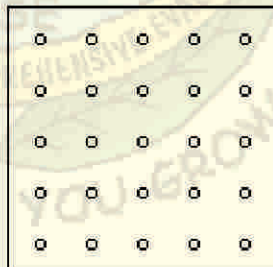
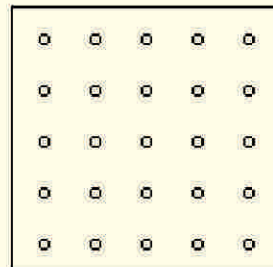
Nature of task	Content
Learning objective	To understand that area of parallelograms on the same base and between the same parallels are equal
Execution of task	With the help of geo-board/dotted sheets students can explore the area of different parallelograms on the same base and between the same parallels. Teacher may distribute the photocopy of the following geo-sheet to all students. In each grid students can draw a line joining the four dots horizontally and a line joining five dots vertically. Complete the parallelogram, rectangle...on the same base line in each grid and between same height. Count the number of dots in each parallelogram to find the area.
Duration	1 Period
Criteria for assessment	Students can be assessed on the parameter of class ethics, observation and response on follow-up sheet.



### GEO-BOARD / DOTTED SHEET

**5 x 5 Geoboard Dot Paper**

Name \_\_\_\_\_ Date \_\_\_\_\_

**CONCLUSION:**

Teacher's signature:

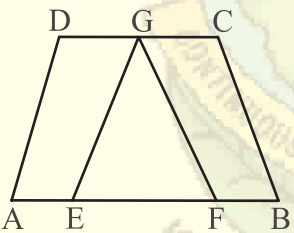
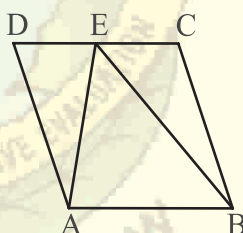


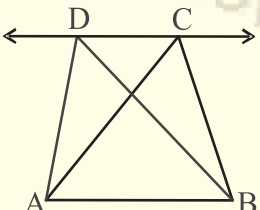
**Task-4: Multiple Choice Questions**

Nature of task	Post-content
Learning objective	To apply the concepts learnt about the area of parallelogram and triangle on the same base and between same parallels.
Execution of task	Teacher can distribute the MCQ sheet to students. Students can exchange their sheets to check the answers explained by the teacher after the worksheet is over.
Duration	25 minutes
Criteria of assessment	One mark for correct answer and no marks for incorrect answer.
Follow-up task for further assessment	Discussion in the classroom about common errors.

**MCQ Worksheet**

- Given figure A and figure B such that  $ar(A) = 20$  sq. units and  $ar(B) = 20$  sq. units. The
  - Figure A and B are congruent
  - Figure A and B may or may not be congruent
  - Figure A and B are all not congruent
- Out of the given figures, mark which are not on the same base but between same parallels

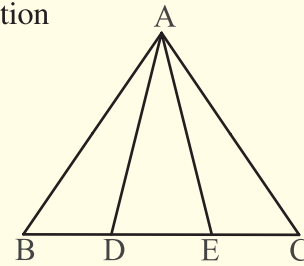
A.  B. 

C.  D. None of these



3. In the given figure,  $BD = DE = EC$ . Mark the correct option

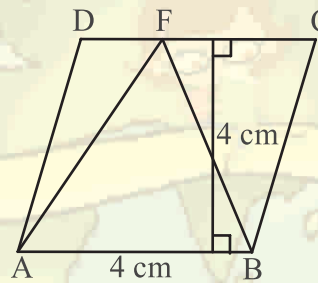
- A.  $\text{ar}(\triangle ABD) = \text{ar}(\triangle AEC)$
- B.  $\text{ar}(\triangle DBA) = \text{ar}(\triangle ADC)$
- C.  $\text{ar}(\triangle ADE) = \frac{1}{3} \text{ar}(\triangle ABC)$
- D.  $\text{ar}(\triangle ABE) = \frac{2}{3} \text{ar}(\triangle ABC)$



4. ABCDE is a pentagon. A line through B line parallel to AC meet DC produced at F

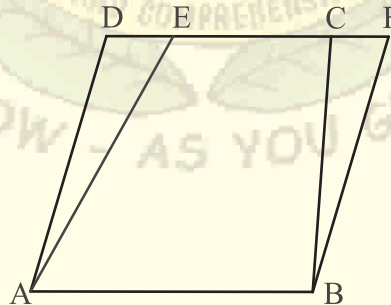
- A.  $\text{ar}(\triangle ACB) = \text{ar}(\triangle ACF)$
- B.  $\text{ar}(\triangle ABF) = \text{ar}(\triangle CABF)$
- C.  $\text{ar}(\triangle ACF) = \text{ar}(\triangle CBF)$
- D.  $\text{ar}(\triangle ABF) = \text{ar}(\triangle ABC)$

5. In the figure, ABCD is a parallelogram, then  $\text{ar}(\triangle AFB)$  is



- A.  $16 \text{ cm}^2$
- B.  $8 \text{ cm}^2$
- C.  $4 \text{ cm}^2$
- D.  $2 \text{ cm}^2$

6. In the given figure, ABCD and ABFE are parallelograms and  $\text{ar}(\text{quad. EABC}) = 17 \text{ cm}^2$   
 $\text{ar}(\text{parallelogram ABCD}) = 25 \text{ cm}^2$  then  $\text{ar}(\triangle BCF)$  is



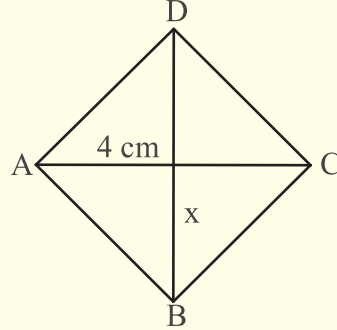
- A.  $4 \text{ cm}^2$
- B.  $8 \text{ cm}^2$
- C.  $4.8 \text{ cm}^2$
- D.  $6 \text{ cm}^2$

7. Given  $\text{ar}(\triangle ABC) = 32 \text{ cm}^2$ , AD is median of  $\triangle ABC$ , and BE is median of  $\triangle ABD$ . If BO is median of  $\triangle ABE$ , the  $\text{ar}(\triangle BOE)$  is

- A.  $16 \text{ cm}^2$
- B.  $4 \text{ cm}^2$
- C.  $2 \text{ cm}^2$
- D.  $1 \text{ cm}^2$



8. In the given figure, find  $x$ , if ABCD is a rhombus and  $AC = 4$  cm,  $ar(ABCD) = 20$  cm<sup>2</sup>



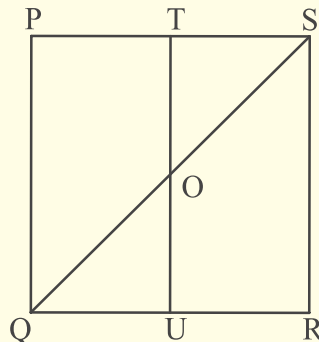
- A. 4 cm                      B. 5 cm                      C. 10 cm                      D. 2.5 cm

**Task-5: Home Assignment**

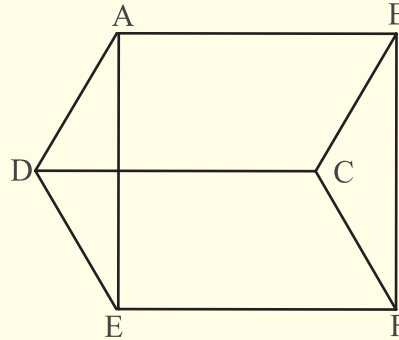
Topic	Area of Parallelogram and Triangles
Nature of task	Post-content
Learning objective	To apply the concepts learnt about the area of parallelogram & triangle on the same base and between same parallels.
Execution of task	For extra practise of content taught, home assignment can be given after the completion of Chapter.
Duration	2 to 3 days
Criteria of assessment	Follow CW / HW / assignment rubric
Follow-up	Class discussion. Answers to the questions may be discussed in class room and individual queries may be answered.

**Home Assignment**

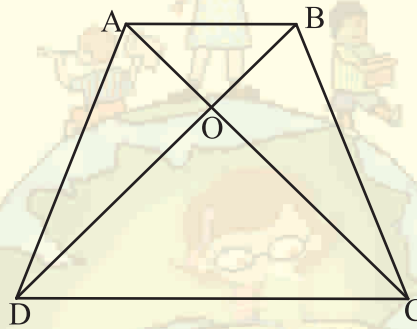
1. ABCD is a parallelogram  $x$  and  $y$  are mid-points of BC and CD respectively. Prove that  $ar(\Delta AXY) = 3/8 ar(11^{gm} ABCD)$
2. The medians BE and CF of a triangle ABC intersect at G.. Prove that  $ar(\Delta GBC) =$  area of quadrilateral AFGE.
3. In Fig. PQRS is a square and T and U are respectively, the mid-points of PS and QR. Find the area of  $\Delta OTS$  if  $PQ = 8$  cm



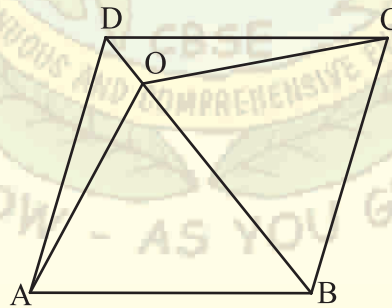
4. In Fig, ABCD, ABFE and CDEF are parallelograms. Prove that  $\text{ar}(\triangle ADE) = \text{ar}(\triangle BCF)$ .



5. In fig, ABCD is a trapezium in which  $AB \parallel DC$ . Prove that area of  $\triangle AOD =$  area of  $\triangle BOC$ .



6. The diagonals of parallelogram ABCD intersect at a point O. Through O, a line is drawn to intersect AD at P and BC at Q. Show PQ divides the parallelogram into two parts of equal area.
7. In the fig. O is any point on the diagonal BD of the parallelogram ABCD. Prove that  $\text{ar}(\triangle OAB) = \text{ar}(\triangle OBC)$



8. Show that the diagonals of a parallelogram divide it into four triangles of equal area.





9. In fig. ABCD is a parallelogram and BC is produced to a point Q such that  $AD = CQ$ . If AQ intersects DC at P, show that  $\text{ar}(\triangle BPC) = \text{ar}(\triangle DPQ)$

