**GROUP-5**

**MINIMUM LEVEL OF LEARNING**

**CLASS -9**

**AREAS OF TRIANGLES AND PARLLELOGRAM**

**IMPORTANT POINTS TO REMEMBER:**

* Two congruent figures have equal areas but the converse need not be true.
* Two figures are said to be on the same base and between the same parallels, if they have

 a common base (side) and the vertices, (or the vertex) opposite to the common base of

 each figure lie on a line parallel to the base.

* Parallelograms on the same base (or equal bases) and between the same parallels are

 equal in area.

* Area of a parallelogram is the product of its base and the corresponding altitude.
* Parallelograms on the same base (or equal bases) and having equal areas lie between the

 same parallels.

* If a parallelogram and a triangle are on the same base and between the same parallels, then

 area of the triangle is half the area of the parallelogram.

* Triangles on the same base (or equal bases) and between the same parallels are equal in

 area.

* Area of a triangle is half the product of its base and the corresponding altitude.
* Triangles on the same base (or equal bases) and having equal areas lie between the same

 parallels.

* A median of a triangle divides it into two triangles of equal areas.

**LEVEL-1**

1. Which of the following figures lie on the same base and between the same parallels.

In such a case, write the common base and the two parallels.



1. Parallelograms on the same base and between the same parallels

 are equal in area.

1. If a triangle and a parallelogram are on the same base and between the

 same parallels, then prove that the area of the triangle is equal to half the area of the

parallelogram.

1. Show that a median of a triangle divides it into two triangles of equal

Areas.

**LEVEL-2**

1. In Fig. 9.15, ABCD is a parallelogram, AE $⊥$ DC and CF $⊥$AD. If AB = 16 cm, AE = 8 cm and CF = 10 cm, find AD.



1. P and Q are any two points lying on the sides DC and AD respectively of a parallelogram

ABCD. Show that ar (APB) = ar (BQC).

1. A farmer was having a field in the form of a parallelogram PQRS. She took any point A

on RS and joined it to points P and Q. In how many parts the fields is divided? What

are the shapes of these parts? The farmer wants to sow wheat and pulses in equal

 portions of the field separately. How should she do it?

1. In a triangle ABC, E is the mid-point of median AD. Show that ar (BED) = $\frac{1}{4}$ar(ABC)

.**LEVEL-3**

1. In Fig. PQRS and ABRS are parallelograms and X is any point on side BR. Show that

(i) ar (PQRS) = ar (ABRS)

(ii) ar (AX S) = $\frac{1}{2}$ ar (PQRS)



1. Show that the diagonals of a parallelogram divide it into four triangles of equal area.
2. Diagonals AC and BD of a trapezium ABCD with AB || DC intersect each other at O.

Prove that ar (AOD) = ar (BOC).

1. In Fig. ABCDE is a pentagon. A line through B parallel to AC meets DC produced at F. Show

that

(i) ar (ACB) = ar (ACF)

(ii) ar (AEDF) = ar (ABCDE)

