

# THE VILLAGE INTERNATIONAL SCHOOL

## QUESTION BANK – MATHEMATICS

**GRADE: 9**

**CHAPTER: QUADRILATERALS**

### MULTIPLE CHOICE QUESTIONS:

1. In a  $\Delta ABC$ , P,Q,R, are the midpoints of the sides BC, CA and AB respectively. If  $AC = 21\text{ cm}$ ,  $BC = 29\text{ cm}$ ,  $AB = 30\text{ cm}$ . Find the perimeter of quadrilateral ARPQ.  
(A) 20 cm.                      (B) 52 cm                      (C) 51 cm                      (D) 80 cm
2. The quadrilateral formed by joining the midpoints of the sides of the quadrilateral PQRS taken in order, is a rectangle if diagonals of  
(A) PQRS are at right angles                      (B) PQRS is rectangle  
(C) PQRS is a parallelogram                      (D) none of these
3. The diagonal of a rectangle is inclined to one side of the rectangle at  $25^\circ$ . The acute angle between the diagonals is  
(A)  $55^\circ$                       (B)  $50^\circ$                       (C)  $40^\circ$                       (D) none of these
4. ABCD is rhombus such that  $\angle ACB = 40^\circ$  then  $\angle ADB$  is  
(A)  $40^\circ$                       (B)  $45^\circ$                       (C)  $50^\circ$                       (D)  $60^\circ$

### ASSERTION AND REASON:

**Direction:** Each of these questions contains an assertion followed by reason. Read them carefully and answer the questions on the basis of following options, select the one that best describes the two statements.

- (a) If both assertion and reason are correct and reason is the correct explanation of assertion.
- (b) If both assertion and reason are correct but reason is not the correct explanation of assertion.
- (c) If assertion is correct but reason is incorrect.
- (d) If assertion is incorrect but reason is correct

5. **ASSERTION:** The line segment joining the mid points of any two sides of a triangle is parallel to the third side and equal to half of it.

**REASON:** Diagonal of a parallelogram divides it into two congruent triangles.

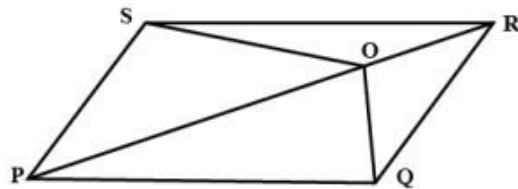
### SHORT ANSWER QUESTIONS:

6. ABCD is a rectangle in which diagonals BD bisects  $\angle B$ . show that ABCD is a square.
7. If in a parallelogram ABCD,  $AB = x + 5$  and  $BC = x + 11$  and perimeter is 40 cm. Find x.
8. If in a parallelogram ABCD, AC is a diagonal. If the area of ABCD is  $180\text{ cm}^2$ . Find the area of  $\Delta ABC$ .
9. Show that each angle of rectangle is a right angle.
10. The perimeter of parallelogram is 32 cm. If the longer side is 9.5 cm, then find the measure of shorter side.
11. In a trapezium ABCD,  $AB \parallel CD$ , if  $\angle A = 55^\circ$ ,  $\angle B = 70^\circ$ , find  $\angle C$  and  $\angle D$ .
12. The diagonals of rectangle ABCD intersect at a point O. If  $\angle COD$  is  $78^\circ$ , then find  $\angle OAB$ .

13. The angles of a quadrilateral are in the ratio 2:3:4:6. Find the angles of quadrilateral.
14. In a parallelogram PQRS, If angle P =  $(3x - 5)$  and angle Q =  $(2x + 15)$ . Find the value of x
15. The adjacent angles of a parallelogram are  $(3x + 10)$  and  $(5x - 30)$ . Find the value of x

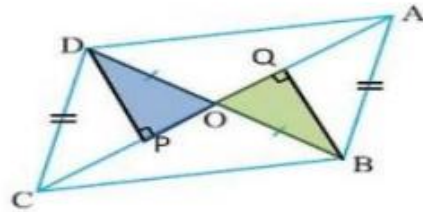
**LONG ANSWER QUESTIONS:**

16. ABCD is a quadrilateral in which P, Q, R and S are mid-points of sides AB, BC, CD and DA respectively. AC is the diagonal. Show that:
- $SR \perp AC$  and  $SR = (1/2) AC$
  - $PQ = SR$
  - PQRS is a parallelogram
17. In ABCD is parallelogram, AE is perpendicular to DC and CF is perpendicular to AD. If AB =12 cm, AE =5 cm, CF =8 cm find AD.
18. Prove that the quadrilateral formed by the bisectors of the angles of a parallelogram is rectangle.
19. E and F are respectively the mid points of the non-parallel sides AD and BC of a trapezium ABCD. Prove that  $EF \perp AB$  and  $EF = \frac{1}{2}(AB + CD)$
20. O is any point on the diagonal PR of parallelogram PQRS. Prove that  $ar(PSO) = ar(PQO)$ .



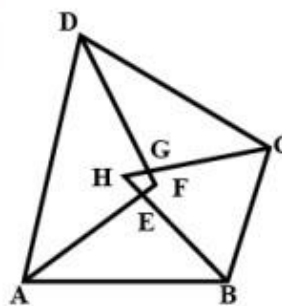
21. In Figure given, diagonals AC and BD of quadrilateral ABCD intersect at O such that  $OB = OD$ . If  $AB = CD$ , then show that:

- $ar(DOC) = ar(AOB)$
- $ar(DCB) = ar(ACB)$
- $DA \parallel CB$



22. In figure given, prove that the quadrilateral EFGH internal angle bisectors of the quadrilateral ABCD is

formed by the cyclic.

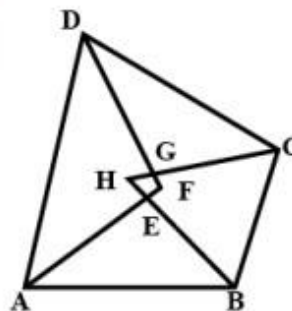


**CASE STUDY BASED QUESTIONS**

23. There is a Holi celebration in the KV school Rishikesh. Girls are asked to prepare Rangoli in a triangular shape. They made a rangoli in the shape of triangle ABC. Dimensions of  $\triangle ABC$  are 26 cm, 28 cm, 25 cm.

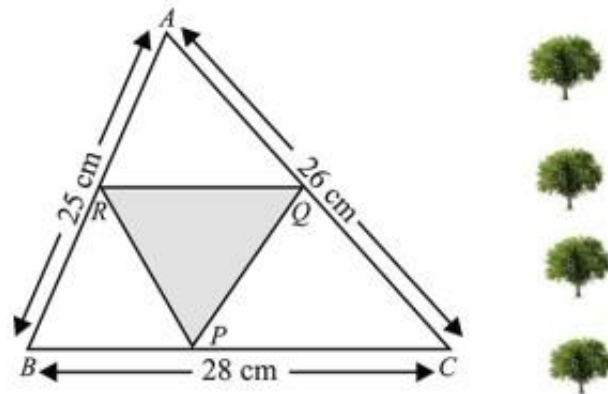
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**CASE STUDY BASED QUESTIONS**

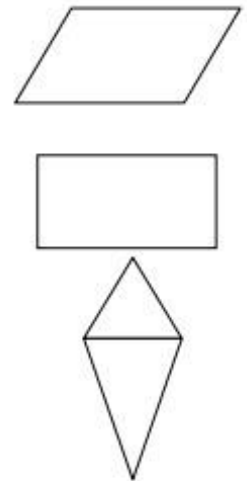
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- In fig, R is mid-point of AB and  $RQ \parallel BC$  then AQ is equal to
  - QC
  - RB
  - BC
  - AD
- In fig R and Q are mid-points of AB and AC respectively. The length of RQ is:
  - 13
  - 14
  - 12.5
  - 13.5
- If Garland is to be placed along the side of  $\triangle QPR$  which is formed by joining midpoint, what is the length of garland?
  - 39.5 cm
  - 49.5 cm
  - 35 cm
  - 79.5 cm

24. During Math Lab Activity each student was given four broomsticks of lengths 10cm, 10cm, 6cm, 6cm to make different types of quadrilaterals.

- How many quadrilaterals can be formed using these sticks?
  - Only one type of quadrilateral can be formed
  - Two types of quadrilaterals can be formed.
  - Three types of quadrilaterals can be formed.
  - Four types of quadrilaterals can be formed.
- Name the types of quadrilaterals formed?
  - Rectangle, Square, Parallelogram
  - Kite, Trapezium, parallelogram
  - Rectangle, Square, Kite
  - Rectangle, Kite, Parallelogram
- Which of the following is not true for a parallelogram?
  - opposite sides are equal
  - opposite angles are equal
  - opposite angles are bisected by the diagonals
  - diagonals do not bisect each other.



## ANSWERS:

1. (C) 51cm
2. (A) PQRS are at right angles
3. (B)  $50^\circ$
4. (C)  $50^\circ$
5. (A)
6. Solve
7. 2cm
8.  $90\text{cm}^2$
9. Solve
10. 6.5cm
11.  $\angle C = 110^\circ$  and  $\angle D = 125^\circ$
12.  $78^\circ$
13.  $48^\circ, 72^\circ, 96^\circ, 144^\circ$
14.  $34^\circ$
15.  $20^\circ$
16. Solve
17. AD = 7.5CM
18. Solve
19. Solve
20. Solve
21. Solve
22. Solve
23. 1) a. QC    2) b. 14    3) a. 39.5 cm
24. 1) c                    2) d                    3) d