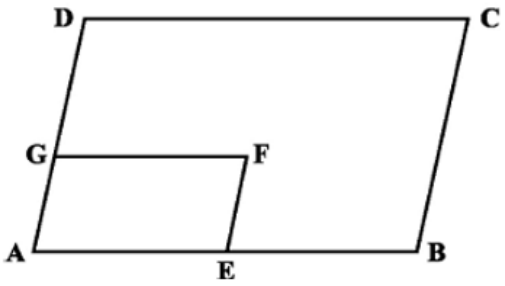
INDIAN SCHOOL AL WADI AL KABIR
Department: Mathematics
Class IX **Worksheet – QUADRILATERALS**

Questions of 1 mark each

Q.1. The angles of a quadrilateral are x°, (x – 10) °, (x + 30) ° and (2x) °, the smallest angle is

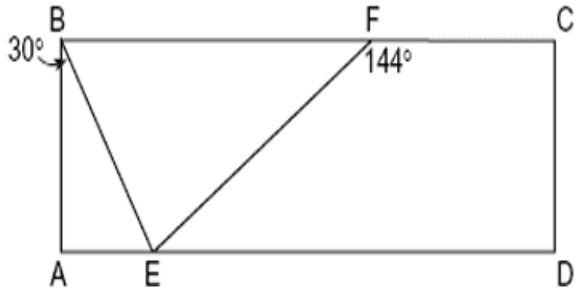
A	68°	B	52°	C	58°	D	47°

Q.2. In the given figure, ABCD and AEFG are two parallelograms. If $\angle C = 55°$, determine $\angle F$.



A	35°	**B**	75°	**C**	55°	**D**	105°

Q.3. In the given fig. ABCD is a rectangle. If ∠ABE = 30° and ∠CFE = 144°, then the measure of ∠BEF is



A	36°	B	60°	C	84°	D	90°

Q.4. The diagonals AC and BD of a parallelogram ABCD intersect each other at the point O. If ∠DAC = 32° and ∠AOB = 72°, then ∠DBC is

A	32°	B	40°	C	24°	D	63°

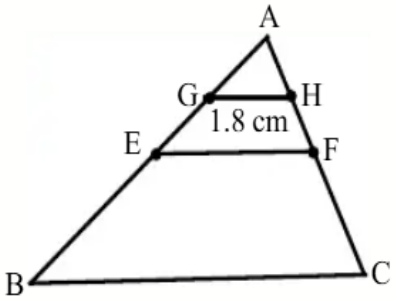
Q.5. In a square ABCD, AB = (2x + 3) cm and BC = (3x – 5) cm. Then the value of x is

A	8	B	5	C	7	D	10

Q.6. The measures of two adjacent angles of a parallelogram are in the ratio 3 : 2. The measure of the angles are:

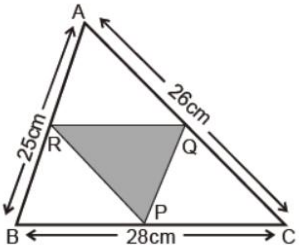
A	52°, 104°	B	74°, 106°	C	108°,72°	D	102°, 54°

Q.7. In the figure, E and F are mid-points of the sides AB and AC respectively of the ΔABC; G and H are the midpoints of the sides AE and AF respectively of the ΔAEF. If GH = 1.8 cm, find BC.



A	1.8cm	B	3.6cm	C	5.4cm	D	7.2cm

Q.8. Students were asked to prepare Rangoli in triangular shape. Dimensions of ΔABC are 26 cm, 28 cm and 25 cm. A garland is to be placed along side of ΔPQR which is formed by joining midpoints of sides of ΔABC. Then the length of the garden required will be:



A	79 cm	B	37.5 cm	C	39.5cm	D	54 cm

Q.9. If one angle of a parallelogram is 24° less than twice the smallest angle, then the measure of the largest angle of a parallelogram is

A	176°	B	68°	C	114°	D	112°

ASSERTION REASONING

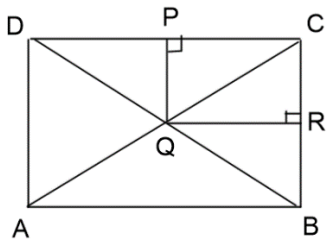
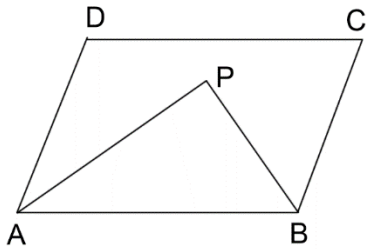
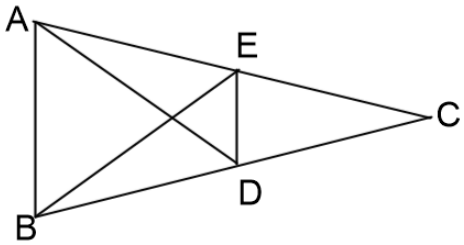
Directions: *In the following question, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:*

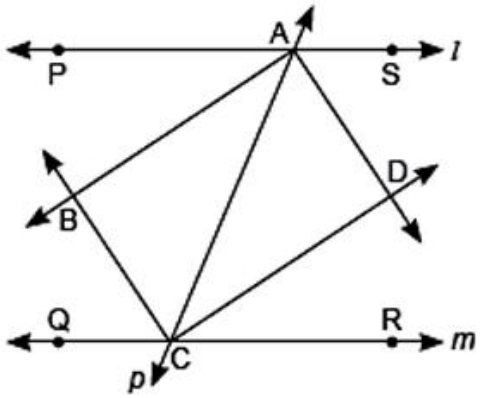
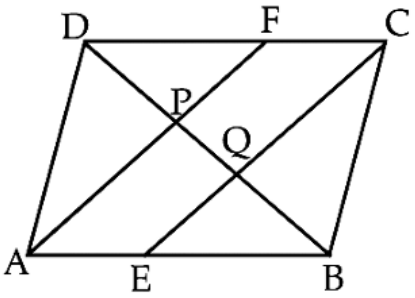
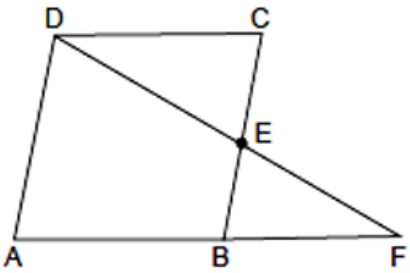
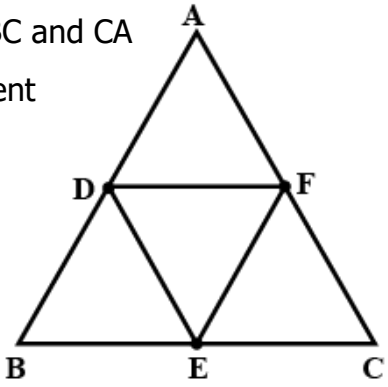
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(C) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

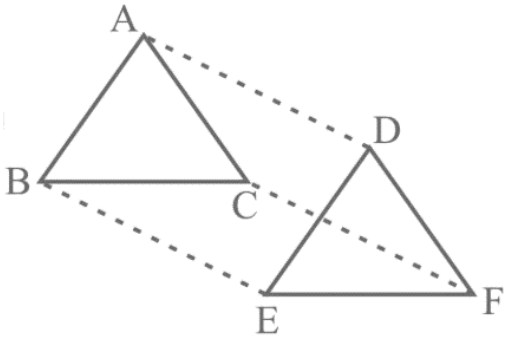
Q.10	ASSERTION: ABCD and PQRC are rectangles and Q is a midpoint of AC. Then DP = PC.  REASON: The line segment joining the midpoint of any two sides of a triangle is parallel to the third side and equal to half of it.
Q.11	ASSERTION: If the angles of a quadrilateral are in the ratio 2 : 3 : 7 : 6, then the measure of angles are 40^0, 60^0, 140^0 120^0, respectively. REASON: The sum of the angles of a quadrilateral is 360^0.
Questions of 2 marks each	
Q.12	In a parallelogram ABCD, bisectors of adjacent angles A and B intersect at P. Prove that ∠APB=90°. 
Q.13	In the given figure, AD is the median and DE ∥ AB. Prove that BE is the median. 
Questions of 3 marks each	
Q.14	Prove that a diagonal of a parallelogram divides it into two congruent triangles.

Q.15	Two parallel lines l and m are intersected by a transversal p. Show that the quadrilateral formed by the bisectors of interior angles is a rectangle. 
Q.16	In the figure, ABCD is a parallelogram. E and F are the mid-points of sides AB and CD respectively. Show that the line segments AF and EC trisect the diagonal BD. 
Q.17	ABCD is a parallelogram and E is the mid-point of side BC. DE and AB on producing meet at F. Prove that AF = 2AB. 
Questions of 5 marks each	
Q.18	In Δ ABC, D, E and F are respectively the mid-points of sides AB, BC and CA respectively (see fig). Show that Δ ABC is divided into four congruent triangles by joining D, E and F. 

Q.19

In ΔABC and ΔDEF, AB = DE, AB || DE, BC = EF and BC || EF. Vertices A, B and C are joined to the vertices D, E and F respectively. Show that

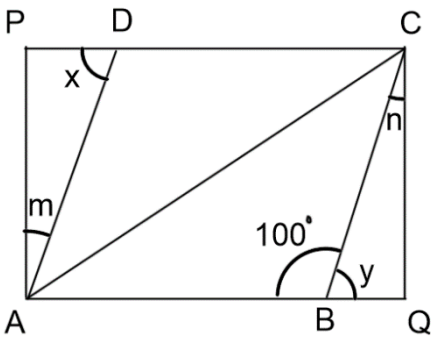
(i) Quadrilateral ABED is a parallelogram.
(ii) Quadrilateral BEFC is a parallelogram.
(iii) AD || CF and AD = CF.
(iv) Quadrilateral ACFD is a parallelogram.
(v) AC = DF
(vi) ΔABC ≅ ΔDEF.



Case study-based (4 marks)

Q.20.

In the middle of the city, there was a park ABCD in the form of a parallelogram form so that AB = CD, AB||CD and AD =BC, AD || BC. Municipality converted this park into a rectangular form by adding land in the form of ΔAPD and ΔBCQ. Both the triangular shape of land were covered by planting flower plants.



On the basis of the above information, solve the following questions:

(a) Show that ΔAPD and ΔBQC are congruent.

OR (2)

What is the value of ∠m?

(b) Which side is equal to PD? (1)

(c) Show that ΔABC and ΔCDA are congruent. (1)

ANSWERS

Q.1	C	**Q.2**	C	**Q.3**	C	**Q.4**	B
Q.5	A	**Q.6**	C	**Q.7**	D	**Q.8**	C
Q.9	D	**Q.10**	B	**Q.11**	A	**Q.20**	a) m = 10° b) BQ