

MATHEMATICS
WORKSHEET_210925
Chapter-05, 06, 07 and 08

SUBJECT: MATHEMATICS

MAX. MARKS : 40

CLASS : IX

DURATION : 1½ hrs

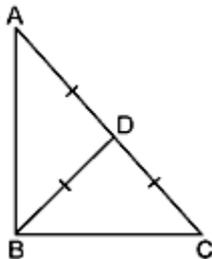
General Instructions:

- (i). All questions are compulsory.
- (ii). This question paper contains 20 questions divided into five Sections A, B, C, D and E.
- (iii). **Section A** comprises of 10 MCQs of 1 mark each. **Section B** comprises of 4 questions of 2 marks each. **Section C** comprises of 3 questions of 3 marks each. **Section D** comprises of 1 question of 5 marks each and **Section E** comprises of 2 Case Study Based Questions of 4 marks each.
- (iv). There is no overall choice.
- (v). Use of Calculators is not permitted

SECTION – A

Questions 1 to 10 carry 1 mark each.

1. In the given figure, the measure of $\angle ABC$ is

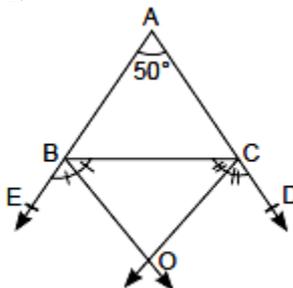


- (a) 60° (b) 30° (c) 45° (d) 90°

2. A diagonal of a rectangle is inclined to one side of the rectangle at 25° . The acute angle between the diagonals is

- (a) 55° (b) 50° (c) 40° (d) 25°

3. In the given figure, measure of $\angle BOC$ is

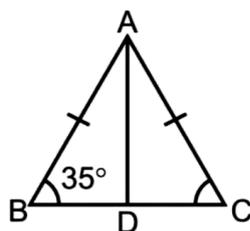


- (a) 50° (b) 65° (c) 60° (d) 55°

4. Given a quadrilateral ABCD, and diagonals AC and BD bisect each other at P such that $AP = CP$ and $BP = DP$. Also $\angle APD = 90^\circ$, then quadrilateral is a

- (a) rhombus (b) trapezium (c) parallelogram (d) rectangle

5. In the given figure, AD is the median, then $\angle BAD$ is



- (a) 35° (b) 70° (c) 110° (d) 55°

6. Diagonals of a rectangle ABCD intersect at O. If $\angle AOB = 70^\circ$, then $\angle DCO$ is
 (a) 70° (b) 110° (c) 35° (d) 55°
7. Difference between 'postulate' and 'axiom' is
 (a) there is no difference
 (b) few statements are termed as axioms other postulates
 (c) 'postulates' are the assumptions used especially for geometry and 'axioms' are the assumptions used throughout mathematics.
 (d) none of these
8. Two angles of a quadrilateral are 60° and 70° and other two angles are in the ratio 8 : 15, then the remaining two angles are
 (a) $140^\circ, 90^\circ$ (b) $100^\circ, 130^\circ$ (c) $80^\circ, 150^\circ$ (d) $70^\circ, 160^\circ$

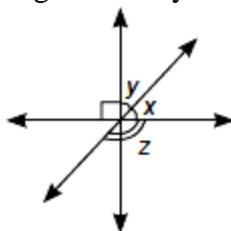
In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

- (a) Both A and R are true and R is the correct explanation of A.
 (b) Both A and R are true but R is not the correct explanation of A.
 (c) A is true but R is false.
 (d) A is false but R is true.

9. **Assertion (A):** The quadrilateral formed by joining the midpoints of consecutive sides of a quadrilateral whose diagonals are perpendicular is a rectangle.

Reason (R): The line segment in a triangle joining the midpoint of any two sides of the triangle is said to be parallel to its third side and is also half of the length of the third side and the quadrilateral formed by joining the midpoints of consecutive sides of a quadrilateral is a parallelogram.

10. **Assertion (A):** In the given figure, if the angles x and y are in the ratio 2 : 3, then angle z is 144°

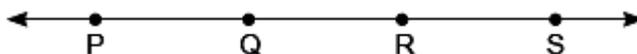


Reason (R): The angles are said to be linear if they are adjacent to each other after the intersection of the two lines. The sum of angles of a linear pair is always equal to 180° .

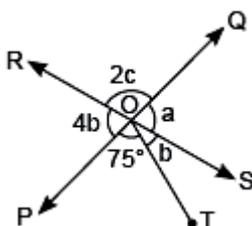
SECTION – B

Questions 11 to 14 carry 2 marks each.

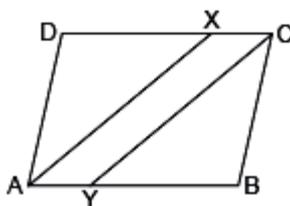
11. In the given figure $PR = QS$, then show that $PQ = RS$. Name the mathematician whose postulate/axiom is used for the same.



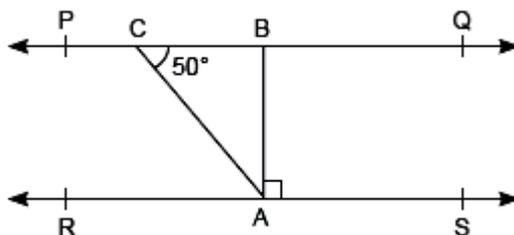
12. In the given figure, two straight lines PQ and RS intersect each other at O. If $\angle POT = 75^\circ$. Find the value of a , b and c .



13. In the given figure, ABCD is a parallelogram and line segments AX and CY bisect the angles A and C respectively. Show that AX \parallel CY.



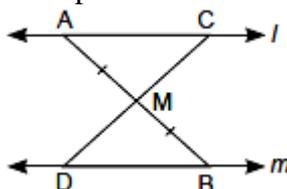
14. In the given figure PQ \parallel RS, BA \perp RS and $\angle BCA = 50^\circ$ find $\angle BAC$ and $\angle CAS$.



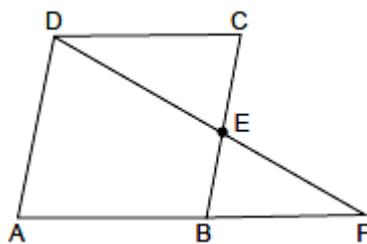
SECTION – C

Questions 15 to 17 carry 3 marks each.

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.
16. In the given figure, $l \parallel m$ and M is the mid-point of line segment AB. Prove that M is also the mid-point of any line segment CD having its end points C and D on l and m respectively.



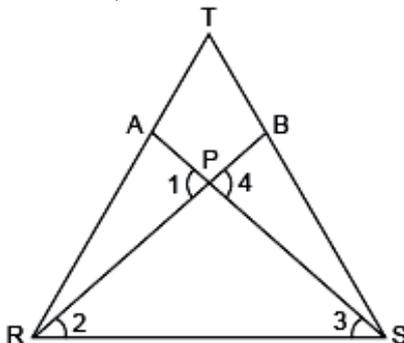
17. ABCD is a parallelogram and E is the mid-point of side BC. DE and AB on producing meet at F. Prove that $AF = 2AB$.



SECTION – D

Questions 18 carry 5 marks.

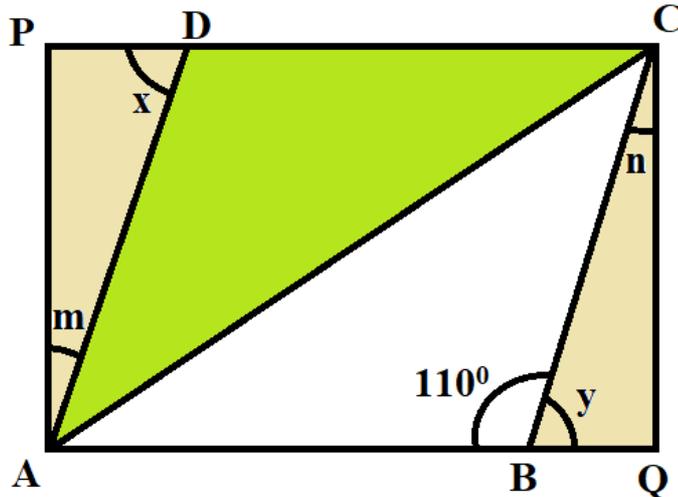
18. In the given figure, it is given that $RT = TS$, $\angle 1 = \angle 2$ and $\angle 4 = \angle 3$. Prove that $\triangle RBT \cong \triangle SAT$



SECTION – E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

19. In the middle of the city, there was a park ABCD in the form of a parallelogram form so that $AB = CD$, $AB \parallel CD$ and $AD = BC$, $AD \parallel BC$. Municipality converted this park into a rectangular form by adding land in the form of $\triangle APD$ and $\triangle BCQ$. Both the triangular shape of land were covered by planting flower plants.



(a) Show that $\triangle APD$ and $\triangle BCQ$ are congruent. (2)

OR

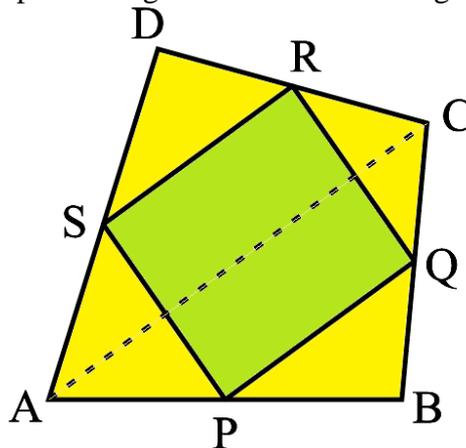
What is the value of $\angle m$? (2)

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

(c) Show that $\triangle ABC$ and $\triangle CDA$ are congruent. (1)

20. **Activity-based learning-** ensures active engagement of learner with concepts and instructional materials. Learning is hands-on and experiential, providing learners the opportunity of learning through manipulation of materials and objects.

Teachers model the process, and students work independently to copy it. Kumar sir Maths teacher of class 9th wants to explain the properties of parallelograms in a creative way, so he gave students yellow colored paper in the shape of a quadrilateral and then ask the students to make a parallelogram from it by using paper folding and coloured it with green colour.



(a) How can a parallelogram be formed by using paper folding? (2)

(b) (i) If $\angle RSP = 30^\circ$, then find $\angle RQP$. (1)

(ii) If $SP = 3$ cm, Find the RQ. (1)

OR

(b) Find the value of $\angle R$ and $\angle S$ if $\angle P : \angle Q = 1 : 4$. (2)