WORKSHEET BASED ON CASE BASED QUESTIONS:

1. The picture below shows a staircase outside a house. Each step of the staircase is congruent and there are 25 steps in the staircase from the floor to the platform and 25 steps from the platform to the roof.
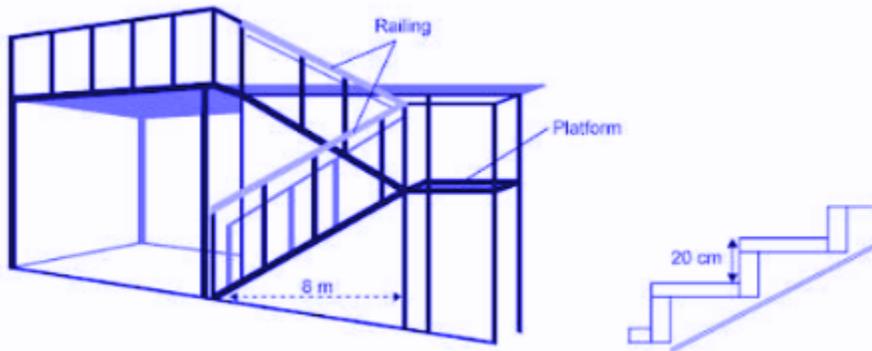
(i) What is the length of the staircase railing?
(ii) Calculate the total vertical height of the platform from the floor.

Q2. Rita says, 'For two triangles to be congruent, any three parameters of the six (3 sides and 3 angles) should be equal.'Give examples in favour of and against her statement.

Q3. The adjacent sides of quadrilateral A are equal to corresponding sides of Quadrilateral B. All angles of Quadrilateral A measure 90°. The angles of Quadrilateral B are 120°, 60°, 120° and 60° respectively. Which quadrilateral has a greater area? Give reasons.

Q4. Sanya has a triangular piece of land. She wants to divide it into four equal areas. Suggest a way to do so.

Q5. The figure below shows the side view of a shopping trolley. The metal plate is fixed on the side by the store keeper for advertisement.

(i) Three angles of the basket are obtuse. Which type of angle is the fourth?
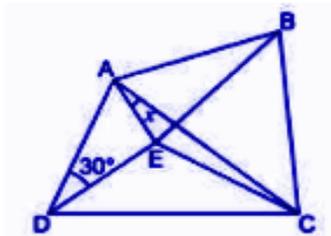**(ii) What is the shape of the metal plate?**
**A. Square   B. Rectangle   C. Rhombus   D. Parallelogram**

Q6. In the quadrilateral ABCD given below, ∠DAC = 90° and
AB = AC = AD = DE = EB.
(i) What is the value of ∠EAC?
(ii) Which type of quadrilateral is ABCE?
(iii)What is the value of ∠ABE?

Q7 . Atul likes to observe the stars with his telescope. He likes to track the movements of stars in the sky.He took a picture of the night sky one day. On that day, Mars was equidistant from Saturn and Jupiter.
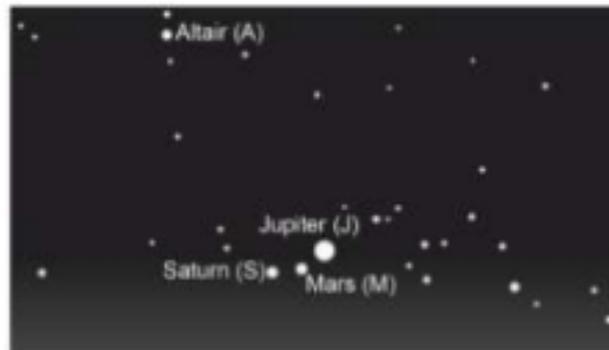
He draws a circle such that the dots showing the planets Mars (M), Jupiter (J), Saturn (S) and a star Altair (A) lies on the boundary of a circle and ∠SMJ = 150°.
(i) What is the measure of ∠SAJ?
(ii) Atul claims that the quadrilateral MJAS is a kite, What additional information is required to confirm his claim?
  A. Distance between Altair and Saturn is equal to the distance between Mars and Jupiter.
  B. Distance between Altair and Jupiter is equal to the distance between Mars and Saturn.
  C. Distance between Altair and Saturn is equal to the distance between Altair and Mars.
  D. Distance between Altair and Saturn is equal to the distance between Altair and Jupiter.

ASSERTION REASON BASED QUESTIONS:

In the following questions 12 to 16, 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.

Q1. Assertion (A): If the diagonal of a parallelogram are equal, then it is a
                rectangle.
    Reason (R): The diagonals of parallelogram bisect each other at right angles.

Q2. 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.

Q3. Assertion: If the diagonals of a parallelogram ABCD are equal then $\angle$ABC is
                equal to 90°
    Reason: If the diagonals of a parallelogram are equal then it becomes a
                Rectangle.

Q4. Assertion: In triangle ABC median AD is produced to X such that AD is
                equal to DX then ABXC is a parallelogram.
    Reason: Diagonals EX and BC bisect each other at right angles.

Q5. Assertion: In triangle ABC, E and F are the mid points of AC and AB
                respectively the altitude AP at BC intersects FE are Q then AQ is
                equal to QP.
    Reason: Q is a midpoint of AP.

A, CHOOSE THE CORRECT OPTIONS:

Q1.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°

Q2. The diagonals AC and BD of a parallelogram ABCD intersect each other at the point O.If $\angle DAC = 32^o$ and $\angle AOB = 70^o$, then $\angle DBC$ is equal to

(a) 24°   (b) 86°   (c) 38°   (d) 32°

Q3. Which of the following is not true for a parallelogram?

(a) opposite sides are equal

(b) opposite angles are equal

(c) opposite angles are bisected by the diagonals

(d) diagonals bisect each other.

Q4. If angles $\angle A$, $\angle B$, $\angle C$ and $\angle D$ of the quadrilateral ABCD , taken in a order, are

in the ratio 3:7:6:4,then ABCD is a

a) rhombus   b) parallelogram   c) trapezium   d) kite

B.SOLVE THE FOLLOWING QUESTIONS:

Q5. In Figure, AX and CY are respectively the bisectors of the opposite angles A and C of a   parallelogram ABCD. Show that AX || CY.
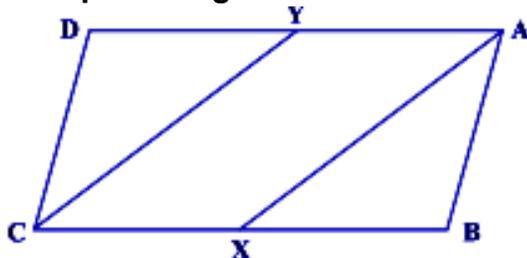
Q6. E and F are points on diagonal AC of a parallelogram ABCD such that AE =CF.Show that BFDE is a parallelogram.

Q7. Points P and Q have been taken on opposite sides AB and CD, respectively of a parallelogram ABCD such that AP = CQ in the figure. Show that AC and PQ bisect each Other.
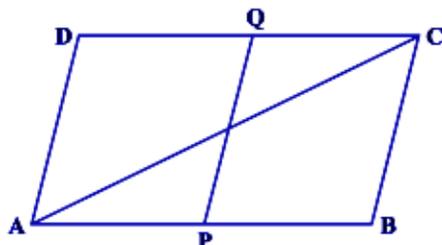
Q20.A diagonal of a parallelogram bisects one of its angles. Show that it is a Rhombus.

Q21. P and Q are the mid-points of the opposite sides AB and CD of a parallelogram ABCD. AQ intersects DP at S and BQ intersects CP at R. Show that PRQS is a parallelogram.