

CLASS VII

SUBJECT : MATHEMATICS

CHAPTER : 6 (THE TRIANGLE AND ITS PROPERTIES)

HOT'S QUESTIONS AND CASE STUDIES

CASE STUDY 1

DRAW ONE ACUTE-ANGLED TRIANGLE, ONE OBTUSE-ANGLED TRIANGLE AND ONE RIGHT-ANGLED TRIANGLE.

- (1). Draw all the 3 medians for each type of triangle.
- (2). Draw all the 3 altitudes for each type of triangle.
- (3). Will an altitude always lie in the interior of a triangle? Justify your answer and discuss.
- (4). Can the altitude and median be same for some triangles? If you think same, then identify the types of such triangles.
- (5). Can you identify a triangle whose two altitudes of the triangle are two of its sides?
- (6). Does a median lie wholly in the interior of the triangle? Justify your answer by drawing all types of triangles based on their sides and angles.

CASE STUDY 2

- | | |
|-------------------------|--------------------------------|
| (a) 10 cm, 15 cm, 24 cm | (b) 7 cm, 13 cm, 5 cm |
| (c) 8 cm, 10 cm, 6cm, | (d) 20 cm, 14 cm, 33 cm |
| (e) 15 cm, 8 cm, 17 cm | (f) 12 cm, 27 cm, 15 cm |
| (g) 9 cm, 16 cm, 9 cm | (h) 5 cm, 5 cm, $5\sqrt{2}$ cm |

- (1). Check is it possible to have a triangle with the following sides.
- (2). Can you identify any of the examples from the above which is/are also forming right-triangle? If yes, identify those.

(3). Can you identify any of the examples from the above which is/are also forming isosceles triangle? If yes, identify those.

(4). Can you identify any of the examples from the above which is/are also forming isosceles right-angled triangle? If yes, identify those.

(5). Can you identify any of the examples from the above which is/are also forming scalene triangle? If yes, identify those.

CASE STUDY 3

**Draw a triangle ABC whose side AB= 8 cm, BC= 12 cm and AC = 8 cm.
Draw a median AD on the side BC.**

(1). Find the length of BD.

(2). If you draw another median say BE on AC, what would be the length of AE?

(3). Is BD equal to DC? Justify and discuss.

(4) Will angle ABC be equal to angle ACB for the above triangle? Discuss.

(5). Will the altitudes and medians be same for this triangle? Justify.

HOT QUESTIONS

Q(1). Draw a triangle PQR whose median is RN.

Q(2). Draw a triangle XYZ whose two sides XZ and YZ are altitudes of the triangle.

Q(3). For a triangle ABC angle A= 50° , angle B= 70° and if you produce the side BC to D, then find angle ACD.

Q(4). Angle M= 53° and angle N= 37° of a triangle MNO.

Which of the following is true?

(a) $OM^2 + MN^2 = ON^2$

(b) $OM^2 - ON^2 = MN^2$

(c) $OM^2 + ON^2 = -MN^2$

(d) $OM^2 = MN^2 - ON^2$

(e) $OM^2 = ON^2 - MN^2$

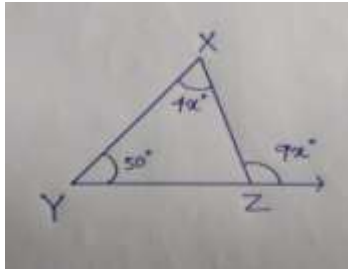
(f) $ON^2 - MN^2 = OM^2$

Q(5). One of the exterior angle of a triangle is 110° and the interior opposite angles are in the ratio 5:6. Find the angles of the triangle.

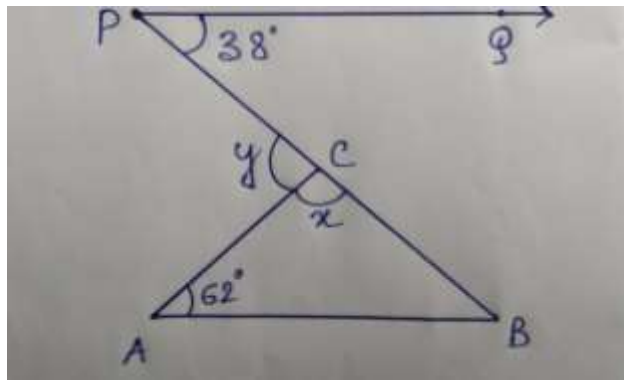
Q(6). Find the diagonal of the rectangle whose length : breadth = 4:3 and its perimeter is 28 cm.

Q(7). The diagonals of a rhombus measure 42 cm and 40 cm. Find its perimeter.

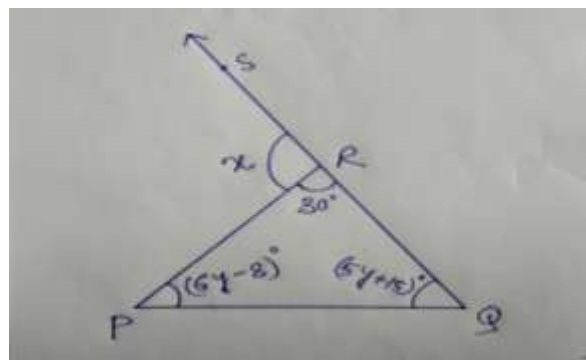
Q(8). Find the value of 'x' for the diagram given below.



Q(9). Here $AB \parallel PQ$, find the value of x and y in the given figure.



Q(10). For the below diagram find the value of x and y.



Q(11). A girl goes 16 m in South direction from her house. From there she turns 90° to her right and moves 20 m and reach at West direction from her house. How far is she from her house?

Q(12). Two light posts of heights 10 m and 18 m stand on a ground. If the distance between their feet is 15 m, find the distance between their tops.

Q(13). The angles of a triangle are $(9m-3)^\circ$, $(4m-15)^\circ$ and $(7m-2)^\circ$. Find the value of m .

Q(14). What are the angle measurements of an isosceles right-angled triangle?

Q(15). Find the value of y in the given figure.

