

## CHAPTER – 5

### Understanding Elementary Shapes

#### EXERCISE – 5.6

##### Q.1

Name the types of following triangles:

- (a) Triangle with lengths of sides 7 cm, 8 cm and 9 cm.
- (b)  $\triangle ABC$  with  $AB = 8.7$  cm,  $AC = 7$  cm and  $BC = 6$  cm.
- (c)  $\triangle PQR$  such that  $PQ = QR = PR = 5$  cm.
- (d)  $\triangle DEF$  with  $m\angle D = 90^\circ$ .
- (e)  $\triangle XYZ$  with  $m\angle Y = 90^\circ$  and  $XY = YZ$ .
- (f)  $\triangle LMN$  with  $m\angle L = 30^\circ$ ,  $m\angle M = 70^\circ$  and  $m\angle N = 80^\circ$ .

Answer:

- (a) It is a scalene triangle as it has all unequal sides.

A scalene triangle is triangle with all three unequal sides.

- (b)  $\triangle ABC$  is a scalene triangle as it has three unequal sides and according to the property of triangle only scalene triangle has all unequal sides.

(c)  $\triangle PQR$  is an equilateral triangle as all sides of the triangle are equal and according to the property of equilateral triangle all sides are equal.

(d)  $\triangle DEF$  Right-angle triangle as it has  $\angle D = 90^\circ$  and according to the property of right angle triangle it has one right angle that is  $90^\circ$ .

(e)  $\triangle XYZ$  Right-angled isosceles triangle as it has one right angle of  $90^\circ$  and two equal sides and according to the property of right-angled isosceles triangle it has one right angle with two equal sides.

(f)  $\triangle LMN$  is an acute angle triangle as it has all the angles less than  $90^\circ$  and according to the property of acute angle triangle it is a triangle with all three angles acute (less than  $90^\circ$ ).

## Q. 2

Match the following:

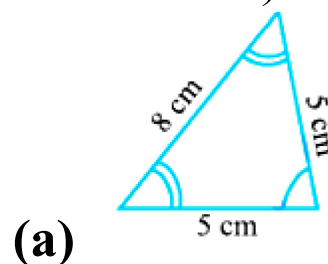
Measures of parts	Type of Triangle
(i) 3 sides of equal lengths	(a) Scalene
(ii) 2 sides of equal lengths	(b) Isosceles right-angled
(iii) All sides are of different lengths	(c) Obtuse angled
(iv) 3 acute angles	(d) Right angled
(v) 1 right angle	(e) Equilateral
(vi) 1 obtuse angle	(f) Acute-angled
(vii) 1 right angle with sides of equal lengths	(g) Isosceles

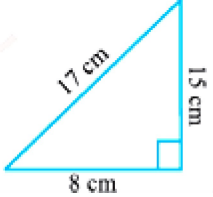
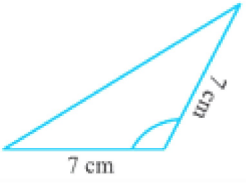
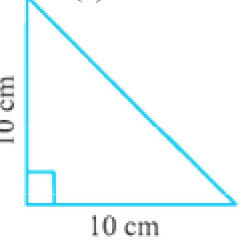
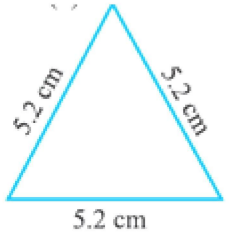
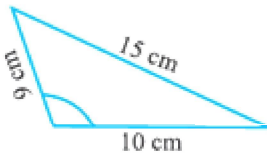
Answer:

Measures of parts	Type of Triangle	Explanation
(i) 3 sides of equal lengths	(e) Equilateral	Equilateral triangle has all three sides equal.
(ii) 2 sides of equal lengths	(g) Isosceles	Isosceles triangle has any two sides equal.
(iii) All sides are of different lengths	(a) Scalene	Scalene triangle has all the three sides different.
(iv) 3 acute angles	(f) Acute-angled	When all the three angles of a triangle are less than $90^\circ$ , then it is an acute-angled triangle.
(v) 1 right angle	(d) Right-angled	When any one angle of a triangle is $90^\circ$ , then it is a right-angled triangle.
(vi) 1 obtuse angle	(c) Obtuse-angled	When any one angle of a triangle is greater than $90^\circ$ but less than $180^\circ$ , then it is an obtuse-angled triangle.
(vii) 1 right angle with sides of equal lengths	(b) Isosceles right-angled	When any two sides of a triangle are equal and one angle of the triangle is $90^\circ$ , then it is an Isosceles-right-angled triangle.

### Q. 3

Name each of the following triangles in two different ways: (you may judge the nature of the angle by observation).



- (b)  A right-angled triangle with a horizontal base of 8 cm, a vertical height of 15 cm, and a hypotenuse of 17 cm. A right-angle symbol is at the vertex where the base and height meet.
- (c)  An equilateral triangle with all three sides labeled 7 cm. An arc is drawn at the bottom-left vertex to indicate the angles are equal.
- (d)  A right-angled triangle with a vertical side of 10 cm and a horizontal base of 10 cm. The hypotenuse is also labeled 10 cm. A right-angle symbol is at the vertex where the two 10 cm sides meet.
- (e)  An equilateral triangle with all three sides labeled 5.2 cm.
- (f)  A triangle with a vertical side of 9 cm, a horizontal base of 10 cm, and a hypotenuse of 15 cm. An arc is drawn at the bottom-left vertex to indicate the angles are equal.

Answer:

(a) Acute-angled and isosceles triangle

As in this figure we can see all angles are less than  $90^\circ$  and it has two equal sides and these are the property of acute angle and isosceles triangle.

(b) Right-angled scalene triangle

As the triangle has one right angle and three unequal sides and these are the property of right-angled and scalene triangle.

(c) Obtuse-angled and isosceles triangle

As we can see one angle is greater than  $90^\circ$  and it has two equal sides and these are the property of obtuse angle and isosceles triangle.

(d) Right-angled and isosceles triangle

As it has one angle of  $90^\circ$  and two equal sides and these are the property of right-angled and isosceles triangle.

(e) Acute-angled and equilateral triangle

As in the figure we can see all angles are less than  $90^\circ$  and it has all equal sides and these are the property of acute angle and equilateral triangle.

(f) Obtuse-angled and scalene triangle

As we can see one angle is greater than  $90^\circ$  and three unequal sides and according to the property of triangles

only obtuse-angled and scalene triangle has these properties.

#### Q. 4

Try to construct triangles using matchsticks. Some are shown here. Can you make a triangle with

(a) 3 matchsticks?

(b) 4 matchsticks?

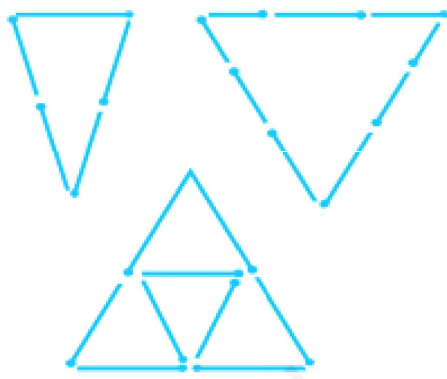
(c) 5 matchsticks?

(d) 6 matchsticks?

(Remember you have to use all the available matchsticks in each case)

Name the type of triangle in each case.

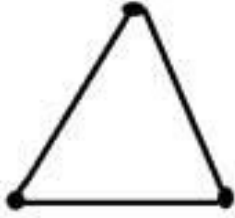
If you cannot make a triangle, think of reason for it.



Answer:

(a) We can make a triangle by using 3 matchsticks.

According to the property of a triangle the sum of two sides is greater than the length of the remaining side. It can be an equilateral triangle as it has all equal sides.



(b) By using 4 matchsticks it is not possible to make a triangle because in a triangle the sum of the two sides is greater than the length of the remaining side.

(c) Yes we can form a triangle by using 5 matchsticks.



(d) With the help of 6 matchsticks we can form a triangle.

