Class.6.Maths By: Prashant Kumar

Understanding Elementary Shapes

(Solved Exercise)

Ex-5.5

Question 1:Which of the following are models for perpendicular lines:

(a) The adjacent edges of a table top.

(b) The lines of a railway track.

(c) The line segments forming the letter 'L'

(d) The letter V.

Answer:

(a) The adjacent edges of a table top are perpendicular to each other.

(b) The lines of a railway track are parallel to each other.

(c) The line segments forming the letter 'L' are perpendicular to each other.

(d) The sides of letter V are inclined at some acute angle on each other.

Hence, (a) and (c) are the models for perpendicular lines.

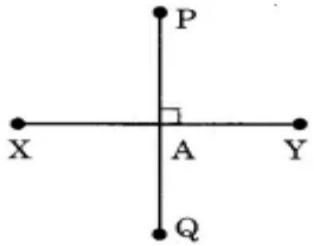
Question2:

Let $\overline{PQ}$ be the perpendicular to the line segment $\overline{XY}$. Let $\overline{PQ}$ and $\overline{XY}$ intersect at in the point A. What is the measure of ∠PAY?

Solution:

Since $\overline{PQ} \perp XY$

$\therefore \angle PAY = 90°$

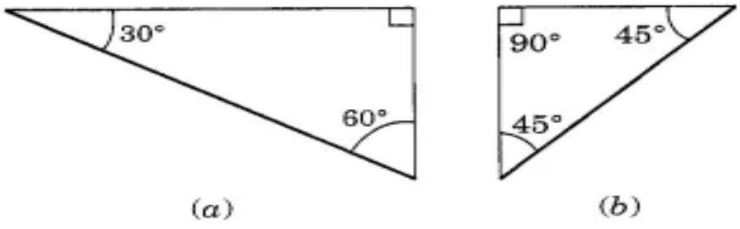


Question 3:

There are two set-squares in your box. What are the measures of the angles that are formed at their corners? Do they have any angle measure that is common?

Solution:

The figures of the two set-squares are given below:



The measure angles of triangle (a) are : 30°, 60° and 90°.

The measure angles of triangle (b) are 45°, 45° and 90°.

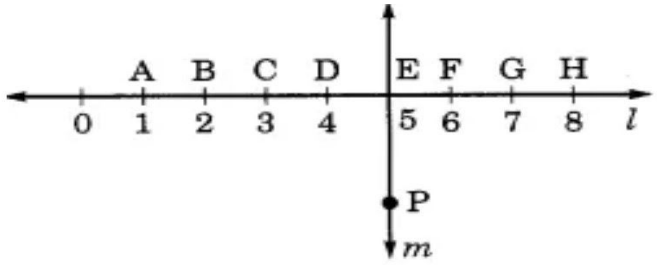
Yes, they have a common angle of measure 90°.

Question 4:

Study the diagram. The line l is perpendicular to line m.

(a) Is CE = EG?

(b) Does PE bisects CG?



(c) Identify any two line segments for which PE is the perpendicular bisector.

(d) Are these true?

(i) AC > FG

(ii) CD = GH

(iii) BC < EH

Solution:

(a) Yes,

Since, CE = 2 units and EG = 2 units

Hence, CE = EG.

(b) Yes, PE bisects CG

(c)Required line segments for which PE is perpendicular bisector are: DF and BH.

(d) (i) True (ii) True (iii) True

Ex-5.6

Question 1.

Name the types of following triangles:

(a) Triangle with lengths of sides 7 cm, 8 cm and 9 cm.

(b) ∆ABC with AB = 8.7 cm, AC = 7 cm and BC = 6 cm.

(c) ∆PQR such that PQ = QR = PR = 5 cm.

(d) ∆DEF with m∠D = 90°

(e) ∆XYZ with m∠Y = 90° and XY = YZ.

(f) ∆LMN with m∠L = 30° m∠M = 70° and m∠N = 80°.

Solution:

(a) Lengths of the sides of a triangle are given as: 7 cm, 8 cm and 9 cm.

Since, all sides of the given triangle are different.

Hence, it is a Scalene triangle.

(b) Given that: AB = 8.7 cm, AC = 7 cm and BC = 6 cm

Here AB ≠ AC ≠ BC Hence, ∆ABC is Scalene triangle.

(c) Given that: PQ = QR = PR = 5 cm

Since all sides are equal.

Hence, it is an equilateral triangle.

(d) Given that: In ∆DEF, m∠D = 90°
Hence it is a right angled triangle.
(e) Given that: In ∆XYZ, m∠Y = 90° and XY = YZ
Hence it is a right angled isosceles triangle.
(f) Given that: ∆LMN, m∠L = 30°, m ∠M = 70° and m∠N = 80°.
Hence it is an acute angled triangle.

Question 2.

Match the following:

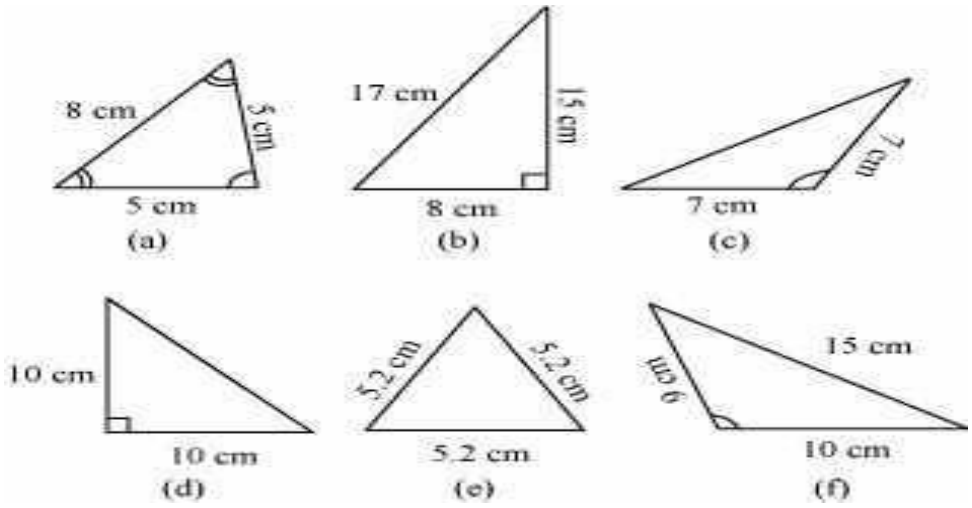
Measure of triangle	**Type of triangle**
(i)3 sides of equal length.	(a) Scalene
(ii)2 sides of equal length.	(b) Isosceles right angled
(iii)All sides are of different length	(c) Obtuse angled
(iv)3 acute angles.	(d) Right angled
(v)1 right angle.	(e) Equilateral
(vi)1 obtuse angle.	(f) Acute angled
(vii)1 right angle with two sides of equal length	(g) Isosceles

Solution:

(i) ↔ (e)
(ii) ↔ (g)
(iii) ↔ (a)
(iv) ↔ (f)
(v) ↔ (d)
(vi) ↔ (c)
(vii) ↔ (b)

Question 3.

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



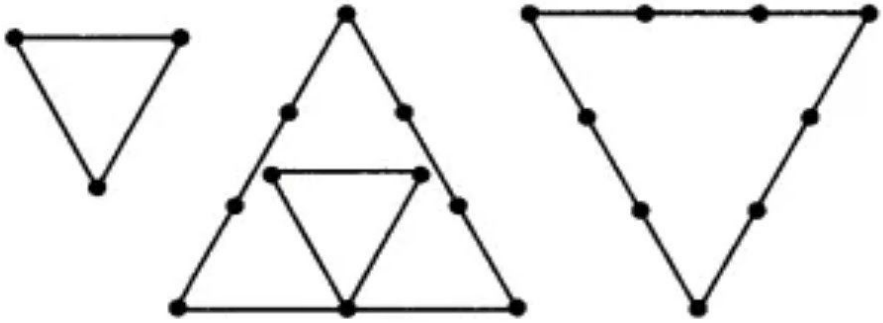
Solution:

(a) (i) Acute angled triangle
(ii) Isosceles triangle
(b) (i) Right angled triangle
(ii) Scalene triangle
(c) (i) Obtuse angled triangle
(ii) Isosceles triangle
(d) (i) Right angled triangle
(ii) Isosceles triangle
(e) (i) Acute angled triangle
(ii) Equilateral triangle
(f) (i) Obtuse angled triangle
(ii) Scalene triangle.

Question 4.

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

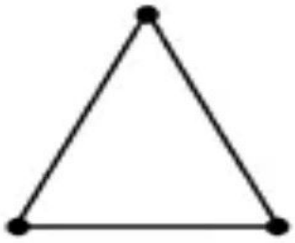
(a) 3 matchsticks?
(b) 4 matchsticks?
(c) 5 matchsticks?
(d) 6 matchsticks?



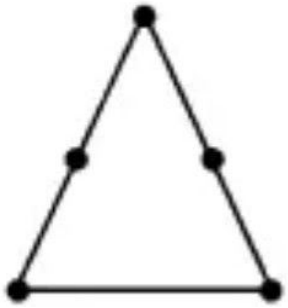
(Remember you have to use all the available matchsticks in each case)
Name the type of triangle in each case.
If you cannot make a triangle, give of reasons for it.

Solution:

(a) Yes, we can make an equilateral triangle with 3 matchsticks.



(b) No, we cannot make a triangle with 4 matchsticks.
(c) Yes, we can make an isosceles triangle with five matchsticks.



(d) Yes, we can make an equilateral triangle with 6 matchsticks.