

Mathematics

(Chapter – 5) (Understanding Elementary Shapes) (Class - VI)

Exercise 5.1

Question 1:

What is the disadvantage in comparing line segments by mere observation?

Answer 1:

There may be chance of error due to improper viewing.

Question 2:

Why is it better to use a divider than a ruler, while measuring the length of a line segment?

Answer 2:

It is better to use a divider than a ruler, because the thickness of the ruler may cause difficulties in reading off her length. However divider gives up accurate measurement.

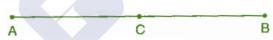
Question 3:

Draw any line segment, say AB. Take any point Clying in between A and B. Measure the lengths of AB, BC and AC. Is AB = AC + CB?

[Note: If A, B, C are any three points on a line, such that AC + CB = AB, then we can be sure that C lies between A and B.]

Answer 3:

Yes.



AB = 6.5 cm, AC = 3 cm, CB = 3.5 cm

$$AC + CB = 3 \text{ cm} + 3.5 \text{ cm} = 6.5 \text{ cm} = AB$$

Ouestion 4:

Willion Stars & Practice Williams And Control of the Control of th If A, B, C are three points on a line such that AB = 5 cm, BC = 3cm and AC = 8 cm, which one of them lies between the other two?

Answer 4:

AC is the longest line segment, thus B is the point between A and C.



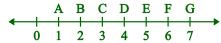
Question 5:

Verify whether D is the mid-point of AG.



Answer 5:

AD = 3 units, DG = 3 units



AD = DG.

Thus, D is the mid-point.

Question 6:

If B is the mid-point of \overline{AC} and C is the mid-point of \overline{BD} , where A, B, C, D lie on a straight line, say why AB = CD?

Answer 6:

B is the mid-point of \overline{AC} .

AB = BC

... (i)

And C is the mid-point of \overline{BD} .

:. BC = CD

... (ii)

From equation (i) and (ii), we get

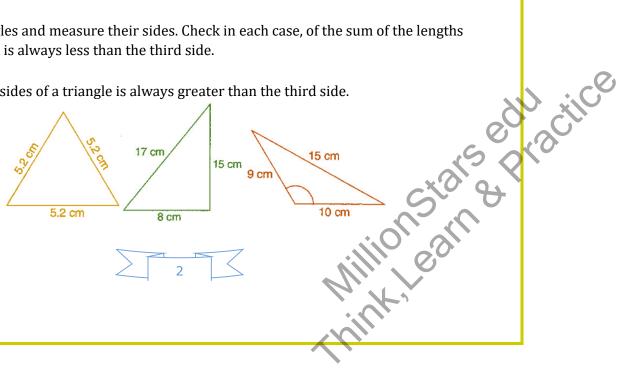
$$AB = CD$$

Ouestion 7:

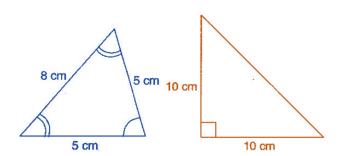
Draw five triangles and measure their sides. Check in each case, of the sum of the lengths of any two sides is always less than the third side.

Language Answer 7:

Yes, sum of two sides of a triangle is always greater than the third side.









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Question 1:

What fraction of a clockwise revolution does the hour hand of a clock turn through, when it goes from

(a) 3 to 9

(b) 4 to 7

(c) 7 to 10

(d) 12 to 9

(e) 1 to 10

(f) 6 to 3

Answer 1:

- (a) $\frac{1}{2}$ or two right angles
- (b) $\frac{1}{4}$ or one right angle
- (c) $\frac{1}{4}$ or one right angle
- (d) $\frac{3}{4}$ or three right angles.
- (e) $\frac{3}{4}$ or three right angles.
- (f) $\frac{3}{4}$ or three right angles.

Question 2:

Where will the hand of a clock stop if it:

- (a) starts at 12 and make $\frac{1}{2}$ of a revolution, clockwise? Millionstars educitice with the process of the control of the cont
- (b) starts at 2 and makes $\frac{1}{2}$ of a revolution, clockwise?
- (c) starts at 5 and makes $\frac{1}{4}$ of a revolution, clockwise?
- (d) starts at 5 and makes $\frac{3}{4}$ of a revolution, clockwise?

Answer 2:

(a) At 6

(b) At 8

(c) At 8

(d) At 2



Question 3:

Which direction will you face if you start facing:

- (a) East and make $\frac{1}{2}$ of a revolution clockwise?
- (b) East and make $1\frac{1}{2}$ of a revolution clockwise?
- (c) West and makes $\frac{3}{4}$ of a revolution, clockwise?
- (d) South and make one full revolution? (Should we specify clockwise or anti-clockwise for this last question? Why not?)



- (a) West
- (b) West
- (c) North
- (d) South

(For answer (d), it is immaterial whether we turn clockwise or anticlockwise, because one full revolution will bring us back to the original position)

Question 4:

What part of a revolution have you turned through if you stand facing:

- (a) East and turn clockwise to face north?
- (b) South and turn clockwise to face east?
- (c) West and turn clockwise to face east?

Answer 4:

(a) $\frac{3}{4}$

- (b) $\frac{3}{4}$
- (c) $\frac{1}{2}$

Question 5:

Million Stars Practice Find the number of right angles turned through by the hour hand of a clock when it goes from:

- (a) 3 to 6
- (b) 2 to 8
- (c) 5 to 11
- (d) 10 to 1
- (e) 12 to 9
- (f) 12 to 6



EMANSWER 5:

- (a) One right angle
- (c) Two right angles
- (e) Three right angles

- (b) Two right angles
- (d) One right angle
- (f) Two right angles

Question 6:

How many right angles do you make if you start facing:

- (a) South and turn clockwise to west?
- (b) North and turn anti-clockwise to east?
- (c) West and turn to west?
- (d) South and turn to north?

Answer 6:

(a) One right angle

(b) Three right angles

(c) Four right angles

(d) Two right angles

Question 7:

Where will the hour hand of a clock stop if it starts:

- (a) from 6 and turns through 1 right angle?
- (b) from 8 and turns through 2 right angles?
- (c) from 10 and turns through 3 right angles?
- (d) from 7 and turns through 2 straight angles?

Answer 7:

(a) At 9

(b) At 2

(c) At 7

(d) At 7



Question 1:

Match the following:

- Straight angle (i)
- (ii) Right angle
- Acute angle (iii)
- Obtuse angle (iv)
- (v) Reflex angle

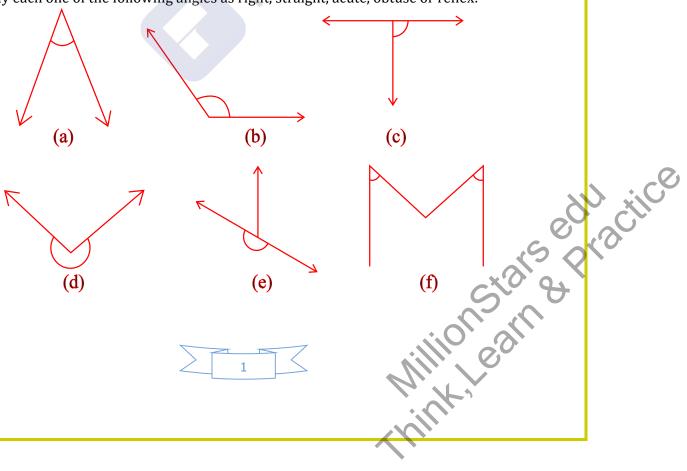
- (a) less than one-fourth a revolution
- (b) more than half a revolution
- (c) half of a revolution
- (d) one-fourth a revolution
- (e) between $\frac{1}{4}$ and $\frac{1}{2}$ of a revolution
- (f) one complete revolution

Answer 1:

- (i) (c)
- (ii) (d)
- (iii) (a)
- (iv) (e)
- (v) (b)

Question 2:

Classify each one of the following angles as right, straight, acute, obtuse or reflex:





EMAI Answer 2:

- (a) Acute angle
- (b) Obtuse angle
- (c) Right angle
- (d) Reflex angle
- (e) Straight angle
- (f) Acute angle



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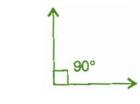


Question 1:

What is the measure of (i) a right angle? (ii) a straight angle?

Answer 1:

(i) 90°



(ii) 180°



Question 2:

Say True or False:

- (a) The measure of an acute angle $< 90^{\circ}$.
- (b) The measure of an obtuse angle < 90°.
- (c) The measure of a reflex angle $> 180^{\circ}$.
- (d) The measure of on complete revolution = 360° .
- (e) If $m\angle A = 53^{\circ}$ and $m\angle B = 35^{\circ}$, then $m\angle A > m\angle B$.

Answer 2:

- (a) True
- (b) False
- (c) True
- (d) True
- (e) True

Ouestion 3:

Write down the measure of:

- (a) some acute angles (give at least two examples of each)

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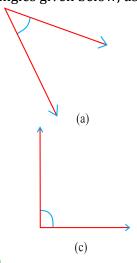
L Answer 3:

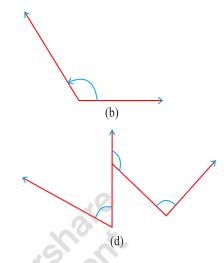
- (a) 35°, 20°
- (b) 110°,135°



Question 4:

Measure the angles given below, using the protractor and write down the measure:





Answer 4:

- (a) 40°
- (c) 90°

- (b) 130°

Question 5:

Which angle has a large measure? First estimate and then measure:

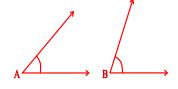
Measure of angle A =

Measure of angle B =



∠ B has larger measure.

$$\angle A = 40^{\circ}$$
 and $\angle B = 65^{\circ}$



Question 6:

Million Stars Practice From these two angles which has larger measure? Estimate and then confirm by measuring them:

Answer 6:

Second angle has larger measure.



Question 7:

Fill in the blanks with acute, obtuse, right or straight:

- (a) An angle whose measure is less than that of a right angle is ______.
- (b) An angle whose measure is greater than that of a right angle is ___
- (c) An angle whose measure is the sum of the measures of two right angles is
- (d) When the sum of the measures of two angles is that of a right angle, then each one of them is _
- (e) When the sum of the measures of two angles is that of a straight angle and if one of them is acute then the other should be _____

Ewati Answer 7:

(a) acute angle

(b) obtuse angle

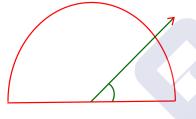
(c) straight angle

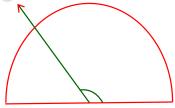
(d) acute angle

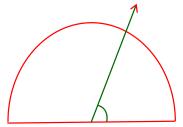
(e) obtuse angle

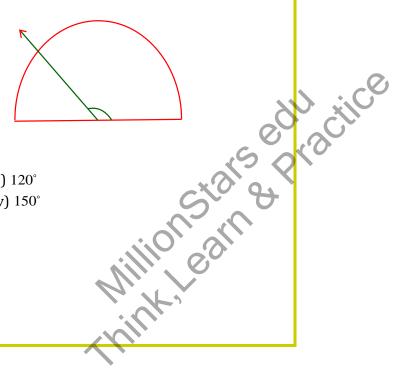
Question 8:

Find the measure of the angle shown in each figure. (First estimate with your eyes and then find the actual measure with a protractor).











- (i) 30°
- (iii) 60°

- (ii) 120°
- (iv) 150°



Question 9:

Find the angle measure between the hands of the clock in each figure:







1.00 p.m.



6.00 p.m.

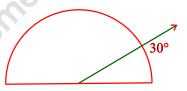
Answer 9:

- (i) 90° (Right angle)
- (ii) 30° (Acute angle)
- (iii) 180° (Straight angle)

Question 10:

Investigate:

In the given figure, the angle measure 30°. Look at the same figure through a magnifying glass. Does the angle becomes larger? Does the size of the angle change?

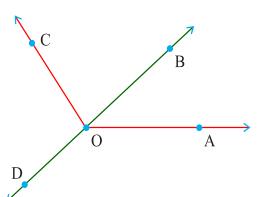


Answer 10:

No, the measure of angle will be same.

Question 11:

Measure and classify each angle:



Angle	Measure	Туре								
	Measure	Турс								
∠AOB										
∠AOC				-01						
∠B0C			21) : C						
∠D0C			O	Cy						
∠D0A			.50	(0						
∠DOB				*						
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Answer 11:

Angle	∠AOB	∠ AOC	∠ BOC	∠ DOC	∠ DOA	∠ DOB
Measure	40°	130°	90°	90°	140°	180°
Туре	Acute	Obtuse	Right	Right	Obtuse	Straight



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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.

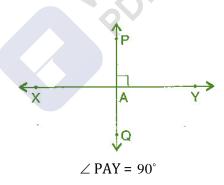
Answer 1:

- (a) Perpendicular
- (b) Not perpendicular
- (c) Perpendicular
- (d) Not perpendicular

Question 2:

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

Answer 2:

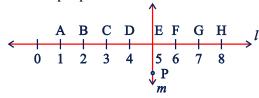


Answer 3:
One set-square has 45°,90°,45° and other set-square has 60°,90°,30°. They have 90° as common angle.



Question 4:

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



- (a) Is CE = EG?
- (b) Does PE bisect 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

Answer 4:

- (a) Yes, both measure 2 units.
- (b) Yes, because CE = EG
- (c) \overline{DF} and \overline{CG} , \overline{BH}
- (d) (i) True, (ii) True, (iii) True





Question 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°
- (e) \triangle XYZ with $m \angle$ Y = 90° and XY = YZ
- (f) \triangle LMN with $m\angle$ L = 30°, $m\angle$ M = 70° and $m\angle$ N = 80°.

Answer 1:

- (a) Scalene triangle
- (b) Scalene triangle
- (c) Equilateral triangle
- (d) Right-angled triangle
- (e) Isosceles right-angled triangle
- (f) Acute-angled triangle

Question 2:

Match the following:

Measure of Triangle

- 3 sides of equal length (i)
- 2 sides of equal length (ii)
- All sides are of different length (iii)
- 3 acute angles (iv)
- 1 right angle (v)
- 1 obtuse angle (vi)
- 1 right angle with two sides (vii) of equal length

Types of Triangle

- (a) Scalene
- (b) Isosceles right angle
- (c) Obtuse angle
- (d) Right angle
- Millions are educaciice with a cince (e) Equilateral
- (f) Acute angle
- (g) Isosceles

Answer 2:

(i) \rightarrow (e),

(ii) \rightarrow (g),

(iii) \rightarrow (a),

(iv) \rightarrow (f),

(v) \rightarrow (d),

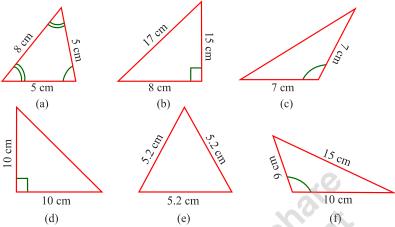
(vi) \rightarrow (c),

(vii) \rightarrow (b)



Question 3:

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



Answer 3:

- (a) Acute angled triangle and Isosceles triangle
- (b) Right-angled triangle and scalene triangle
- (c) Obtuse-angled triangle and Isosceles triangle
- (d) Right-angled triangle and Isosceles triangle
- (e) Equilateral triangle and acute angled triangle
- (f) Obtuse-angled triangle and scalene triangle

Question 4:

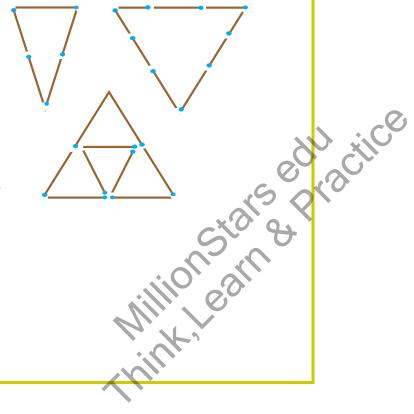
Try to construct triangles using match sticks. Some are shown here.

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)

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





English Answer 4:

(a) 3 matchsticks

This is an acute angle triangle and it is possible with 3 matchsticks to make a triangle because sum of two sides is greater than third side.

(b) 4 matchsticks

This is a square, hence with four matchsticks we cannot make triangle.



(c) 5 matchsticks

This is an acute angle triangle and it is possible to make triangle with five matchsticks, in this case sum of two sides is greater than third side.





(d) 6 matchsticks

This is an acute angle triangle and it is possible to make a triangle with the help of 6 matchsticks because sum of two sides is greater than third side.







Question 1:

Say true or false:

- (a) Each angle of a rectangle is a right angle.
- (b) The opposite sides of a rectangle are equal in length.
- (c) The diagonals of a square are perpendicular to one another.
- (d) All the sides of a rhombus are of equal length.
- (e) All the sides of a parallelogram are of equal length.
- (f) The opposite sides of a trapezium are parallel.

Answer 1:

(a) True (b) True (c) True (d) True (e) False (f) False

Question 2:

Give reasons for the following:

- (a) A square can be thought of as a special rectangle.
- (b) A rectangle can be thought of as a special parallelogram.
- (c) A square can be thought of as a special rhombus.
- (d) Squares, rectangles, parallelograms are all quadrilateral.
- (e) Square is also a parallelogram.

Answer 2:

- (a) Because its all angles are right angle and opposite sides are equal.
- (b) Because its opposite sides are equal and parallel.
- (c) Because its four sides are equal and diagonals are perpendicular to each other.
- (d) Because all of them have four sides.
- (e) Because its opposite sides are equal and parallel.

Ouestion 3:

Million Stars & Practice Rain & Practice A figure is said to be regular if its sides are equal in length and angles are equal in measure. Can you identify the regular quadrilateral?

Answer 3:

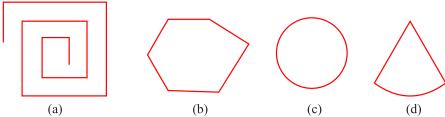
A square is a regular quadrilateral.





Question 1:

Examine whether the following are polygons. If anyone among these is not, say why?

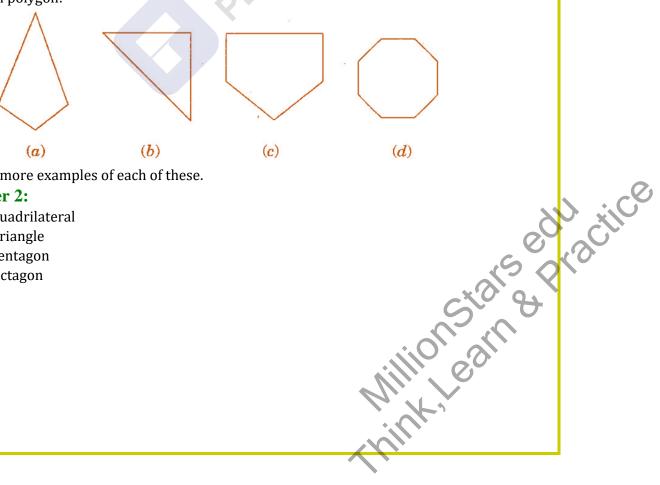


Answer 1:

- (a) As it is not a closed figure, therefore, it is not a polygon.
- (b) It is a polygon because it is closed by line segments.
- (c) It is not a polygon because it is not made by line segments.
- (d) It is not a polygon because it not made only by line segments, it has curved surface also.

Question 2:

Name each polygon:



Make two more examples of each of these.

Answer 2:

- (a) Quadrilateral
- (b) Triangle
- (c) Pentagon
- (d) Octagon

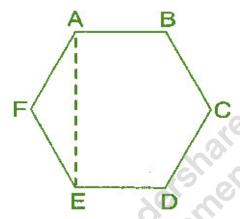


Question 3:

Draw a rough sketch of a regular hexagon. Connecting any three of its vertices, draw a triangle. Identify the type of the triangle you have drawn.

Answer 3:

ABCDEF is a regular hexagon and triangle thus formed by joining AEF is an isosceles triangle.

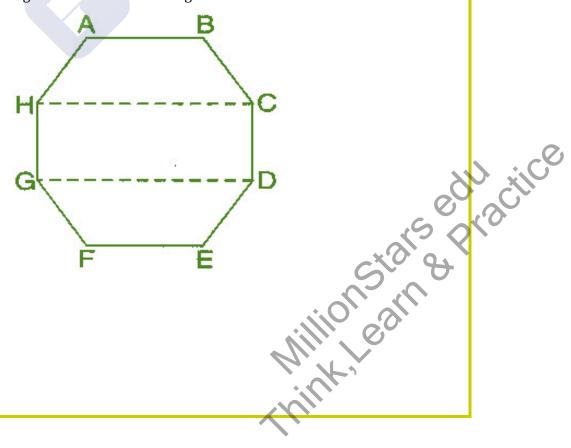


Question 4:

Draw a rough sketch of a regular hexagon. Connecting any three of its vertices, draw a triangle. Identify the type of the triangle you have drawn.

Answer 4:

ABCDEFGH is a regular octagon and CDGH is a rectangle.



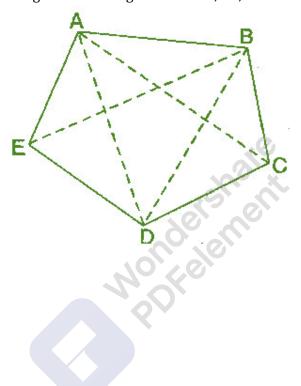


Question 5:

A diagonal is a line segment that joins any two vertices of the polygon and is not a side of the polygon. Draw a rough sketch of a pentagon and draw its diagonals.

Answer 5:

ABCDE is the required pentagon and its diagonals are AD, AC, BE and BD.



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Question 1:

Match the following:

(a) Cone

(i)



(b) Sphere

(ii)



(c) Cylinder

(iii)



(d) Cuboid



(e) Pyramid



Give two example of each shape.

Answer 1:

(a) Cone

(ii)



(b) Sphere

(iv)



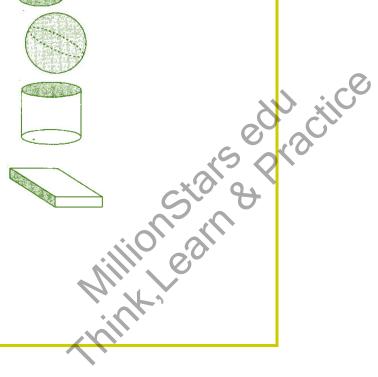
(c) Cylinder

(v)



(d) Cuboid

(iii)





(e) Pyramid





Question 2:

What shape is:

- (a) Your instrument box?
- (b) A brick?
- (c) A match box?
- (d) A road-roller?
- (e) A sweet laddu?

EAnswer 2:

- (a) Cuboid
- (b) Cuboid
- (c) Cuboid
- (d) Cylinder
- (e) Sphere



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