CHAPTER – 5

UNDERSTANDING ELEMENTARY SHAPES

EXERCISE – 5.1

Q.1 What is the disadvantage in comparing line segments by mere observation?

Answer:

A line segment is a fixed portion of a line. It starts from a point and ends at a specific point so this makes it possible to measure the line segment. This measure of each line segment is a unique number called its "length".

The main disadvantage of comparing line segments by mere observation is that we won't be sure about the line segments of almost same lengths. We will face difficulty in identifying the greater line segment if they are almost same length. Therefore, mere observation is not an appropriate method to compare the line segments.

Q. 2 Why is it better to use a divider than a ruler; while measuring the length of a line segment?

Answer:

It is better to use a divider than a ruler; while measuring the length of a line segment because the divider will provide the more accurate answer while there are chances that the ruler may not. In ruler, the positioning error may occur.

Q. 3 Draw any line segment, say $\overline{AB}$. Take any point C lying 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:

Let's draw a line AB and take a point C on it

As we can see AB is a line segment which starts with A and ends with B. C is a point on AB which means it divides AB in two parts. So sum of these parts will be equal to the total length of the line segments.

Hence, AB = AC + CB.

Q. 4 If A, B, C are three points on a line such that AB = 5 cm, BC = 3 cm and AC = 8 cm, which one of them lies between the other two?

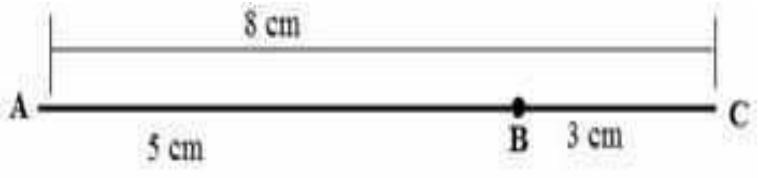
Answer:

As we can see the greatest length is 8 cm in the given data.

So, we draw a line of 8 cm and mark the first point on 5 cm on the same line. Now the remaining portion is of 3 cm length.

Now name the line according to its length as AB = 5cm, so starting point will be A, point B will be at 5 cm and the endpoint is C as AC is 3cm.

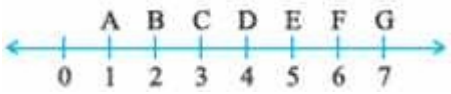
As shown in the figure (given figure is a rough diagram)



Now if we look closer we can see that AB and BC together form the complete line AC.

Point B lies between A and C.

Q. 5 Verify, whether D is the mid-point of AG.



Answer:

AG is the line with the measure of 7-1 = 6 cm

AG = 6cm

AD = 4 – 1 = 3 cm

DG = 4 – 1 = 3 cm

Therefore,

3 + 3 = 6cm

AD + DG = AG

So, from the above figure we can see D is the mid-point of the given line AG.

Q. 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:

Draw the line AD and mark the points A, B, C and D on it.

Given in the question B is the mid-point of AC and C is the mid-point of BD.

From the above statement we get,

AB = BC…(i) (mid-point: a mid-point divides a line into two equal parts)

BC = CD…(ii) (mid-point)

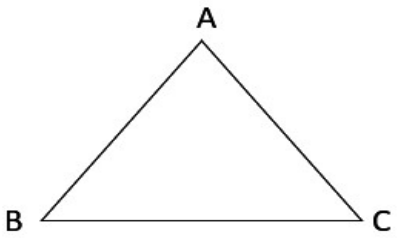
From the first and second statements we can say that,

AB = CD

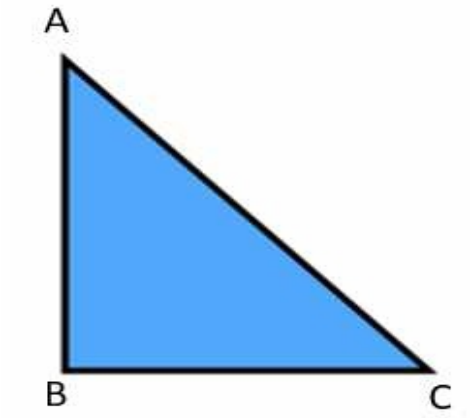
Q. 7 Draw five triangles and measure their sides. Check in each case, if the sum of the lengths of any two sides is always less than the third side.

Answer:

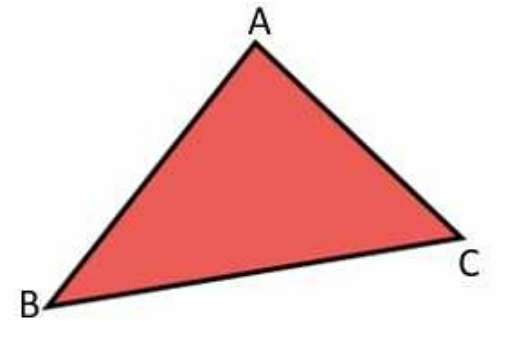
This task must be performed by the students on their own. Randomly draw some triangles and measure their lengths.
For example, we have drawn a few for your reference.



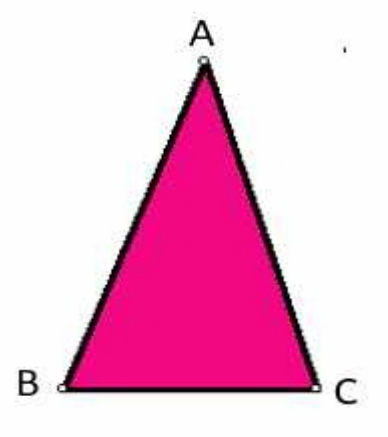
Here AB = 1 cm, BC = 1 m, AC = 1 cm sum of two sides> third side



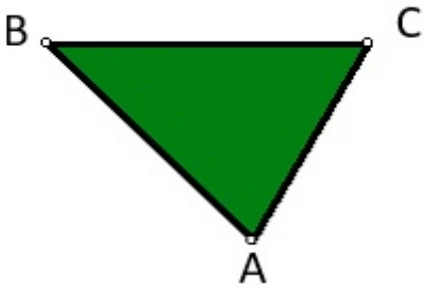
Here AB = 4 cm, BC = 3 cm and AC = 5 cm sum of two sides> third side



Here AB = 3 cm, BC = 3 cm and AC = 5 cm sum of two sides> third side



Here AB = 7 cm, BC = 7 cm and AC = 6 cm sum of two sides> third side



Here AB = 8 cm, BC = 9 cm and AC = 10 cm sum of two sides> third side

EXERCISE – 5.2

Q.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:

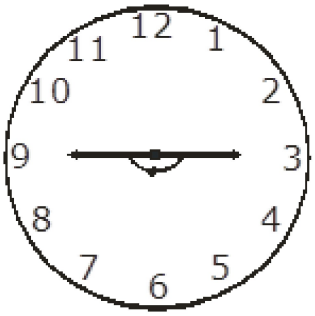
A clock completes a clockwise revolution of 360° in a day.

(a) 3 to 9

By looking at the clock we can see when the hour hand goes from 3 to 9 it complete half of the revolution which is 180°.

Fraction = $\frac{180}{360} = \frac{1}{2}$.

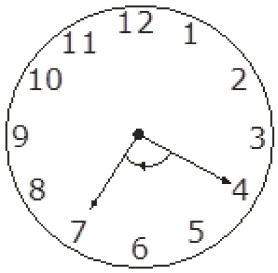
As we know 180° is the half of the 360° so it covers $\frac{1}{2}$.



(b) 4 to 7

By looking at the clock we can see when the hour hand goes from 4 to 7 it makes a right angle which is of 90°.

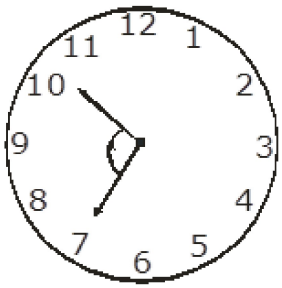
Fraction = $\frac{90}{360} = \frac{1}{4}$.



(c) 7 to 10

By looking at the clock we can see when the hour hand goes from 7 to 10 it makes a right angle which is of 90°.

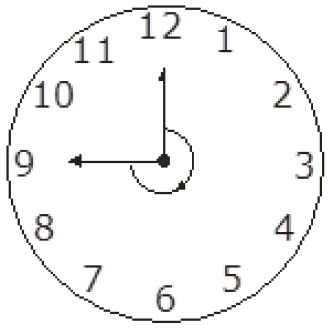
Fraction = $\frac{90}{360} = \frac{1}{4}$.



(d) 12 to 9

By looking at the clock we can see when the hour hand goes from 12 to 9 it basically covers three right angles which is of = 90 + 90 + 90 = 270°.

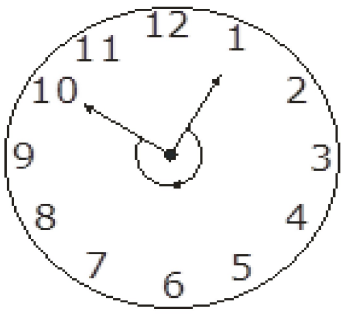
Fraction = 270/260 = 3/4



(e) 1 to 10

By looking at the clock we can see when the hour hand goes from 1 to 10 it basically covers three right angles which is of 270°.

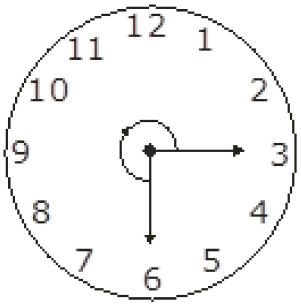
Fraction = 270/360 = 3/4



(f) 6 to 3

By looking at the clock we can see when the hour hand goes from 6 to 3 it basically covers three right angles which is of 270°.

Fraction = 270/360 = ¾



Q. 2 Where will the hand of a clock stop if it.

(a) starts at 12 and makes $\frac{1}{2}$ of a revolution, clockwise?

(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:

In one complete revolution the hand of clock covers the 360°.

(a) When the hand of the clock starts from 12 and makes half of the revolution clockwise, so it will stop at 6 because half of the revolution is 180°.

(b) When the hand of the clock starts from 2 and makes half of the revolution clockwise which is of 180°, so it will stop at 8.

(c) When the hand of the clock starts from 5 and makes one fourth of the revolution clockwise which is a right angle (90°), so it will stop at 8.

(d) When the hand of the clock starts from 5 and makes three fourth of the revolution clockwise which is of 120°, so it will stop at 2.

Q. 3 Which direction will you face if you start facing

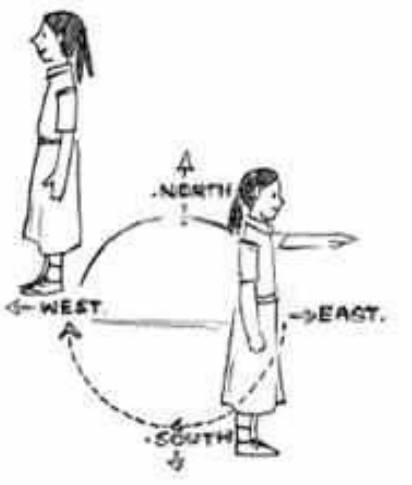
(a) east and make $\frac{1}{2}$ of a revolution clockwise?

(b) east and make $1\frac{1}{2}$ of a revolution clockwise?

(c) west and make $\frac{3}{4}$ of a revolution clockwise?

(d) south and make one full revolution?

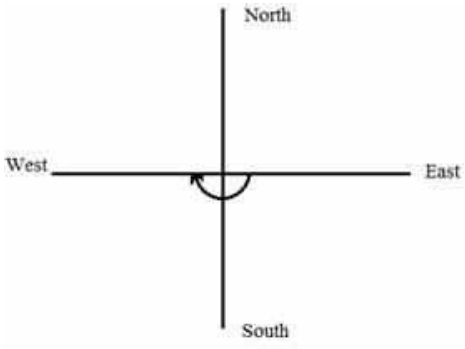
(Should we specify clockwise or anti-clockwise for this question? Why not?)



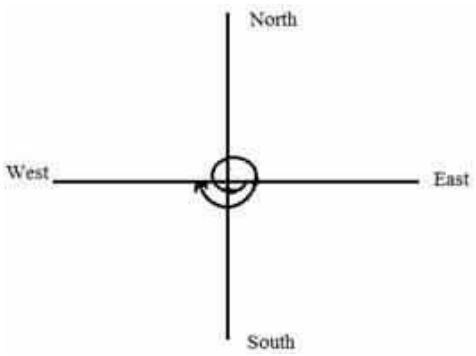
Answer:

When we revolve one complete round in either clockwise or anti-clockwise direction we complete an angle of 360° and the two adjacent directions will be at 90°.

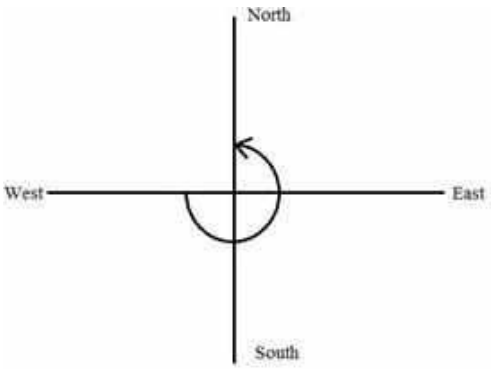
(a) If we start from East and make half of the complete revolution clockwise, we will be facing the west direction.



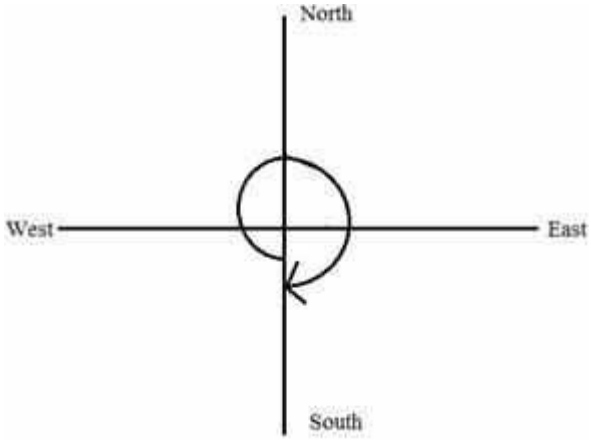
(b) If we start from East and make one and half of the complete revolution clockwise, we will be facing the west direction.



(c) If we start from West and make three fourth of the complete revolution anti-clockwise, we will be facing the north direction.



(d) If we start from South and make a complete revolution clockwise or anti-clockwise, we will be facing the South direction again.



Q. 4 What part of a revolution have you turned through if you stand facing

(a) east and turn clockwise to face north?

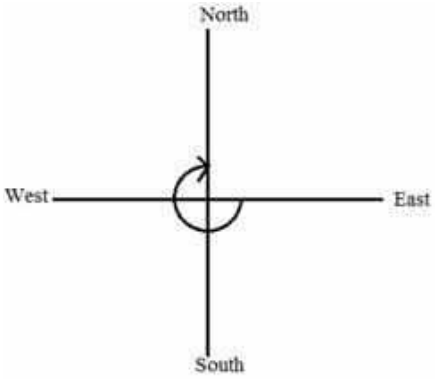
(b) south and turn clockwise to face east?

(c) west and turn clockwise to face east?

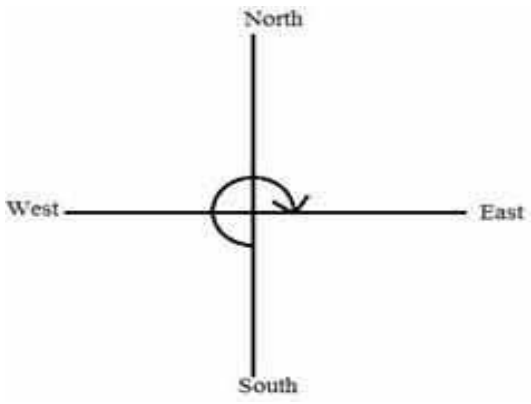
Answer:

As we know that if we complete one revolution whether clockwise or anti-clockwise we will be making an angle of 360°.

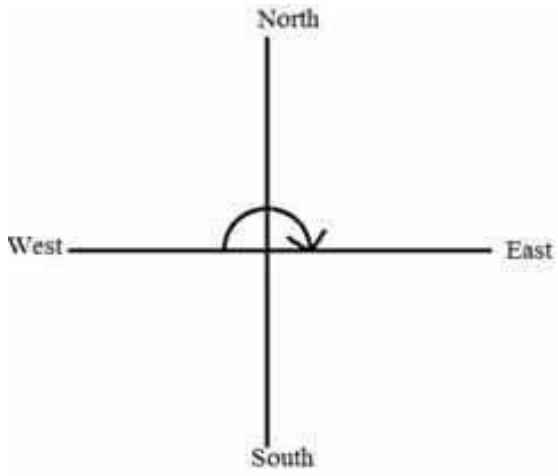
(a) If we start from East and turn clockwise to face north then we will be completing the three fourth of the revolution which is of 270°.



(b) If we start from South and turn clockwise to face East then we will be completing the three fourth of the revolution which is of 270°.



(c) If we start from West and turn clockwise to face east then we will be completing the half of the revolution which is of 180°.



Q. 5 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 1 (d) 10 to 1

(e) 12 to 9 (f) 12 to 6

Answer:

A clock hand makes an angle of 360° in on complete round which also made of 4 right angles.

(a) When a clock hand goes from 3 to 6 it makes only 1 right angle as it covers only one fourth of the complete revolution.

(b) When a clock hand goes from 2 to 8, it makes 2 right angles as it covers half of the complete revolution which is of 180°.

(c) When a clock hand goes from 5 to 11, it makes 2 right angles as it covers half of the complete revolution which is of 180°.

(d) When a clock hand goes from 10 to 1 it makes only 1 right angle as it covers only one fourth of the complete revolution.

(e) When a clock hand goes from 12 to 9, it makes 3 right angles as it covers three fourth of the complete revolution which is of 270°.

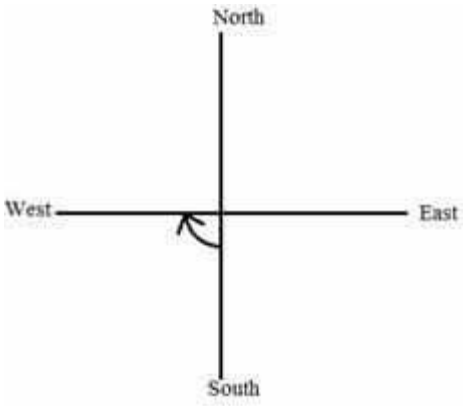
(f) When a clock hand goes from 12 to 6, it makes 2 right angles as it covers half of the complete revolution which is of 180°.

Q. 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?

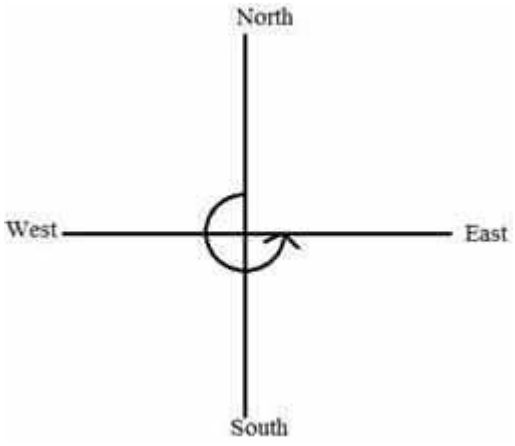
Answer:

One complete revolution is of 360° or we can say 4 right angles.

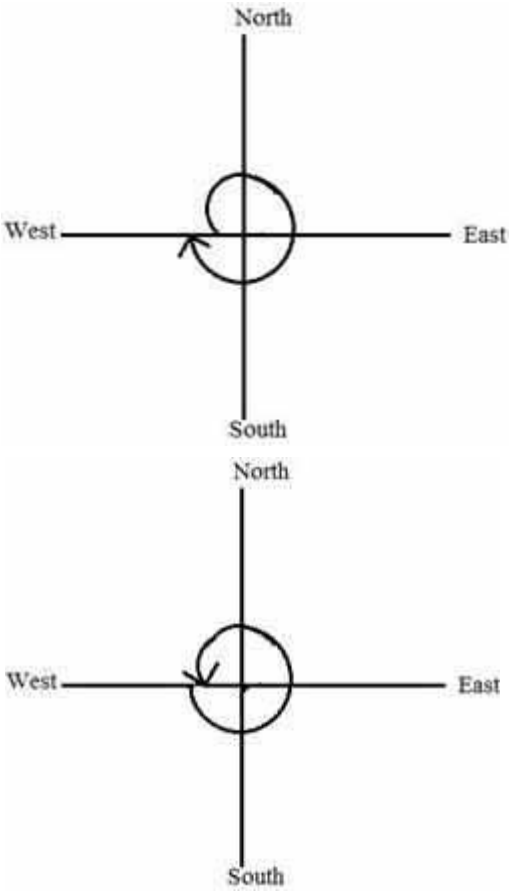
(a) If you start from South and turn clockwise to west then you are making 1 right angle.



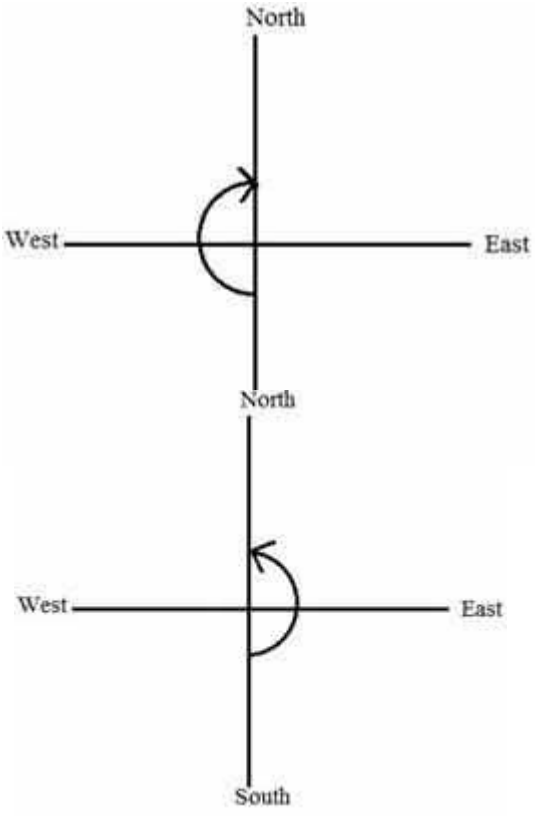
(b) If you start from North and turn anti-clockwise to east then you are making 3 right angles.



(c) If you start from west and turn to west again then you are completing one revolution which is of 4 right angles.



(d) If you start from South and turn clockwise to north then you are making 2 right angles.



Q. 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:

As we know one complete revolution is of 360° which is consist of 4 right angles.

By looking at the clock we can tell;

(a) If the hour hand of the clock starts from 6 and make 1 right angle then it will stop at 9.

(b) If the hour hand of the clock starts from 8 and make 2 right angles then it will stop at 2.

(c) If the hour hand of the clock starts from 10 and make 3 right angles then it will stop at 7.

(d) If the hour hand of the clock starts from 7 and make 2 straight angles then it will stop at 7.

EXERCISE – 5.3

Q. 1 Match the following:

Column A	**Column B**
(i) Straight angle	(a) Less than one-fourth of a revolution
(ii) Right angle	(b) More than half a Revolution
(iii) Acute angle	(c) Half of a revolution
(iv) Obtuse angle	(d) One – fourth of a Revolution
(v) Reflex angle	(e) Between $\frac{1}{4}$ and $\frac{1}{2}$ of a Revolution
	(f) One complete Revolution

Answer:

Column A	**Column B**
(i) Straight angle	(c) Half of a revolution
(ii) Right angle	(d) One – fourth of a Revolution
(iii) Acute angle	(a) Less than one-fourth of a revolution
(iv) Obtuse angle	(e) Between $\frac{1}{4}$ and $\frac{1}{2}$ of a Revolution
(v) Reflex angle	(b) More than half a Revolution

(i) Straight angle – It is formed when legs are pointing in opposite direction and they form a straight line through the vertex of the angle. Thus measure of a straight line is always 180°.

Let's discuss revolution a revolution is a complete turn or a full rotation so it points back the same way and form an angle of 360°. And a straight angle is the half of the revolution that is 180°.

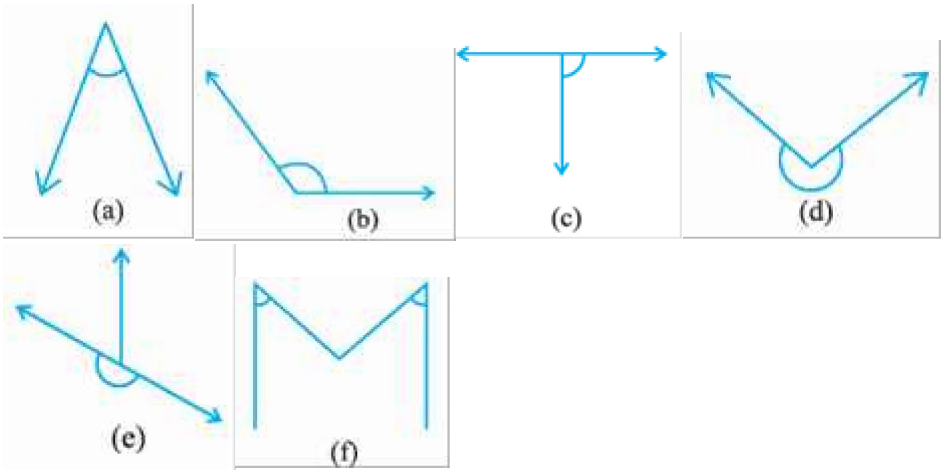
(ii) Right angle is of 90° and 90° is the of the 360°

(iii) Acute angle is less than 90° so it will be less than one-fourth of a revolution as 90° is the one-fourth.

(iv) Obtuse angle is the angle greater than 90° but less than 180° so it will be in between one-fourth and half of the revolution.

(v) Reflex angle whose measure is greater than 180° but less than 360° so it is more than half a revolution.

Q. 2 Classify each one of the following angles as right, straight, acute, obtuse or reflex:



Answer:

(a) It is an acute angle as its measure is less than 90°

(b) It is an obtuse angle because its measure is more than 90° but less than 180°

(c) Right angle as its measure is 90°

(d) Reflex angle as its measure is more than 180° but less 360°

(e) Straight angle as its measure is 180°

(f) Acute angle as its measure is less than 90°.

EXERCISE – 5.4

Q. 1 What is the measure of
(i) a right angle?
(ii) a straight angle?

Answer:

(i) A right angle is always of $90°$

(ii) A straight angle is always of $180°$

Q. 2 Say True or False:
(a) The measure of an acute angle $< 90°$.
(b) The measure of an obtuse angle $< 90°$.
(c) The measure of a reflex angle $> 180°$.
(d) The measure of one complete revolution $= 360°$
(e) If $m\angle A = 53°$ and $m\angle B = 35°$, then $m\angle A > m\angle B$.

Answer:

(a) True

An acute angle has its measure less than $90°$

(b) False

An obtuse angle has its measure of greater than $90°$ but less than $180°$

(c) True

A reflex angle has its measure greater than $180°$

(d) True

A complete revolution is of $360°$

(e) True

$53° > 35°$

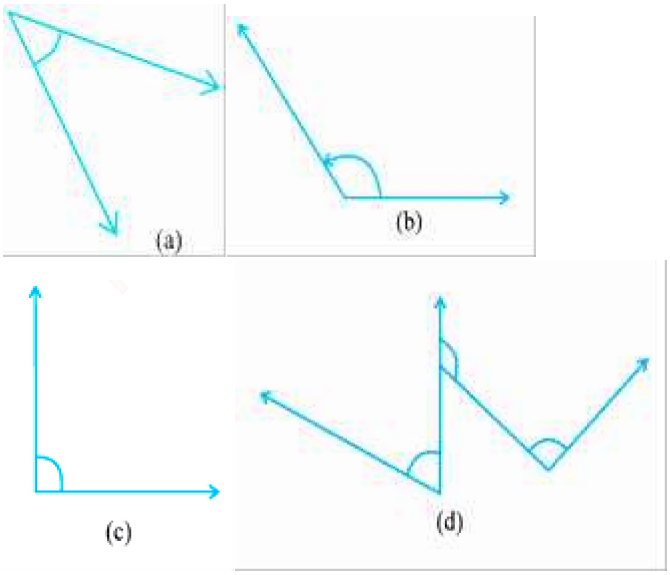
Q. 3 Write down the measures of
(a) some acute angles.
(b) some obtuse angles.
(Give two examples of each).

Answer:

(a) Acute angles is the angle which is less than 90° so the examples are; 30°, 45°, 60° and 70°

(b) Obtuse angle is the angle which is greater than 90° but less than 180° and the examples are; 110°, 120°, 135° and 170°.

Q. 4 Measure the angles given below, using the Protractor and write down the measure.



Answer:

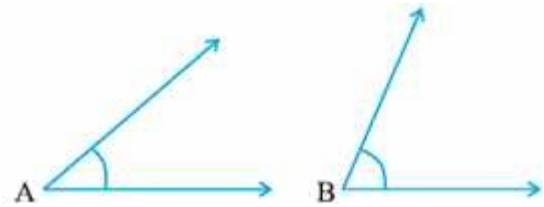
(a) 45°

(b) 120°

(c) 90°

(d) 60°, 130° and 90°.

Q. 5 Which angle has a large measure? First estimate and then measure.
Measure of ∠A =
Measure of ∠B =



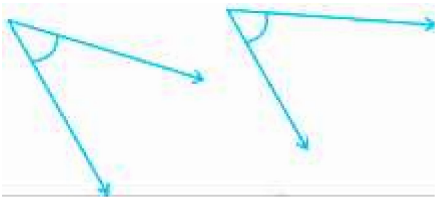
Answer:

Measure of ∠A = 40°

Measure of ∠B = 68°

Students have to measure it by their self.

Q. 6 From the following two angles, which has longer measure? Estimate and then confirm by measuring them.



Answer:

The first figure has the angle of 45° and second one of 55°.

Therefore, the angle 55° is the greatest.

Q. 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 measure of two right angle 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 …….. .

Answer:

(a) Acute

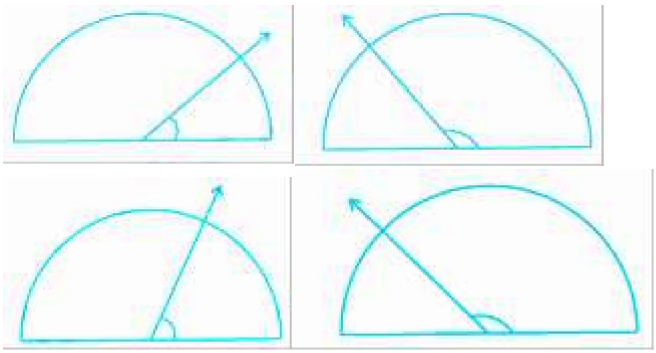
(b) Obtuse angle (if it is less than 180°)

(c) Straight angle

(d) Acute angle

(e) Obtuse angle.

Q. 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.).



Answer:

By measuring the figures with the help of protractor we get that the angles are of 40° for the first figure, 130° in the second figure, 65° in the third and 135° in the fourth one.

Q. 9 Find the angle measure between the hands of the clock in each figure:

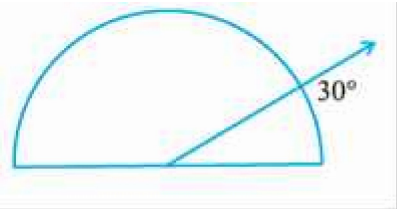
Answer:

9:00 AM = 90°

1:00 PM = 30°

6:00 PM = 180° as it forming the straight line which is always of 180°.

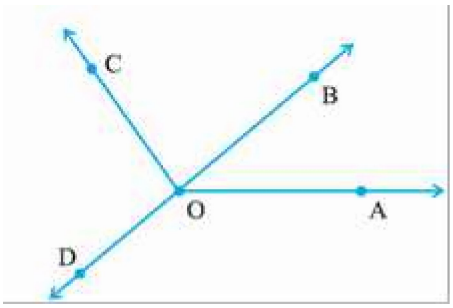
Q. 10 Investigate:
In the given figure, the angle measures 30°. Look at the same figure through a magnifying glass.
Does the angle become larger? Does the size of the angle change?



Answer:

By looking at the figure through the magnifying glass also the angle will remain the same it will not change.

Q. 11 Measure and classify each angle:



Angle	Measure	Type
∠AOB	–	–
∠AOC	–	–
∠BOC	–	–
∠DOC	–	–
∠DOA	–	–
∠DOB	–	–

Answer:

Angle	Measure	Type
∠AOB	40°	Acute angle
∠AOC	125°	Obtuse angle
∠BOC	85°	Acute angle
∠DOC	95°	Obtuse angle
∠DOA	140°	Obtuse angle
∠DOB	180°	Straight angle

EXERCISE – 5.5

Q. 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) It forms an acute angle as its sides are inclined at a point.

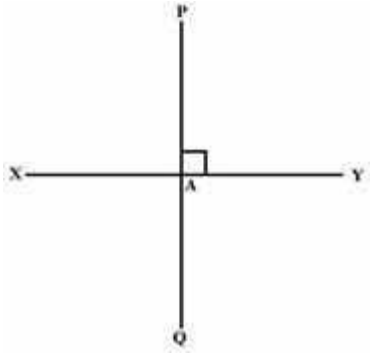
Q. 2 Let $\overline{PQ}$ be the perpendicular to the line segment $\overline{XY}$.
Let $\overline{PQ}$ and $\overline{XY}$ intersect in the point A. What is the measure of $\angle PAY$**?**

Answer:

Let's draw the line segment XY first,

Now draw PQ perpendicular to XY and intersecting at point A.

As PQ is a perpendicular to XY so it will form a right angle at intersecting point.



As we can see in the figure $\angle PAY$ is of $90°$.

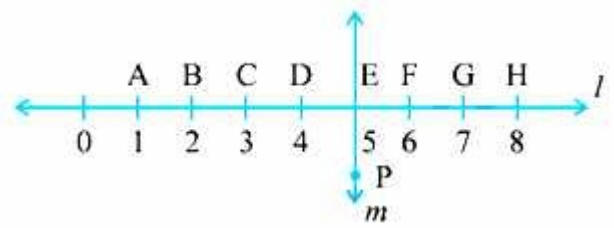
Q. 3 There are two set-squares in your geometry box. What are the measures of the angles that are formed at their corners? Do they have any angle measure that is common?

Answer:

The first one is of $90°$, $45°$ and $45°$

The second one is of $90°$, $30°$ and $60°$

Q. 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:

(a) Yes CE = EG as both have same distance of 2 units from the intersecting point. nee

(b) Yes PE bisect CG as E is the mid-point of CG and PE divides the line into two equal parts which is CE = EG.

(c) The two line segments can be BH and CG.

(d)

(i) AC > FG – True

As length of AC = 2 units

Length of FG = 1 unit

(ii) CD = GH – True

As both have same length of 1 unit.

(iii) BC < EH – True

As the length of BC = 1 unit

Length of EH = 3 units

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) Δ ABC with AB = 8.7 cm, AC = 7 cm and BC = 6 cm.

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

(d) Δ DEF with $m\angle D = 90°$.

(e) Δ XYZ with $m\angle Y = 90°$ and XY = YZ.

(f) Δ LMN with $m\angle L = 30°$, $m\angle M = 70°$ and $m\angle N = 80°$.

Answer:

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

A scalene triangle is triangle with all three unequal sides.

(b) ΔABC 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) ΔPQR is an equilateral triangle as all sides of the triangle is equal and according to the property of equilateral triangle has all equal sides.

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

(e) ΔXYZ Right-angled isosceles angle as it has one right angle of 90° and two equal sides and according to the property of right-angled isosceles triangle is has one right angle with two equal sides.

(f) ΔLMN is an acute angle as it has all the angles less than 90° and according to the property of acute angle it is a triangle with all three angles acute (less than 90°).

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

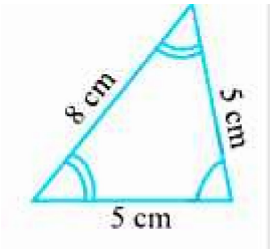
Answer:

Measures of parts	**Type of Triangle**	**Explanation**
(i) 3 sides of equal lengths	(a) Scalene	Equilateral triangle has all three sides equal.
(ii) 2 sides of equal lengths	(b) Isosceles right – angled	Iscoles triangle has any two sides equal.
(iii) All sides are of different lengths	(c) Obtuse angled	Scalene triangle has all the three sides different.
(iv) 3 acute angles	(d) Right angled	When all the three angles of a triangle are less than 45°, then it is an acute – angled triangle.
(v) 1 right angle	(e) Equilateral	When any one angle of a triangle is 90° then it is a right – angled triangle.
(vi) 1 obtuse angle	(f) Acute – angled	When any one angle of a triangle is greater than 90° but less than 180°, then it is an obtuse – angled triangle.

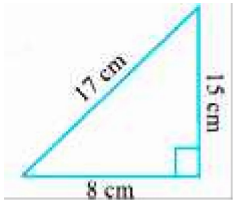
(vii) 1 right angle with sides of equal lengths	(g) Isosceles	When any two sides of a triangle are equal and one angle of the triangle is 90°, then it is an Isosceles – right – angled triangle.

Q. 3 Name each of the following triangles in two different ways: (you may judge the nature of the angle by observation).

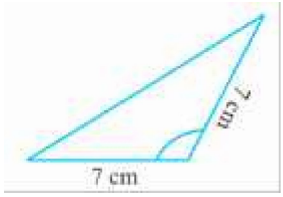
(a)



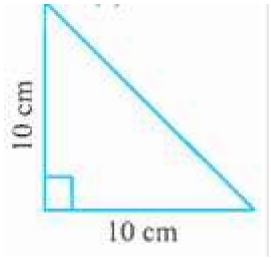
(b)

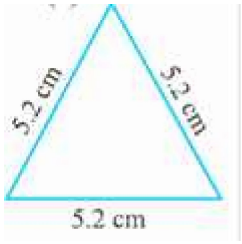


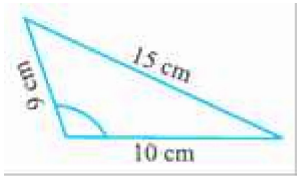
(c)



(d)



(e) 

(f) 

Answer:

(a) Acute-angled and isosceles triangle

As in this figure we can see all angles are less than 90° 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° 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° 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° 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° 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?

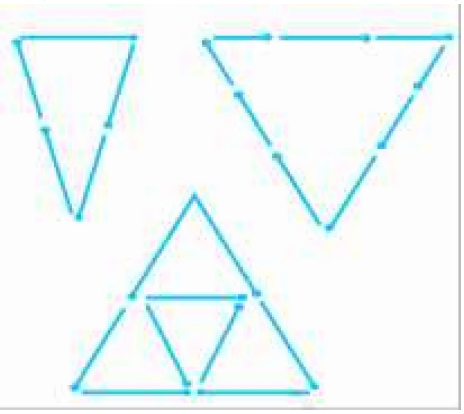
(b) 4 matchsticks?

(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.



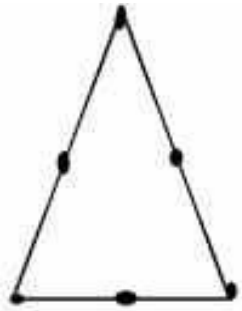
Answer:

(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.



EXERCISE – 5.7

Q.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:

(a) True.

As a square has all the sides of same length and all the interior angles of 90° which is also known as a right angle.

(b) True

It is a property of a rectangle that it has all the sides' equals to each other.

(c) True

A square is a special kind of rectangle which has all the angles of 90° and opposite side are equals to each other. So yes the diagonals of a square are perpendicular to one another.

(d) True

A rhombus is a quadrilateral with all sides of equal length.

(e) False

A parallelogram has two pairs of equal and parallel sides.

(f) False

A trapezium is a quadrilateral with one pair of parallel sides.

Q. 2 Give a reason 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 quadrilaterals.
(e) Square is also a parallelogram.

Answer:

(a) Yes, a square is a special rectangle, as a rectangle has its all angle of 90° and opposite sides are equals to each other. In the case of a square, all the angles are also 90° and it has all the sides' equals to each other.

(b) A rectangle has its all angles of 90° and opposite sides are equals and parallel to each other. A parallelogram also has opposite sides equal and parallel to each other. So we can say that a parallelogram with each angle a right angle becomes a rectangle and this rectangle can be thought of as a special parallelogram.

(c) All side of a rhombus are equal and a square also has all sides' equals to each other with all the interior angles of 90°. A rhombus with each angle a right angle becomes a square. So, a square can be seen as a special rhombus.

(d) Squares, rectangles, parallelograms are all quadrilaterals as all of them have 4 line segments and all are closed figures.

(e) In a parallelogram opposite sides are equal and parallel and in a square opposite side are equal and all the sides have same length so yes a square can be seen as a special parallelogram.

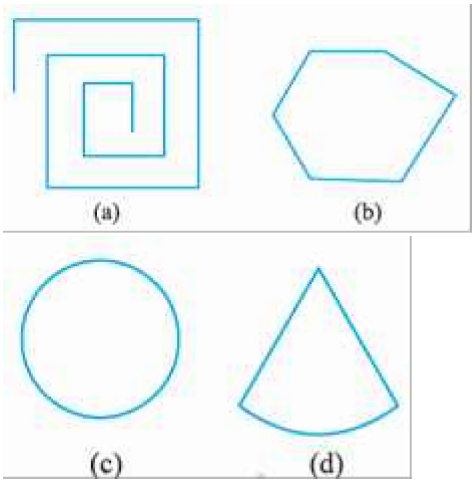
Q. 3 A figure is said to be regular, if its sides are equal in length and angles are equal in measure. Can you identify the regular quadrilateral?

Answer:

In a square all the interior angle is of 90° and all the sides are of same length. Therefore, a square is a regular quadrilateral.

EXERCISE – 5.8

Q.1 Examine whether the following are polygons. If anyone among them is not, say why?



Answer:

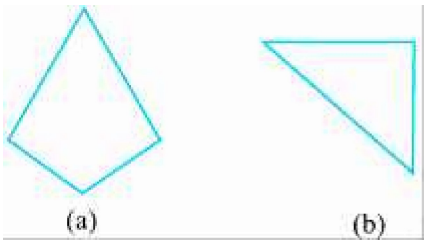
(a) No, it is not a polygon as it's not a closed figure.

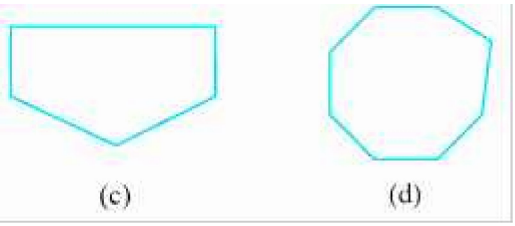
(b) Yes, it is a polygon as it is made of 6 line segments.

(c) No, it is not a polygon. It's a circle and it is not made of any line segments.

(d) No, it's not a polygon as it is not only made of line segments.

Q. 2 Name each polygon:





Make two more examples of each of these.

Answer:

(a) As the given figure is made of 4 line segments it is a quadrilateral.

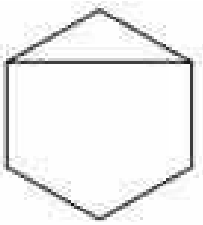
(b) The given figure is a triangle as we can see it is made of 3 line segments.

(c) The given figure is a pentagon as it is made of 5 line segments.

(d) The given figure is of octagon as it is made of 8 line segments.

Q. 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:

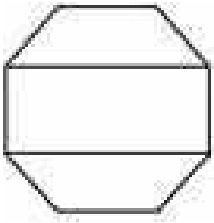


An isosceles triangle by joining three of the vertices of a hexagon will look like the figure above.

Q. 4 Draw a rough sketch of a regular octagon. (Use squared paper if you wish). Draw a rectangle by joining exactly four of the vertices of the octagon.

Answer:

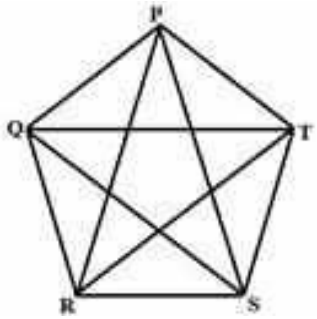
An octagon has eight sides.



If we join any two opposite sides, then we get a rectangle as shown in the above figure.

Q. 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**.**

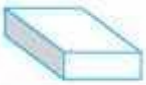
Answer:



It can be seen in the figure that PR, PS, QT, QS and RT are the diagonals.

EXERCISE – 5.9

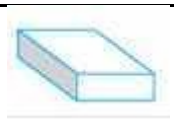
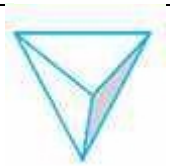
Q. 1 Match the following:

(a) Cone	(i) 
(b) Sphere	(ii) 
(c) Cylinder	(iii) 
(d) Cuboid	(iv) 
(e) Pyramid	(v) 

Give two more examples of each shape.

Answer:

(a) Cone	(ii) 
(b) Sphere	(iv) 
(c) Cylinder	(v) 

(d) Cuboid	(iii) 
(e) Pyramid	(v) 

(a) Cone – a cone is a three-dimensional geometric shape that has a circular base and a single vertex.

(b) Sphere – It is like a circle with the set of points that are all at the same distance from a given point.

(c) Cylinder- It is the curvilinear geometric shape formed by the points at a fixed distance from a given straight line called axis of the cylinder.

(d) Cuboid – A cuboid is a box-shaped solid object. It has six flat sides and all angles are right angles and all its faces are rectangles.

(e) Pyramid – A polyhedron formed by connecting a polygonal base and a point called the apex.

Q. 2 What shape is

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

Answer:

(a) Cuboid

(b) Cuboid

(c) Cuboid

(d) Cylinder

(e) Sphere