Unit 2 (Geometry)

Multiple Choice Questions (MGQs)

Question 1:

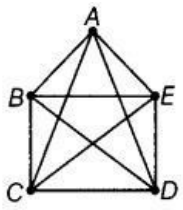
The number of lines passing through five points such that no three of them are collinear, is

(a) 10 (b) 5 (c) 20 (d) 8

Solution:

(a) Let A, B, C, D and E be five points such that no three of them are 4 collinear.

Lines passing through these five points are AB, BC, CD, DE, EA, BA, BD, CE, AC and AD.



Hence, the number of lines is 10.

Note Three or more points are said to be collinear, if they lie on a single straight line.

Question 2:

The number of diagonals in a septagon is

(a) 21 (b) 42 (c) 7 (d) 14

Solution:

(d) We know that, if a polygon has n sides, then

Number of diagonals = n(n-3)/2

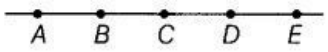
A septagon is a polygon having seven sides, i.e. n = 7

Number of diagonals in septagon = 7(7-3)/2 = 14

Note A diagonal is a line segment joining two non-consecutive vertices of a polygon.

Question 3:

The number of line segments in the given figure is



(a) 5 (b) 10

(c) 15 (d) 20

Solution:

(b) A line segment is a part of a line that has finite length and is bounded by two distinct end points.

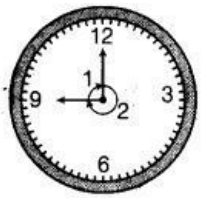
In the given figure, the line segments are AS, SC, CD, DE, AC, AD, BD, BE, CE and AE.
Hence, there are 10 line segments in the given figure.

Question 4:

Measures of the two angles between hour and minute hands of a clock at 9 O'clock are
(a) 60° , 300° (b) 270°, 90° (c) 75° , 285° (d) 30°, 330°

Solution:

(b) The positions of hour and minute hands of a clock at 9 O'clock are represented in the following figure



Clearly, $\angle 1 = 90°$
and $\angle 2 = \text{Reflex of } \angle 1 = 360° - 90° = 270°$

Note *A reflex angle is more than 180° but less than 360°. For any acute angle θ, its reflex angle is (360° − θ).*

Question 5:

If a bicycle wheel has 48 spokes, then the angle between a pair of two consecutive spokes is

(a) $\left(5\frac{1}{2}\right)^\circ$ (b) $\left(7\frac{1}{2}\right)^\circ$ (c) $\left(\frac{2}{11}\right)^\circ$ (d) $\left(\frac{2}{15}\right)^\circ$

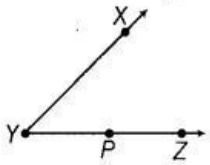
Solution:

(b) Given, number of spokes = 48 A complete angle = 360°
Angle between a pair of two consecutive spokes = Complete angle
Number of spokes 48 2

Question 6:

In the given figure, ∠XYZ cannot be written as

(a) ∠Y (b) ∠ZXY (c) ∠ZYX (d) ∠XYP

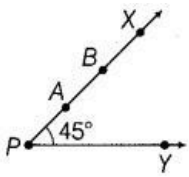


Solution:

(b) Since, ∠XYZ can be written as ∠Y, ∠ZYX , ∠XYP and ∠PYX.
So, ∠XYZ cannot be written as ∠ZXY.

Question 7:

In the given figure, if point A is shifted to point B along the ray PX such that PB = 2 PA, then the measure of ∠BPY is
(a) greater than 45° (b) 45° (c) less than 45° (d) 90°



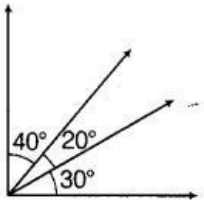
Solution:

(b) There will be no change in the measure of ∠BPY.

Question 8:

The number of angles in the given figure is

(a) 3 (b) 4 (c) 5



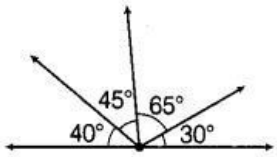
Solution:

(d) Angles shown in the figure are 40°, 20°, 30°, 60°, 50° and 90°. Therefore, there are 6 angles,

Question 9:

The number of obtuse angles in the given figure is

(a) 2 (b) 3 (c) 4 (d) 5



Solution:

(c) There are 4 obtuse angles.

(i) 30° + 65° = 95°

(ii) 30° + 65° + 45° = 140°

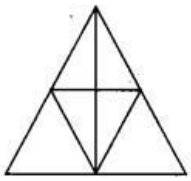
(iii) 65°+ 45° = 110°

(iv) 65° + 45° + 40° = 150° [van obtuse angle is more than 90° but less than 180°]

Question 10:

The number of triangles in the figure given is

(a) 10 (b) 12 (c) 13 (d) 14



Solution:

(c) By observing the figure, we can say that, number of triangles is 13.

Question 11:

If the sum of two angles is greater than 180°, then which of the following is not possible for the two angles?

(a) One obtuse angle and one acute angle

(b) One reflex angle and one acute angle

(c) Two obtuse angles

(d) Two right angles

Solution:

(d) Because sum of two right angles is equal to 180°.

Note:

• An acute angle is less than 90°.

• A right angle is equal to 90°.

• An obtuse angle is more than 90° but less than 180°.

• A reflex angle is more than 180° but less than 360°.

Question 12:

If the sum of two angles is equal to an obtuse angle, then which of the following is not possible?

(a) One obtuse angle and one acute angle

(b) One right angle and one acute angle

(c) Two acute angles

(d) Two right angles

Solution:

(d) Because sum of two right angles is equal to 180°.

Question 13:

A polygon has prime number of sides. Its number of sides is equal to the sum of the two least consecutive primes. The number of diagonals of the polygon is

(a) 4 (b) 5 (c) 7 (d) 10

Solution:

(b) The two least consecutive primes are 2 and 3.

2+3=5

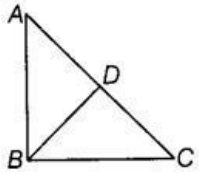
So, sides of polygon (n) = 5

Number of diagonals = n(n-3)/2 = 5(5-3)/2 = 5

Question 14:

In the given figure, AB = BC and AD = BD = DC.

(a) 1 (b) 2 (c) 3 (d) 4



Solution:

(c) A triangle, in which two sides are equal, is known as an isosceles triangle.

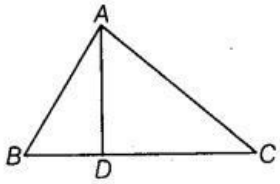
Hence, there are 3 isosceles triangles in the given figure,

i.e. A ABC, AABD and ABDC. [AB = BC, AD = DB and BD = DC]

Question 15:

In the given figure, ∠BAC = 90° and AD Perpendicular to BC.

The number of right angled triangles in the figure is



(a) 1 (b) 2 (c) 3 (d) 4

Solution:

(c) A triangle, in which one angle is equal to 90°, is called a right angled triangle.

Since, ∠BAC = 90°

ABAC is a right angled triangle.

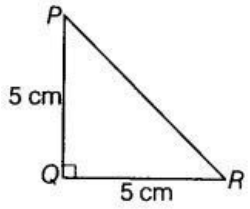
Also, ∠ADB = ∠ADC = 90° [AD Perpendicular to BC]

A ADB and A ADC are also right angled triangles.

Hence, there are 3 right angled triangles.

Question 16:

In the given figure, PQ Perpendicular to RQ, PQ = 5 cm and QR = 5 cm. Then, APQR is



(a) a right angled triangle but not isosceles

(b) an isosceles right angled triangle

(c) isosceles but not a right angled triangle

(d) neither isosceles nor right angled triangle

Solution:

(b) Since, PQ Perpendicular to RQ

So, <PQR = 90°

∴ APQR is right angled triangle.

Also, in APQR,

PQ = QR

APQR is an isosceles triangle.

Hence, APQR is an isosceles right angled triangle.

Fill in the Blanks

In questions 17 to 31, fill in the blanks to make the statements true.

Question 17:

An angle greater than 180° and less than a complete angle is called ……

Solution:

Reflex Angle

By definition, an angle greater than 180° and less than a complete angle (360°) is called reflex angle.

Question 18:

The number of diagonals in a hexagon is …….

Solution:

9

Number of sides in hexagon (n) = 6

Number of diagonals = n (n-3)/2 = 6(6- 3)/2=9

Question 19:

A pair of opposite sides of a trapezium is ……..

Solution:

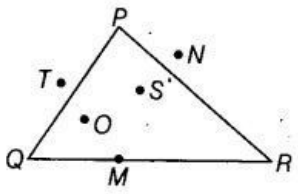
Parallel

If the quadrilateral has one pair of parallel sides, then it is known as trapezium.

Hence, a pair of opposite sides of a trapezium is parallel.

Question 20:

In the adjacent figure, points lying in the interior of the APQR are …… , that in the exterior are …….. and that on the triangle itself are ……



Solution:

Those points which lie inside the triangle are known as interior points and those lie outside the triangle are known as exterior points.

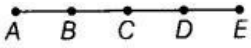
In the given figure, points lying in the interior of APQR are O and S.

Points lying in the exterior of APQR are N and T.

Points lying on the APQR is M, P, Q and R.

Question 21:

In the given figure, points A, B, C, D and E are collinear, such that AB = BC = CD = DE. Then,



(a) $AD = AB +$ _____

(b) $AD = AC +$ _____

(c) Mid-point of AE is _____

(d) Mid-point of CE is _____

(e) $AE =$ _____ AB.

Solution:

(a) BD

AD = AB+ BC + CD = AB+ BD

(b) CD

AD = AB+ BC + CD = AC + CD

(c) C

Given, AB = BC =CD = DE

∴ AE = AC + CE So, C is the mid-point of AE.

(d) D

Given, AB = BC = CD = DE CE = CD + DE So, D is the mid-point of CE.

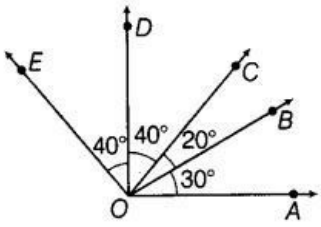
(e) 4

AE = AB+ BC + CD+ DE AE = AB+ AB+ AB+ AB

AE = 4 AS

Question 22:

In the given figure,



(a) $\angle AOD$ is a/an _____ angle.

(b) $\angle COA$ is a/an _____ angle.

(c) $\angle AOE$ is a/an _____ angle.

Solution:

(a) Right

Since, ∠AOD = ∠AOB + ∠BOC + ∠COD = 30° + 20° + 40° = 90°

So, <AOD = 90° is a right angle.

(b) Acute

Since, ∠COA = ∠COB + ∠BOA = 20° + 30° = 50° Because ∠COA = 50° < 90°

So, ∠COA is an acute angle.

(c) Obtuse

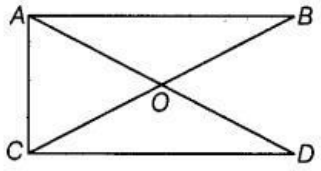
Since, ∠AOE = ∠AOB + ∠BOC + ∠COD + ∠DOE

= 30° + 20° + 40° + 40° = 130°

Because ∠AOE = 130° > 90° So, ∠AOE is an obtuse angle.

Question 23:

The number of triangles in the given figure is



Also, their names are ……..

Solution:

5

MOB, AAOC, A COD, AABC and AACD.

Question 24:

The number of angles less than 180° in the figure Q. No. 23 is …..

and their names are ……..

Solution:

12

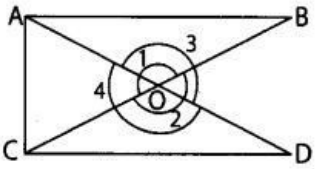
∠OAB, ∠OBA, ∠OAC, ∠OCA, ∠OCD, ∠ODC, ∠AOB, ∠AOC, ∠COD, ∠DOB, ∠BAC and ∠ACD.

Question 25:

The number of straight angles in the figure given below is ……

Solution:

4



i.e. L_1, L_2, L_3 and L_4.

Question 26:

The number of right angles in a straight angle is and that in a …….

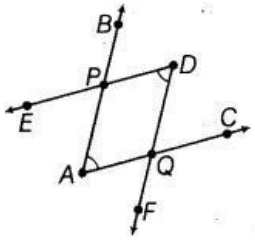
complete angle is

Solution:

2,4

Question 27:

The number of common points in the two angles marked in the figure is ……..



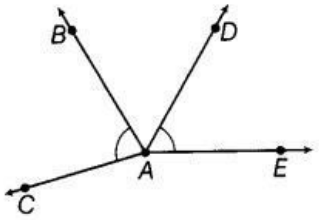
The common points in the ∠PDQ and ∠PAQ are P and Q.

Solution:

2

Question 28:

The number of common points in the two angles marked in the given figure is …….



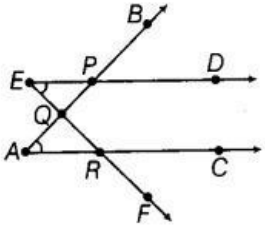
Solution:

1

The common point in ∠BAC and ∠DAE is A.

Question 29:

The number of common points in the two angles marked in the given figure is ……..



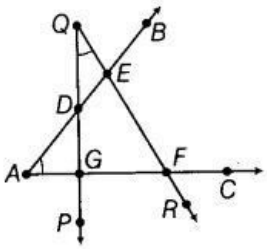
Solution:

3

The common points in <DEF and <BAC are P, 0 and R.

Question 30:

The number of common points in the two angles marked in the given figure is ……



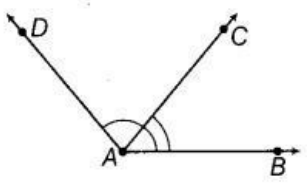
Solution:

4

The common points in ∠PQR and ∠BAC are D, E, F and G.

Question 31:

The common part between the two angles BAC and DAB in the given figure is …….



Solution:

Ray AS

Since, the common part between ∠DAB and ∠BAC is ray AB.

True/False

In questions 32 to 41, state whether the given statements are True or False

Question 32:

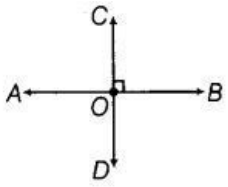
A horizontal line and a vertical line always intersect at right angles .

Solution:

True

Lines that never slant up or down are called horizontal lines. Lines that go straight up and down are called vertical lines.

Let AS be a horizontal line and CD be a vertical line, which intersect at 0.



Clearly, ∠AOD, ∠AOC , ∠COB and ∠BOD are right angles.

Question 33:

If the arms of an angle on the paper are increased, the angle increases.

Solution:

False

If the size of the arms changes, then there will be no change in the measure of the angle formed by those arms.

Question 34:

If the arms of an angle on the paper are decreased, the angle decreases.

Solution:

False

If the size of the arms changes, then there will be no change in the measure of the angle formed by those arms.

Question 35:

If line PQ || line m, then line segment PQ || m.

Solution:

True

If a line is parallel to another line, then their parts are also parallel.

Question 36:

Two parallel lines meet each other at some point.

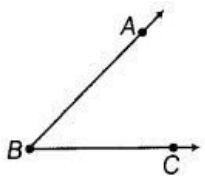
Solution:

False

By definition, parallel lines are those which never intersect each other.

Question 37:

Measures of ∠ABC and ∠CBA in the given figure are same.



Solution:

True

Because in both measurements ∠ABC and ∠CBA, the common angle is B. ∠ABC = ∠CBA

Question 38:

Two line segments may intersect at two points.

Solution:

False

Two line segments will intersect each other at only one point.

Question 39:

Many lines can pass through two given points.

Solution:

False

Only one line can pass through two given points.

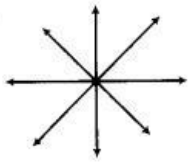
Question 40:

Only one line can pass through a given point.

Solution:

False

Infinitely many lines can pass through a given point.



Question 41:

Two angles can have exactly five points in common.

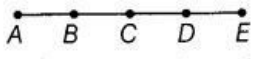
Solution:

False

Two angles can have either one or two points in common.

Question 42:

Name all the line segments in the given figure.

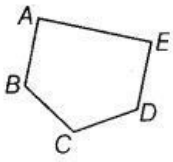


Solution:

A line segment is a part of line having finite length. Hence, all the line segments shown in the figure are AB, AC, AD, AE, BC, BD, BE, CD, CE and DE.

Question 43:

Name all the line segments shown in the figure given below.

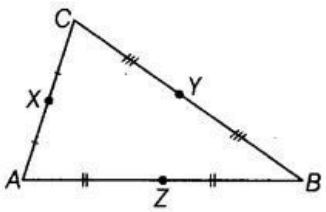


Solution:

There are five line segments in the given figure, namely AB, BC, CD, DE and EA.

Question 44:

State the mid-points of all the sides in the figure.



Solution:

Mid-point of a line segment divides it into two equal parts.

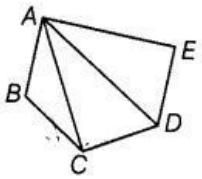
Clearly, from the figure,

AZ = ZB, AX = XC and CY = YB. So Z,X and Y are the mid-points of AS, AC and CB, respectively.

Hence, there are 3 mid-points, i.e. X, Z and Y.

Question 45:

Name the vertices and the line segments in the given figure.

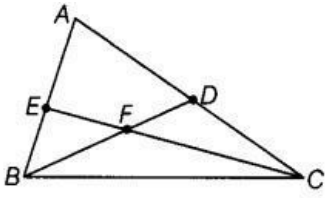


Solution:

There are five vertices in the given figure, namely A, 6, C, D and E and there are seven line segments in the given figure, namely AS, SC, CD, DE, EA, AC and AD.

Question 46:

Write down fifteen angles (less than 180°) involved in the figure.



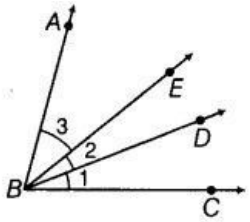
Solution:

The fifteen angles (less than 180°) shown in the figure are

∠EAD, ∠AEF, ∠EFD, ∠ADF, ∠DFC, ∠DCF, ∠CDF, ∠BEF, ∠BFE, ∠EBF, ∠FBC, ∠FCB, ∠BFC, ∠ABC and ∠ACS.

Question 47:

Name the following angles of the given figure using three letters.



(a) $\angle 1$
(b) $\angle 2$
(c) $\angle 3$
(d) $\angle 1 + \angle 2$
(e) $\angle 2 + \angle 3$
(f) $\angle 1 + \angle 2 + \angle 3$
(g) $\angle CBA - \angle 1$

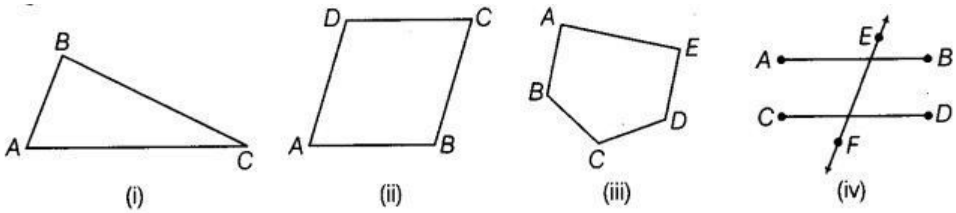
Solution:

From the figure,

(a) $\angle 1 = \angle CBD$
(b) $\angle 2 = \angle DBE$
(c) $\angle 3 = \angle EBA$
(d) $\angle 1 + \angle 2 = \angle CBD + \angle DBE$
$= \angle CBE$
(e) $\angle 2 + \angle 3 = \angle DBE + \angle EBA$
$= \angle DBA$
(f) $\angle 1 + \angle 2 + \angle 3 = \angle CBD + \angle DBE + \angle EBA$
$= \angle CBA$ or $\angle ABC$
(g) $\angle CBA - \angle 1 = \angle CBA - \angle CBD$
$= \angle DBA$ or $\angle ABD$

Question 48:

Name the points and then the line segments in each of the following figures.

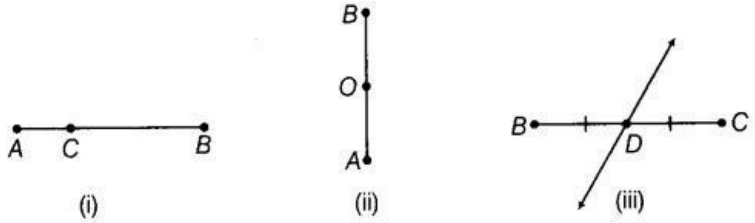


Solution:

(i) Points : A, B and C
Line segments : AB, BC and CA
(ii) Points : A, B, C and D
Line segments : AB, BC, CD and DA
(iii) Points : A, B, C, D and E
Line segments : AB, BC, CD, DE and EA
(iv) Points : A, B, C, D, E and F Line segments : AB, CD and EF

Question 49:

Which points in the given figures appear to be mid-points of the line segments? When you locate a mid-point, then name the two equal line segments formed by it.



Solution:

In figure (ii), point O appears to be the mid-point and equal line segments formed are OA and OB.

Also, in figure (iii), point D appears to be the mid-point and equal line segments formed are BD and DC.

Question 50:

Is it possible for the same

(a) line segments to have two different lengths?

(b) angles to have two different measures?

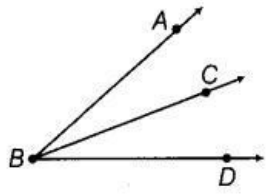
Solution:

(a) No, it is not possible that the same line segments have two different lengths,

(b) No, it is not possible that the same angles have two different measures.

Question 51:

Will the measures of ∠ABC and ∠CBD make measure of ∠ABD in the figure?

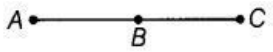


Solution:

Yes, because ∠ABC and ∠CBD together form ∠ABD, i.e. ∠ABC + ∠CBD = ∠ABD.

Question 52:

Will the lengths of line segment AB and line segment BC make the length of line segment AC in the figure?



Solution:

Yes, because the line segments AB and BC together form the line segment AC. i.e. AB + BC = AC

Question 53:

Draw two acute angles and one obtuse angle without using a protractor. Estimate the measures of the angles. Measure them with the help of a protractor and see how much accurate is your estimate?

Solution:

Angles are measured in degrees. The symbol for degrees is a little circle.

The FULL CIRCLE is 360° (360 degrees).

A half circle or a straight angle is 180°.

A quarter circle or a right angle is 90°.

Place the midpoint of the protractor on the VERTEX of the angle.

Line up one side of the angle with the zero line of the protractor (where you see the number 0).

Read the degrees where the other side crosses the number scale.

1. Measure the angles.

2. Measure the angles. Label each angle as acute or obtuse.

3. Tasha measured an acute angle, and got 146°. The teacher pointed out

that she had read the wrong set of numbers on the protractor.

What is the correct angle measure for the angle she measured?

4. Measure the following angles using your own protractor. If you need to, make the sides of the angles

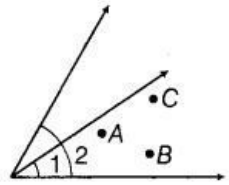
longer with a ruler

5. Draw four dots, and connect them so that you get a quadrilateral.

Measure all the angles of your quadrilateral. Then add the angle measures.
Did you get 360 degrees, or close?

Question 54:

Look at the figure. Mark a point
(a) A, which is in the interior of both ∠1 and ∠2.
(b) B, which is in the interior of only ∠1.
(c) C, in the interior of ∠1.



Now, state whether points B and C lie in the interior of <2 also.
Solution: Yes, points 6 and C lie in the interior of ∠2 also. Since, ∠1 is in interior of ∠2, then all the points lying inside the ∠1, will also lie inside the ∠2.

Question 55:

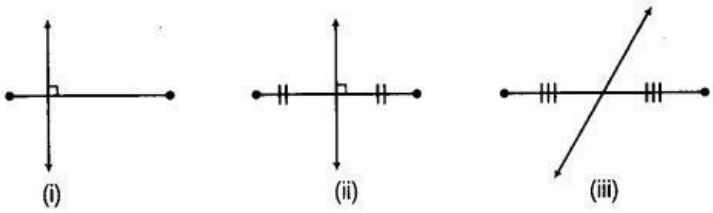
Find out the incorrect statement, if any in the following.
An angle is formed, when we have
(a) two rays with a common end point.
(b) two line segments with a common end point.
(c) a ray and a line segment with a common end point.

Solution:

Angle is made by two rays or lines having a common end point. So, options (b) and (c) are incorrect.

Question 56:

In which of the following figures,
(a) perpendicular bisector is shown?
(b) bisector is shown?
(c) only bisector is shown?
(d) only perpendicular is shown?

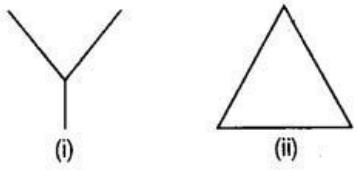


Solution:

A bisector is a line which bisects a given line segment into two equal parts. If this bisector is perpendicular to the given line segment, then it is known as perpendicular bisector.
(a) Figure (ii) represents a perpendicular bisector.
(b) Figures (ii) and (iii) represent bisectors.
(c) Figure (iii) represents only bisector.
(d) Figure (i) represents only perpendicular.

Question 57:

What is common in the following figures (i) and (ii)?



Is figure (i) that of triangle? If not, why?

Solution:

Both the figures have three line segments.

Figure (i) is not a triangle because it is not a closed figure.

Question 58:

If two rays intersect, will their point of intersection be the vertex of an angle, of which the rays are the two sides?

Solution:

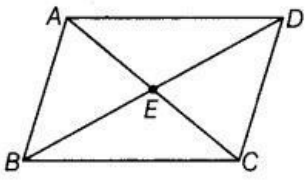
No, because angle is made when two rays intersect at common point. The common point is known as vertex of an angle.

Question 59:

In the given figure,

(a) name any four angles that appear to be acute angles.

(b) name any two angles that appear to be obtuse angles.



Solution:

(a) The four angles that appear to be acute angles are ∠AEB, ∠ADE, ∠BAE and ,BCE.

(b) ∠BCD and ∠BAD are angles that appear to be obtuse angles (answer may vary).

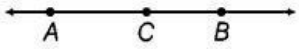
Question 60:

In the given figure,

(a) is $AC + CB = AB$?

(b) is $AB + AC = CB$?

(c) is $AB + BC = CA$?



Solution:

(a) Yes

(b) No, it is not possible.

(c) No, it is not possible.

Question 61:

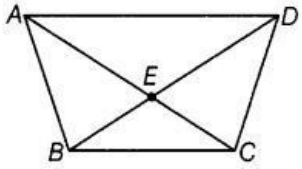
In the given figure,

(a) what is $AE + EC$?

(b) what is $AC - EC$?

(c) what is $BD - BE$?

(d) what is $BD - DE$?



Solution:

From the figure, we observe that

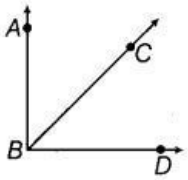
(a) AE+EC = AC (b) AC-EC=AE

(c) BD-BE = ED (d) BD-DE = BE

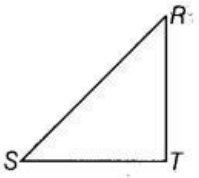
Question 62:

Using the given information, name the right angles in each part of the given figure.

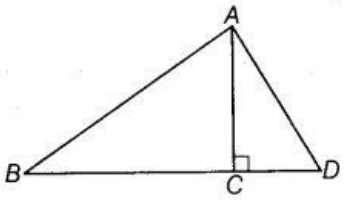
(a) $BA \perp BD$



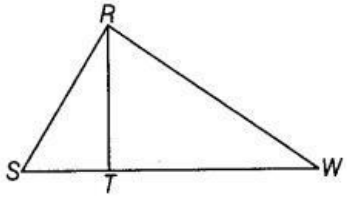
(b) $RT \perp ST$



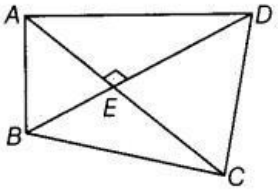
(c) $AC \perp BD$



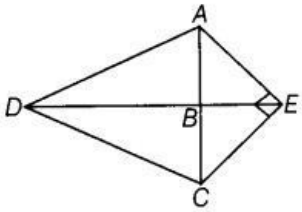
(d) $RT \perp SW$



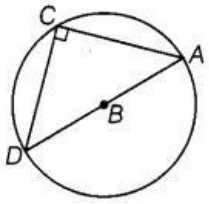
(e) $AC \perp BD$



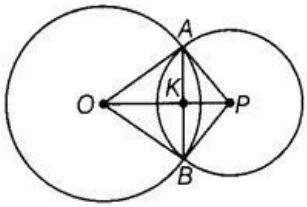
(f) $AE \perp CE$



(g) $AC \perp CD$



(h) $OP \perp AB$



Solution:

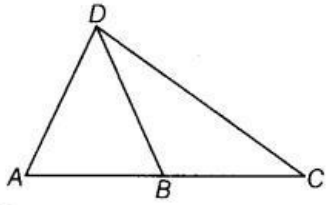
A right angle is an angle of measure 90°. It is formed by two perpendicular lines.

(a) $\angle ABD$ because $BA \perp BD$.
(b) $\angle RTS$ because $RT \perp ST$.
(c) $\angle ACD$ and $\angle ACB$ because $AC \perp BD$.
(d) $\angle RTW$ and $\angle RTS$ because $RT \perp SW$.
(e) $\angle AED$, $\angle AEB$, $\angle BEC$ and $\angle DEC$ because $AC \perp BD$ and E is their point of intersection.
(f) $\angle AEC$ because $AE \perp CE$.
(g) $\angle ACD$ because $AC \perp CD$.
(h) $\angle AKO$, $\angle AKP$, $\angle BKO$ and $\angle BKP$ because $OP \perp AB$ and K is their point of intersection.

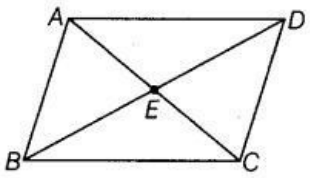
Question 63:

What conclusion can be drawn from each part, of the figure?

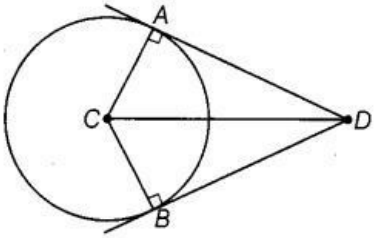
(a) *DB* is the bisector of $\angle ADC$.



(b) *BD* bisects $\angle ABC$.



(c) *DC* is the bisector of $\angle ADB$, $CA \perp DA$ and $CB \perp DB$.



Solution:

(a) If DB is the bisector of ∠ADC, then ∠ADB=∠CDB. Because an angle bisector bisects an angle into two equal angles.

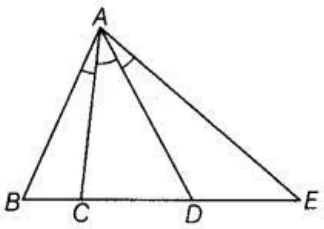
(b) If BD bisects ∠ABC, then ∠ABD=∠CBD. Because an angle bisector bisects an angle into two equal angles.

(c) If DC is the bisector of ∠ADB, then ∠ADC = ∠BDC.

Also, CADA and CBLDB, then ∠CAD=90° and ∠CBD=90°

Question 64:

An angle is said to be trisected, if it is divided into three equal parts. If in the given figure, ∠BAC= ∠CAD = ∠DAE, then how many trisectors are there for ∠BAE?



Solution:

For an angle to be trisected, we need two trisectors. So, for <BAE, we have two trisectors, i.e. AC and AD. AC and AD divides the ∠BAE in three equal angles.

Question 65:

How many points are marked in the figure?

Solution:

There are two points marked, namely A and B.

Question 66:

How many line segments are there in the figure of Q.No. 65?

Solution:

There is only one line segment AB.

Question 67:

In the given figure, how many points are marked? Name them.

Solution:

There are three points marked, namely A, B and C.

Question 68:

How many line segments are there in the figure of Q.No. 67? Name them.

Solution: There are three line segments, namely AB, BC and AC.

Question 69:

In the given figure, how many points are marked? Name them.

Solution:

There are four points marked, namely A, B, C and D.

Question 70:

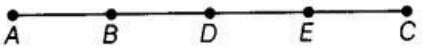
In the given figure, how many line segments are there? Name them.

Solution:

There are six line segments, namely AB, AC, AD, BC, BD and CD.

Question 71:

In the given figure, how many points are marked? Name them.



Solution:

There are five points marked, namely A, B, C, D and E.

Question 72:

In the figure of Q.No. 71, how many line segments are there? Name them.

Solution:

There are ten line segments, namely AB, AD, AE, AC, BD, BE, BC, BC, DE, DC and EC.

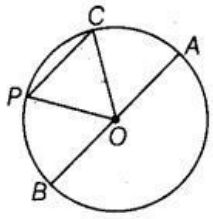
Question 73:

In the given figure, 0 is the centre of the circle.

(a) Name all chords of the circle.

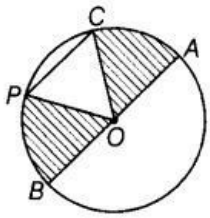
(b) Name all radii of the circle.

(c) Name a chord, which is not the diameter of the circle.
(d) Shade sectors OAC and OPB.
(e) Shade smaller segment of the circle formed by CP.

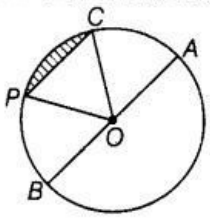


Solution:

A chord of a circle is a straight line segment whose both end points lie on the circle. The longest chord which passes through the centre of the circle is known as diameter. Line segment joining the centre to the point which lie on the circle is known as radius.
The portion of a circle enclosed by two radii is known as sector. The segment of a circle is the region bounded by a chord and the arc subtended by the chord.
(a) CP and AB are the two chords.
(b) OA, OB, OC and OP are the radii of the circle.
(c) CP is a chord which is not the diameter of the circle because it does not pass through the centre.
(d) Shaded sectors *OAC* and *OPB* are as :



(e) Shaded smaller segment of the circle formed by *CP* is as :



Question 74:

Can we have two acute angles whose sum is
(a) an acute angle? Why or why not?
(b) a right angle? Why or why not?
(c) ah obtuse angle? Why or why not?
(d) a straight angle? Why or why not?
(e) a reflex angle? Why or why not?

Solution:

(a) Yes, the sum of the two acute angles may be less than a right angle, e.g. 30° and 45° are acute angles and their sum (i.e. 30°+ 45°=75°) is also an acute angle.
(b) Yes, the sum of two acute angles may be equal to a right angle, e.g. 30° + 60°=90°.
(c) Yes, the sum of two acute angles may be more than a right angle, i.e. obtuse angle, e.g. 60°+70°=130°.
(d) No, the sum of two acute angles is always less than a straight angle, i.e. 180°.
(e) No, the sum of two acute angles is always less than 180°. So, their sum cannot be a reflex angle.

Question 75: Can we have two obtuse angles whose sum is
(a) a reflex angle? Why or why not?

(b) a complete angle? Why or why not?

Solution:

(a) Yes, the sum of two obtuse angles is always greater than 180°. Hence, the sum of two obtuse angles may be a reflex angle.

(b) No, the sum of two obtuse angles cannot be 360°. Because each obtuse angle lies between 90° to 180°. So, the sum of the two obtuse angles lies between 180° to 360°.

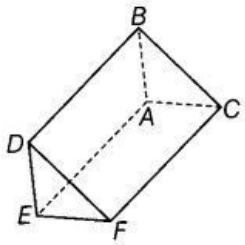
Question 76:

Write the name of

(a) vertices,

(b) edges and

(c) faces of the prism, shown in the given figure.



Solution:

(a) Vertices shown in the figure are A, B, C, D, E and F.

(b) Edges shown in the figure are AB, AC, BC, BD, DF, FC, EF, ED and AE.

(c) Faces of prism shown in the figure are ABC, DEF, AEFC, AEDB and BDFC.

Question 77:

How many edges, faces and vertices are there in a sphere?

Solution: A sphere does not have any edges, faces and vertices.

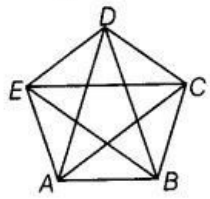
Question 78:

Draw all the diagonals of a pentagon ABODE and name them.

Solution:

Since, a pentagon has five sides, i.e. n = 5.

Hence, the number of diagonals $= \frac{5(5-3)}{2} = 5$



The diagonals of pentagon are *AC*, *AD*, *BE*, *BD* and *CE*.