

NCERT Solutions for Class 6 Maths Chapter 4 Basic Geometrical Ideas Ex 4.1

Exercise 4.1

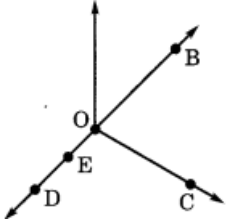
Ex 4.1 Class 6 Maths Question 1.

Use the figure to name:

- (a) Five points
- (b) A line
- (c) Four rays
- (d) Five line segments

Solution:

- (a) Five points are: O, B, C, E and D



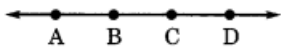
- (b) Name of the line is \overleftrightarrow{DB} or \overleftrightarrow{BD} .

- (c) Four rays are: \overrightarrow{OC} , \overrightarrow{OB} , \overrightarrow{OE} and \overrightarrow{OD}

- (d) Five line segments are: \overline{OE} , \overline{ED} , \overline{OD} , \overline{OB} and \overline{EB} .

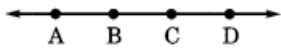
Ex 4.1 Class 6 Maths Question 2.

Name the line given in all possible (twelve) ways, choosing only two letters at a times from the four given.



Solution:

The given lines can be named as follows:

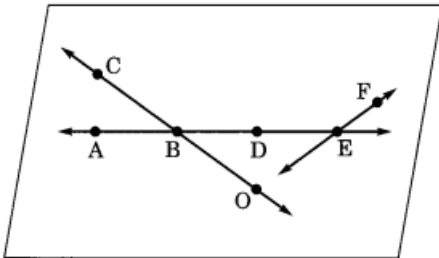


- (i) \overline{AB} (ii) \overline{AC} (iii) \overline{AD}
- (iv) \overline{BC} (v) \overline{BD} (vi) \overline{CD}
- (vii) \overline{BA} (viii) \overline{CA} (ix) \overline{DA}
- (x) \overline{CB} (xi) \overline{DB} (xii) \overline{DC}

Ex 4.1 Class 6 Maths Question 3.

Use the figure to name:

- (a) Line containing point E.
- (b) Line passing through A.
- (c) Line on which O lies.
- (d) Two pairs of intersecting lines.



Solution:

- (a) \overleftrightarrow{EF}
- (b) \overleftrightarrow{AE}
- (c) \overleftrightarrow{BC} or \overleftrightarrow{BO}
- (d) \overleftrightarrow{CO} or \overleftrightarrow{AE} or \overleftrightarrow{AE} or \overleftrightarrow{EF}

Ex 4.1 Class 6 Maths Question 4.

How many lines can pass through

- (a) one given point?
- (b) two given points?

Solution:

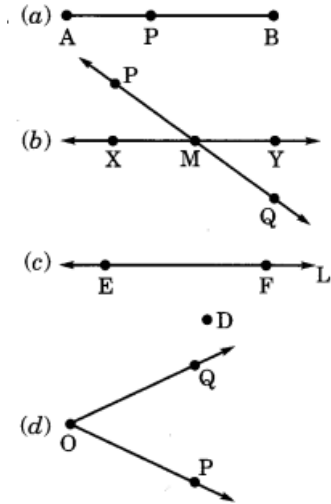
- (a) Infinitely many lines can pass through a given points.
- (b) Only one line can pass through two given points.

Ex 4.1 Class 6 Maths Question 5.

Draw a rough figure and label suitably in each of the following cases:

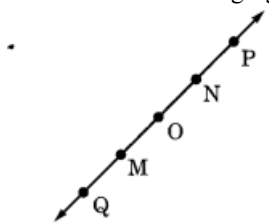
- (a) Point P lies on \overline{AB} .
- (b) \overleftrightarrow{XY} and \overleftrightarrow{PQ} intersect at M.
- (c) Line L contains E and F but not D.
- (d) \overleftrightarrow{OP} and \overleftrightarrow{OQ} meet at O.

Solution:



Ex 4.1 Class 6 Maths Question 6.

Consider the following figure of line MN. Say whether following statements are true or false in context of the given figure.



- (a) Q, M, O, N, P are points on the line \overleftrightarrow{MN} .
- (b) M, O, N are points on a line segment \overline{MN} .
- (c) M and N are end points of line segment \overline{MN} .

- (d) O and N are end points of line segment \overline{OP} .
- (e) M is one of the end points of line segment \overline{QO} .
- (f) M is point on ray \overrightarrow{OP} .
- (g) Ray \overleftrightarrow{OP} is different from ray \overrightarrow{QP} .

- (h) Ray \overleftrightarrow{OP} is same as ray \overrightarrow{OM} .
- (i) Ray \overrightarrow{OM} is not opposite to ray \overleftrightarrow{OP} .
- (j) O is not an initial point of \overleftrightarrow{OP} .
- (k) N is the initial point of \overrightarrow{NP} and \overrightarrow{NM} .

Solution:

- (a) True
 (b) True
 (c) True
 (d) False
 (e) False
 (f) False
 (g) True
 (h) False
 (i) False
 (j) False
 (k) True

NCERT Solutions for Class 6 Maths Chapter 4 Basic Geometrical Ideas Ex 4.2

Exercise 4.2

Ex 4.2 Class 6 Maths Question 1.

Classify the following curves as (i) open or (ii) closed.



(a)



(b)



(c)



(d)

Solution:

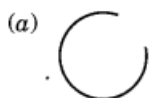
- (a) Open curve
 (b) Closed curve
 (c) Open curve
 (d) Closed curve

Ex 4.2 Class 6 Maths Question 2.

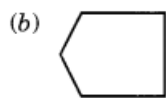
Draw rough diagrams to illustrate the following:

- (a) Open curve
 (b) Closed curve

Solution:



Open curve



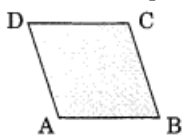
Closed curve

Ex 4.2 Class 6 Maths Question 3.

Draw any polygon and shade

Solution:

ABCD is the required polygon whose interior region is shaded.



Ex 4.2 Class 6 Maths Question 4.

Consider the given figure and answer the questions.

- (a) Is it a curve?
 (b) Is it closed?



Solution:

- (a) Yes, it is a curve.
- (b) Yes, it is closed curve.

Ex 4.2 Class 6 Maths Question 5.

Illustrate, if possible, each one of the following with a rough diagram:

- (a) A closed curve that is not a polygon.
- (b) An open curve made up entirely of line segments.
- (c) A polygon with two sides.

Solution:

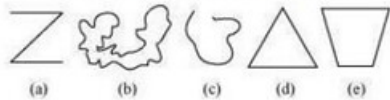
- (a) Required closed curve is a circle.
- (b) ABCD is an open curve made up of the line segments \overline{AB} , \overline{BC} and \overline{CD} .
- (c) A polygon with two sides is not possible.

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Exercise 4.2

Question 1:

Classify the following curves as (i) Open or (ii) Closed.



Answer:

- (a) Open
- (b) Closed
- (c) Open
- (d) Closed
- (e) Closed

Question 2:

Draw rough diagrams to illustrate the following:

- (a) Open curve (b) Closed curve.

Answer:

- (a) Open curve



- (b) Closed curve



Question 3:

Draw any polygon and shade its interior.

Answer:



Question 4:

Consider the given figure and answer the questions:

(a) Is it a curve? (b) Is it closed?



Answer:

(a) Yes

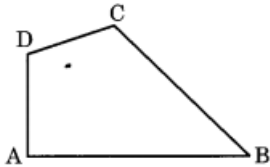
(b) Yes

NCERT Solutions for Class 6 Maths Chapter 4 Basic Geometrical Ideas Ex 4.3

Exercise 4.3

Ex 4.3 Class 6 Maths Question 1.

Name the angles in the given figure.



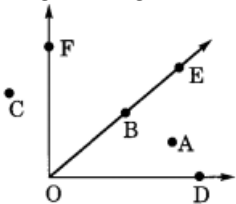
Solution:

The angles are:

- (i) $\angle A$ or $\angle DAB$
- (ii) $\angle B$ or $\angle CBA$
- (iii) $\angle C$ or $\angle DCB$
- (iv) $\angle D$ or $\angle ADC$.

Ex 4.3 Class 6 Maths Question 2.

In the given diagram, name the point(s):



- (a) In the interior of $\angle DOE$
- (b) In the exterior of $\angle EOF$
- (c) On $\angle EOF$

Solution:

- (a) A is the point in the interior $\angle DOE$.
- (b) C is the point in the exterior $\angle EOF$.
- (c) B is the point on $\angle EOF$.

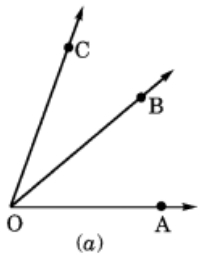
Ex 4.3 Class 6 Maths Question 3.

Draw rough diagrams of two angles such that they have

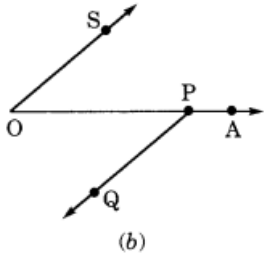
- (a) one point in common.
- (b) two points in common.
- (c) three points in common.
- (d) four points in common.
- (e) One ray in common.

Solution:

(a) In figure (a), O is the common point of $\angle AOB$ and $\angle COB$.

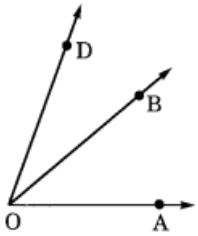


(b) In figure (b), O and P are the common points in $\angle SOA$ and $\angle OPQ$.



(c) Such a diagram is not possible.

(d) Such a diagram is not possible.

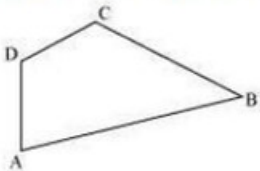


(e) \overrightarrow{OB} is the common ray of $\angle AOB$ and $\angle DOB$.

Exercise 4.3

Question 1:

Name the angles in the given figure.

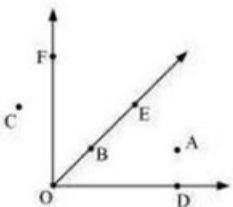


Answer:

$\angle BAD, \angle ADC, \angle DCB, \angle CBA$

Question 2:

In the given diagram, name the point (s)



(a) In the interior of $\angle DOE$

(b) In the exterior of $\angle EOF$

(c) On $\angle EOF$

Answer:

(a) A

(b) C, A, D

(c) B, E, O, F

Question 3:

Draw rough diagrams of two angles such that they have

(a) One point in common.

(b) Two points in common.

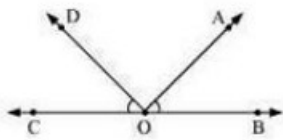
(c) Three points in common.

(d) Four points in common.

(e) One ray in common.

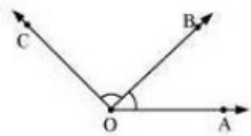
Answer:

(a)



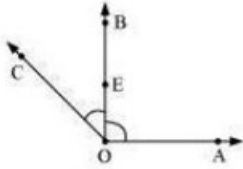
$\angle COD$ and $\angle AOB$ have point O in common.

(b)



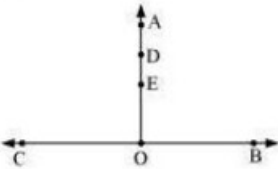
$\angle AOB$ and $\angle BOC$ have points O and B in common.

(c)



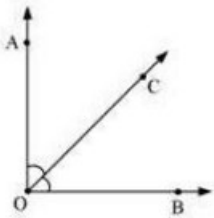
$\angle AOB$ and $\angle BOC$ have points O, E, B in common.

(d)



$\angle BOA$ and $\angle COA$ have points O, E, D, A in common.

(e)



Ray \overline{OC} is common between $\angle BOC$ and $\angle AOC$.

NCERT Solutions for Class 6 Maths Chapter 4 Basic Geometrical Ideas Ex 4.4

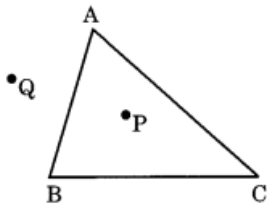
Exercise 4.4

Ex 4.4 Class 6 Maths Question 1.

Draw a rough sketch of a triangle ABC. Mark a point P in its interior and a point Q in its exterior. Is the point A in its exterior or in its interior?

Solution:

Triangle ABC is the given triangle.



P is in the interior of $\triangle ABC$.

Q is in the exterior of $\triangle ABC$.

A is neither in the exterior nor in the interior.

Ex 4.4 Class 6 Maths Question 2.

(a) Identify three triangles in the figure.

(b) Write the names of seven angles.

(c) Write the names of six line segments.

(d) Which two triangles have $\angle B$ as common?

Solution:

(a) Three triangles are: $\triangle ABC$, $\triangle ABD$ and $\triangle ADC$.

(b) (i) $\angle ABC$

(ii) $\angle ADB$

(iii) $\angle BAD$

- (iv) $\angle ADC$
- (v) $\angle ACD$
- (vi) $\angle DAC$
- (vii) $\angle BAC$.

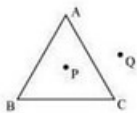
- (c) \overline{AB} , \overline{BD} , \overline{AD} , \overline{AC} , \overline{DC} , \overline{BC}
- (c) $\triangle ABC$ and $\triangle ABD$ have $\angle B$ as common.

Exercise 4.4

Question 1:

Draw a rough sketch of a triangle ABC. Mark a point P in its interior and a point Q in its exterior. Is the point A in its exterior or in its interior?

Answer:

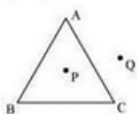


Point A lies on the given $\triangle ABC$.

Question 1:

Draw a rough sketch of a triangle ABC. Mark a point P in its interior and a point Q in its exterior. Is the point A in its exterior or in its interior?

Answer:



Point A lies on the given $\triangle ABC$.

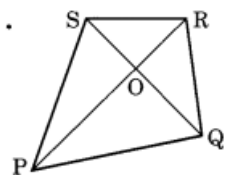
NCERT Solutions for Class 6 Maths Chapter 4 Basic Geometrical Ideas Ex 4.5

Exercise 4.5

Ex 4.5 Class 6 Maths Question 1.

Draw a rough sketch of a quadrilateral PQRS. Draw its diagonals. Name them. Is the meeting point of the diagonals in the interior or exterior of the quadrilateral?

Solution:



- (i) We have a quadrilateral PQRS.
- (ii) PR and QS are its two diagonals.
- (iii) O is the meeting point of the diagonals PR and QS which is in the interior of the quadrilateral.

Ex 4.5 Class 6 Maths Question 2.

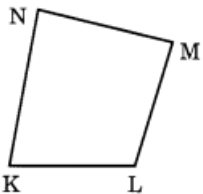
Draw a rough sketch of a quadrilateral KLMN. State:

- (a) two pairs of opposite sides
- (b) two pairs of opposite angles
- (c) two pairs of adjacent sides
- (d) two pairs of adjacent angles.

Solution:

KLMN is the given quadrilateral.

- (a) \overline{KL} , \overline{NM} and \overline{KN} , \overline{LM} are the pairs of opposite sides.
- (b) $\angle K$ and $\angle M$, $\angle L$ and $\angle N$ are the pairs of opposite angles.

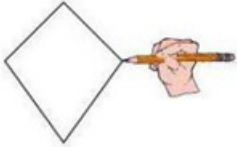


- (c) \overline{KL} and \overline{KN} , \overline{NM} and \overline{ML} are the pairs of adjacent sides.
- (d) $\angle K$ and $\angle L$, $\angle N$ and $\angle M$ are the pairs of adjacent angles.

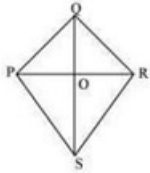
Exercise 4.5

Question 1:

Draw a rough sketch of a quadrilateral PQRS. Draw its diagonals. Name them. Is the meeting point of the diagonals in the interior or exterior of the quadrilateral?



Answer:



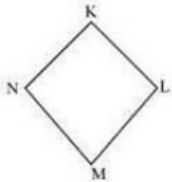
Diagonals are PR and QS. They meet at point O which is in the interior of $\square PQRS$.

Question 2:

Draw a rough sketch of a quadrilateral KLMN. State,

- (a) Two pairs of opposite sides,
- (b) Two pairs of opposite angles,
- (c) Two pairs of adjacent sides,
- (d) Two pairs of adjacent angles.

Answer:



(a) \overline{KL} , \overline{NM} and \overline{KN} , \overline{ML}

(b) $\angle KLM$ and $\angle KNM$

$\angle LKN$ and $\angle LMN$

(c) \overline{KL} , \overline{KN} and \overline{NM} , \overline{ML}

\overline{KL} , \overline{LM} and \overline{NM} , \overline{NK}

(d) $\angle K$, $\angle L$ and $\angle M$, $\angle N$

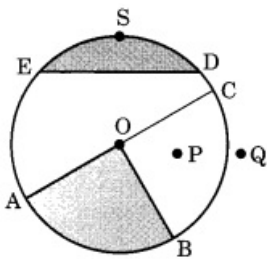
NCERT Solutions for Class 6 Maths Chapter 4 Basic Geometrical Ideas Ex 4.6

Exercise 4.6

Ex 4.6 Class 6 Maths Question 1.

From the figure, identify:

- (a) the centre of circle
- (b) three radii
- (c) a diameter
- (d) a chord
- (e) two points in the interior



- (f) a point in the exterior
- (g) a sector
- (h) a segment.

Solution:

In the given figure,

- (a) O is the centre of the circle.
- (b) Three radii of the given circle are \overline{OA} , \overline{OB} and \overline{OC} .
- (c) \overline{AC} is a diameter of the circle.
- (d) \overline{ED} is a chord of the circle.
- (e) O and P are in the interior of the circle.
- (f) Q is a point in the exterior of the circle.
- (g) OBA is a sector of the circle.
- (h) EDSE, the shaded region is a segment of the circle.

Ex 4.6 Class 6 Maths Question 2.

- (a) Is every diameter of a circle also a chord?
- (b) Is every chord of a circle also a diameter?

Solution:

- (a) Yes, every diameter is the longest chord of a circle.
- (b) No, every chord is not diameter of a circle.

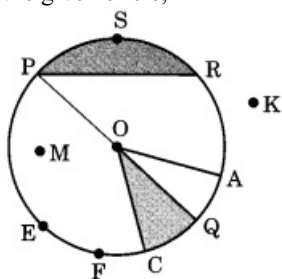
Ex 4.6 Class 6 Maths Question 3.

Draw any circle and mark

- (a) its centre
- (b) a radius
- (c) a diameter
- (d) a sector
- (e) a segment
- (f) a point in its interior
- (g) a point in its exterior
- (h) an arc.

Solution:

In the given circle,



- (a) O is the center.
- (b) \overline{OA} is a radius.
- (c) \overline{PQ} is a diameter.
- (d) OQC is a sector (shaded part)
- (e) PSR (shaded part) is the segment.
- (f) M is in the interior of the circle.
- (g) K is in the exterior of the circle.
- (h) $\overset{\frown}{EF}$ is an arc of the circle.

Ex 4.6 Class 6 Maths Question 4.

Say 'true' or 'false'.

- (a) Two diameters of a circle will necessarily intersect.
- (b) The centre of a circle is always in its interior.

Solution:

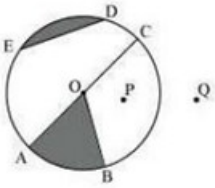
- (a) True

(b) True

Exercise 4.6

Question 1:

From the figure, identify:



- (a) The centre of circle (e) Two points in the interior
- (b) Three radii (f) a point in the exterior
- (c) a diameter (g) a sector
- (d) a chord (h) a segment

Answer:

- (a) O
- (b) $\overline{OA}, \overline{OB}, \overline{OC}$
- (c) \overline{AC}
- (d) \overline{ED}
- (e) O, P
- (f) Q
- (g) AOB (shaded region)
- (h) DE (shaded region)

Question 2:

- (a) Is every diameter of a circle also a chord?
- (b) Is every chord of circle also a diameter?

Answer:

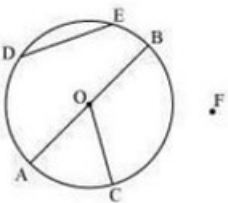
- (a) Yes. The diameter is the longest possible chord of the circle.
- (b) No

Question 3:

Draw any circle and mark

- (a) Its centre (e) a segment
- (b) a radius (f) a point in its interior
- (c) a diameter (g) a point in its exterior
- (d) a sector (h) an arc

Answer:



- (a) O
- (b) \overline{OA}
- (c) \overline{AB}
- (d) COA
- (e) DE
- (f) O
- (g) F
- (h) \widehat{AC}

Question 4:

Say true or false:

- (a) Two diameters of a circle will necessarily intersect.
- (b) The centre of a circle is always in its interior.

Answer:

- (a) True. They will always intersect each other at the centre of the circle.
- (b) True