Angles

Exercise 11.1

Question: 1

Give three examples of angles from your environment.

Solution:

Three examples of angles from our environment are:

(i) Angle formed by the minute and hour hands of an analog clock.

(ii) Angle formed by the two adjacent walls of a room

(iii) Angle formed by the two adjacent fingers of our hand.

Question: 2

Write the arms and the vertex of ∠LMP **given in the figure.**

Solution:

Arms of ∠LMP are MP and ML. Further, vertex is M.

Question: 3

How many angles are formed in the figures given? Name them. (fig. from book)

Solution:

(i) Three angles are formed, namely ∠ABC, ∠BAC, and ∠ACB.

(ii) Four angles are formed, namely ∠ABC, ∠ADC, ∠BCD, and ∠BAD.

(iii) Eight angles are formed
namely ∠ADC, ∠ACD, ∠DAC, ∠ACB, ∠ABC, ∠BAC, ∠BCD, and ∠BAD.

Question: 4

From figure, list the points which are: (fig. from book)

(i) in the interior of ∠P

(ii) in the exterior of ∠P

(iii) lie on ∠P

Solution:

(i) Points J and C lie in the interior of ∠P.

(ii) Points D and B lie in the exterior of ∠P.

(iii) Points A, P and M lie on ∠P.

Question: 5

In the figure, write another name for: (fig. from book)

(i) ∠1.

(ii) ∠2.

(iii) ∠3.

(iv) ∠4.

Solution:

(i) Another name for ∠1 is ∠BOD.

(ii) Another name for ∠2 is ∠BOC.

(iii) Another name for ∠3 is ∠AOC.

(iv) Another name for ∠4 is ∠AOD.

Question: 6

In the figure, write another name for: (fig. from book)

(i) ∠1.

(ii) ∠2.

(iii) ∠3.

Solution:

(i) ∠BPE

(ii) ∠PQC

(iii) ∠DQF

Question: 7

In the given fig., which of the following statements are true: (fig. from book)

(i) Point B in the interior of ∠AOB

(ii) Point B in the interior of ∠AOC

(iii) Point A in the interior of ∠AOD

(iv) Point C in the exterior of ∠AOB

(v) Point D in the exterior of ∠AOC

Solution:

(ii), (iv) and (v) are true statements.

(i), and (iii) are incorrect statements as B lies on ∠AOB and A lies on ∠AOD.

Question: 8

Which of the following statements are true:

(i) The vertex of an angle lies in its interior.

(ii) The vertex of an angle lies in its exterior.

(iii) The vertex of an angle lies on it.

Solution:

(iii) The vertex of an angle lies on it.

This is the only correct statement.

Question: 9

By simply looking at the pair of angles given in figure, state which of the angles in each of the pairs is greater. (fig. from book)

Solution:

(i) ∠AOB is greater than ∠DEF.

(ii) ∠PQR is greater than ∠LMN.

(iii) ∠UVW is greater than ∠XYZ.

Question: 10

By using tracing paper compare the angles in each of the pairs given in figure, (fig. from book)

Solution:

Using tracing paper, we get that:

(i) $\angle PQR$ is greater than $\angle AOB$.

(ii) $\angle UVW$ is greater than $\angle LMN$.

(iii) $\angle RST$ is greater than $\angle XYZ$.

(iv) $\angle PQR$ is greater than $\angle EFG$.

Exercise 11.2

Question: 1

Give two examples each of right, acute and obtuse angles from your environment.

Solution:

Two examples of right angle in our environment are:

(i) The angle formed by the two adjacent walls of a room is a right angle.

(ii) The angle formed by the two adjacent edges of a book is a right angle.

Two examples of acute angle in our environment are:

(i) The angle formed between the two adjacent fingers of our hand.

(ii) The angle between the two adjacent sides of the letter Z of English alphabet.

Two examples of obtuse angle in our environment are:

(i) The smaller angle formed by the two adjacent blades of a fan.

(ii) The smaller angle formed by the two sloping sides of a roof of a but is an obtuse angle.

Question: 2

An angle is formed by two adjacent fingers. What kind of angle will it appear?

Solution:

Angle formed by two adjacent fingers will appear as an acute angle.

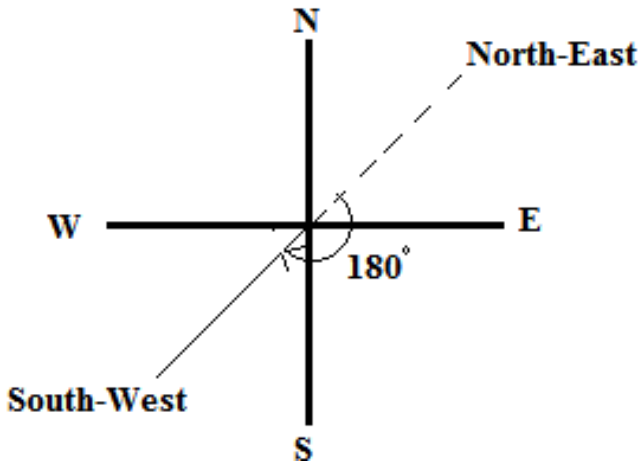
Question: 3

Shikha is rowing a boat due northeast. In which direction will she be rowing if she turns it through:

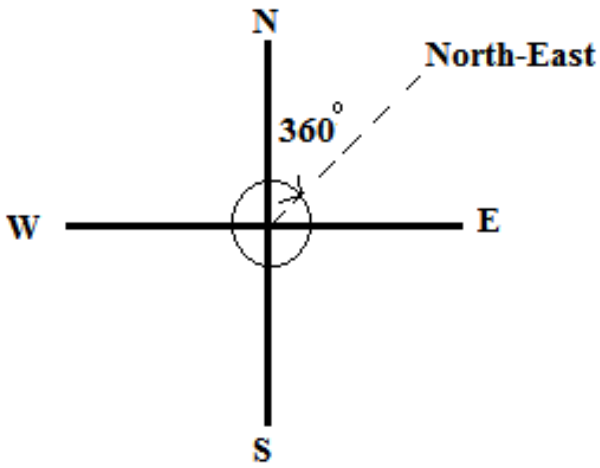
(i) a straight angle. (ii) a complete angle.

Solution:

(i) If Shikha turns through a straight angle or 180 degrees, she will be rowing along the south – west direction.



(ii) If Shikha turns through a complete angle or 360 degrees, she will be rowing along her original direction, i.e., north – east direction.

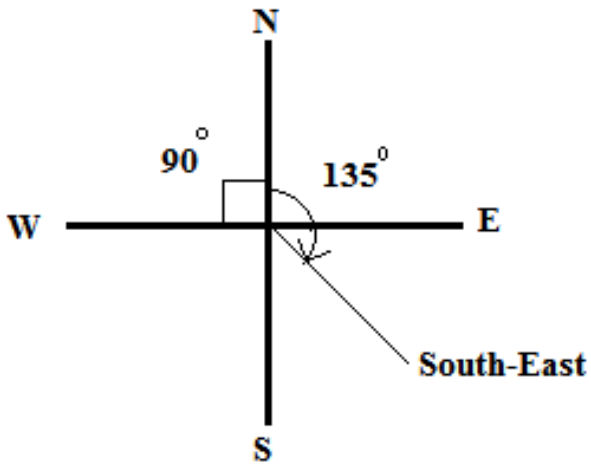


Question: 4

What is the measure of the angle in degrees between:

(i) North and West?

(ii) North and South?
(iii) North and South – East?



Solution:

The measure of the angle between:

(i) North and West is 90 degrees.

(ii) North and South is 180 degrees.

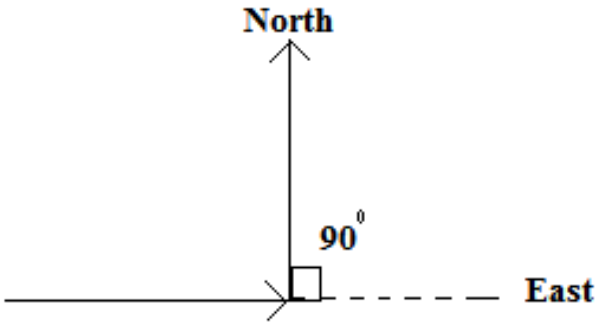
(iii) North and South – East is 135 degrees.

Question: 5

A ship sailing in river Jhelam moves towards east. If it changes to north, through what angle does it turn?

Solution:

If the ship is sailing in east direction and turns to north direction, it turns through an angle of 90 degrees.



Question: 6

You are standing in a class room facing north. In what direction are you facing after making a quarter turn?

Solution:

After making a quarter turn or a turn of 90 degrees, i will be facing east if i turn to my right hand. Similarly, if i turn to my left hand, i will be facing west.

Question: 7

A bicycle wheel makes four and a half turns. Find the number of right angles through which it turns.

Solution:

In one turn, the wheel of a bicycle covers 360°.

If we express 360° in right angles, we get:

360°/90° = 4 right angles.

Thus, in four and a half turns, the wheel will turn by (4 × 4.5) = 18 right angles.

Question: 8

Look at your watch face. Through how many right angles does the minute hand moves between 8 O’ clock and 10:30 O’ clock?

Solution:

The time interval between 8: 00 O’clock and 10 : 30 O’clock is 2.5 hours, i.e., two and a half hours.

In 1 hour, the minute hand turns by a complete angle, i.e., 360° or 360°/90° = 4 right angles.

Thus, in 2.5 hours, the minute hand will turn by 2.5 × 4 = 10 right angles.

Question: 9

If a bicycle wheel has 48 spokes, then find the angle between a pair of adjacent spokes.

Solution:

In a bicycle, the central angle measures 360° and it consists of 48 spokes.

Therefore, angle between any two adjacent spokes = 360/48 = 7.5°.

Question: 10

Classify the following angles as acute, obtuse, straight, right, zero and complete angle:

(i) 118°

(ii) 29°

(iii) 145°

(iv) 165°

(v) $0^{\uparrow 8}$

(vi) 75°

(vii) 180°

(viii) 89.5°

(ix) 30°

(x) 90°

(xi) 179°

(xii) 360°

(xiii) 90.5°

Solution:

An acute angle measures between 0° and 90°; an obtuse angle measures between 90° and 180°; a straight angle measures 180°; a right angle measures 90°; a zero angle measures 0° and a complete angle measures 360°.

(i) 118° is an obtuse angle.

(ii) 29° is an acute angle.

(iii) 145° is an obtuse angle.

(iv) 165° is an obtuse angle.

(v) 0° is a zero angle.

(vi) 75° is an acute angle.

(vii) 180° is a straight angle.

(viii) 89.5° is an acute angle.

(ix) 30° is an acute angle.

(x) 90° is a right angle.

(xi) 179° is an obtuse angle.

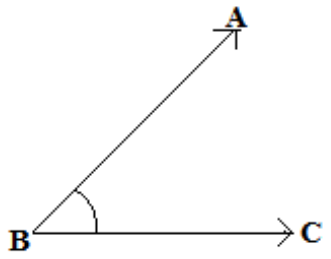
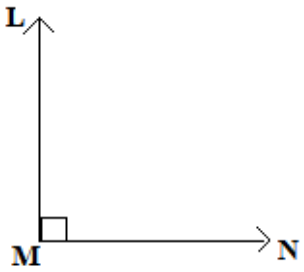
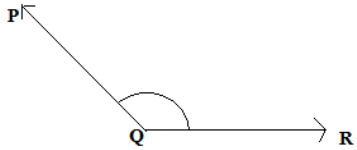
(xii) 360° is a complete angle.

(xiii) 90.5° is an obtuse angle.

Question: 11

Using only a ruler, draw an acute angle, a right angle and an obtuse angle in your notebook and name them.

Solution:

		
Acute angle ∠ABC	Right angle ∠LMN	Obtuse angle ∠PQR

Question: 12

State the kind of angle, in each case, formed between the following directions:

(i) East and West

(ii) East and North

(iii) North and North – East

(iv) North and South – East

Solution:

(i) East and west directions form an angle of 180°, which is a straight angle.

(ii) East and north directions form an angle of 90°, which is a right angle.

(iii) North and north-east directions form an angle of 45°, which is an acute angle.

(iv) North and south-east directions form an angle of 135°, which is an obtuse angle.

Question: 13

State the kind of each of the following angles:

Solution:

(i) Acute angle, as it measures between 0° and 90°.

(ii) Obtuse angle, as it measures between 90° and 180°.

(iii) Straight angle, as it is equal to 180°.

(iv) Right angle, as it is equal to 90°.

(v) Complete angle, as it is equal to 360°.

Objective Type Questions

Mark the correct alternative in each of the following:

Question: 1

The vertex of an angle lies

(a) in its interior (b) in its exterior (c) on the angle (d) inside the angle

Solution:

(c) on the angle.

The vertex of an angle lies on the angle.

Question: 2

The figure formed by two rays with the same initial point is known as

(a) a ray (b) a line (c) an angle (d) a line segment

Solution:

(c) an angle.

An angle is a figure by two rays with the same initial point.

Question: 3

An angle of measure 0° is called

(a) a complete angle (b) a right angle (c) a straight angle (d) none of these

Solution:

(d) none of these.

An angle of measure 0° is called a zero angle.

Question: 4

An angle of measure 90° is called

(a) a complete angle (b) a right angle (c) a straight angle (d) a reflex angle

Solution:

(b) a right angle.

An angle of measure 90° is called a right angle.

Question: 5

An angle of measure 180° is called

(a) a zero angle (b) a right angle (c) a straight angle (d) a reflex angle

Solution:

(c) a straight angle.

An angle of measure 180° is a straight angle.

Question: 6

An angle of measure 360° is called

(a) a zero angle (b) an straight angle (c) a reflex angle (d) a complete angle

Solution:

(d) a complete angle.

An angle of measure 360° is called a complete angle.

Question: 7

An angle of measure $240^{\circ}$is

(a) an acute angle (b) an obtuse angle (c) a straight angle (d) a complete angle

Solution:

None of the given options are correct.

An angle of measure $240^{\circ}$is called a reflex angle.

Question: 8

A reflex angle measures

(a) more than 90° but less than 180° (b) more than 180° but less than 270° (c) more than 180° but less than 360° (d) none of these.

Solution:

(c) more than 180° but less than 360°

A reflex angle is defined as an angle that measures more than 180° but less than 360°.

Question: 9

The number of degrees in 2 right angles is

(a) 90° (b) 180° (c) 270° (d) 360°

Solution:

(b) 180°

Since, 1 right angle = 90°

Therefore, 2 right angles = 90° x 2 = 180°

Question: 10

The number of degrees in 3/2 right angles is

(a) 180° (b) 360° (c) 270° (d) 90°

Solution:

None of the options are correct.

The correct answer is 135°

Since, 1 right angle = 90°

Therefore, 3/2 right angles = 3/2 x 90°= 135°

Question: 11

If bicycle wheel has 36 spokes, then the angle between a pair of adjacent spokes is

(a) 10° (b) 15° (c) 20° (d) 12°

Solution:

(a) 10°

The complete angle of bicycle wheel measures is 360°.

Therefore, the angle between two adjacent spokes of the containing 36 spokes = 360/36 = 10°.