MATHS

BOOKS - MTG IIT JEE FOUNDATION
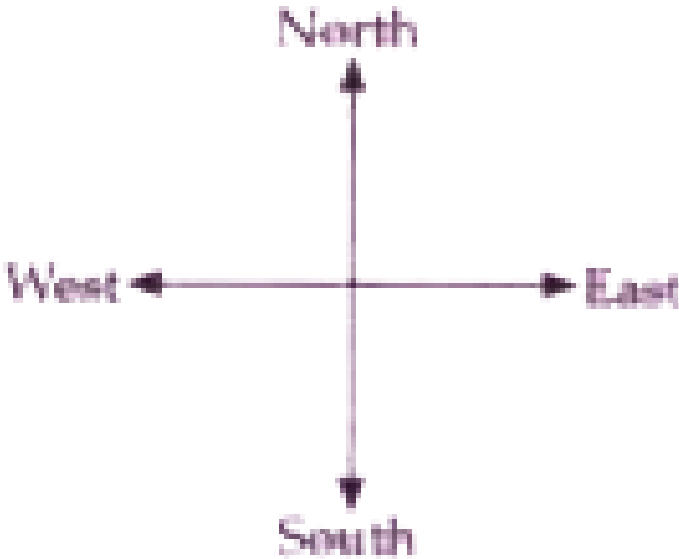
UNDERSTANDING ELEMENTARY SHAPES

Illustrations

1. A, B and C are three points such that AB = 4 cm, BC = 3 cm and AC = 7 cm. Which one of them lies between other two ?

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2. Which method is better for comparison of line segments : observation or divider ?

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**3.** Answer the following questions according to given figure.

(i) What angle is formed if you are facing North and turn clockwise to face South ?

(ii) What angle is formed if you are facing East and cover 1/4 of revolution anti-clockwise ? In which direction are you facing now ?

4. Find the angle measure between the hands of the clock in each figure.

Also write it in term of a revolution.

(i)   (ii)
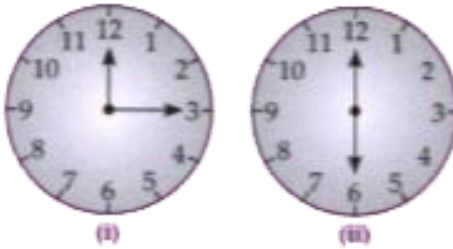
5. Where will the hand of clock stop if it

(i) starts at 12 and make 3/2 of a revolution clockwise ?

(ii) starts at 4 and make 1/4 of a revolution clockwise ?

6. Give two measures of (i) acute angle (ii) obtuse angle.

7. Name the types of triangles formed in each of the following in two different ways.

3 cm, 3 cm, 4 cm (i)

3 cm, 5 cm, 4 cm (ii)

20 cm, 15 cm, 8 cm (iii)

6 cm, 6 cm, 6 cm (iv)
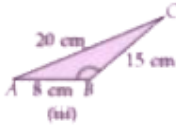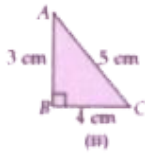
8. What type of quadrilateral is formed in each of the following ?

(i) A quadrilateral in which opposite sides are parallel and all sides and angles are equal.

(ii) A parallelogram in which all angles are right angles.
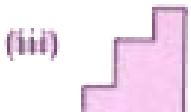
9. Answer the following questions.

(i) What kind of polygon is a eight sided figure with all the angles and

sides are equal ?

(ii) What kind of polygon is a six sided figure with five sides equal and one unequal ?

10. Check whether the following figures are polygons. If not, then give reason.

(i)

(ii)

(iii)

(iv)

11. Name each of the following 3-dimensional shapes.
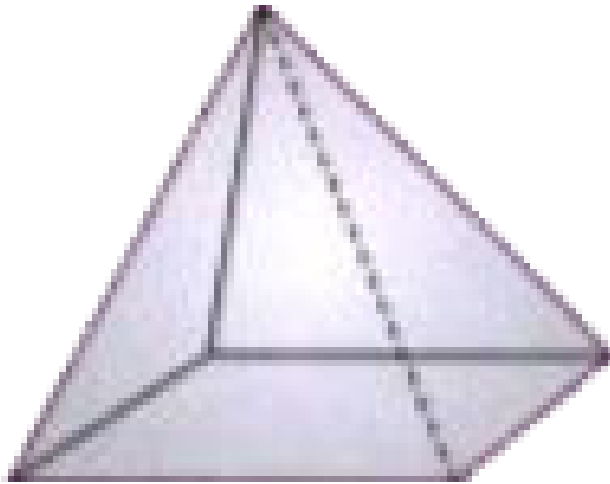
(i) It has one triangular base and three triangular faces.

(ii) It has two opposite pentagonal bases while other faces are rectangles.

(iii) It has one curved face and two circular plane faces.

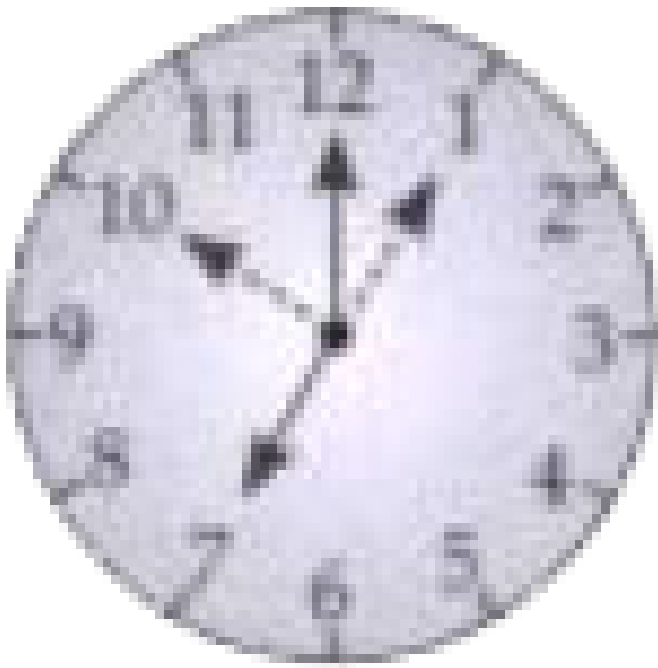**12.** Identify the given figure. Also write number of faces, vertices and edges.

Solved Examples

1. Find the angle formed by two hands of clock when it shows the time 4 O' clock.

2. Where will the hour hand of clock stops if it starts from 7 and turns through 2 right angles ?

3. Ramesh is facing West and make 3/4 of a revolution anti-clockwise. In which direction he would face ?

4. Name the types of triangles formed in two different ways in each of the following :

(i) A triangle in which one angle is of $90°$, and the other two angles are equal.

(ii) A $\triangle$ ABC with $m\angle A = 40°$, $m\angle B = 60°$ and $m\angle C = 80°$.

(iii) A triangle in which one angle is obtuse and the other two angles are equal.

5. Priya is making a figure from a coloured chart paper. She observes that the figure made has only opposite sides equal and all the angles to be right angle. What figure is made by Priya ? Also draw the figure. Give an example of her figure in our day to day life.

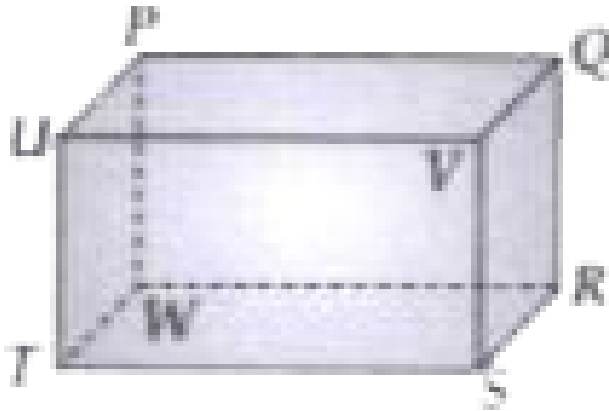**6.** Examine whether the following are polygons. If not, give reasons.

(i)   (ii)   (iii)

7. Name the given figure. Also writes its all edges and vertices.

8. Which solid figure is bounded by one curved face and two plane faces at top and bottom ?

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9. Classify the following as 2 dimensional and 3 dimensional shapes.

(i) Circle

(ii) Pyramid

(iii) Cube

(iv) Kite

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10. The base of a prism is a octagon. All its other faces are rectangle. What is the name of such a prism ?

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11. How many right angles are formed when hour hand of a clock moves from :

(i) 2 to 8

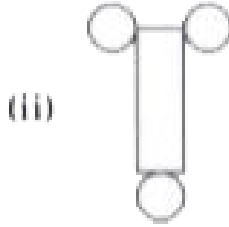(ii) 6 to 9

(iii) 10 to 4

12. Which of the following is the net for a cylinder ?

13. Complete the table.

Figure	Faces	Edges	Vertices
Hexagonal pyramid			
Tetrahedron			
Pentagonal prism			

14. A quadrilateral is a five sided polygon.

15. All the four sides of a rhombus are equal.

16. A trapezium has all angles equal.

17. Half of a revolution is straight angle.

18. A right angle is 1/2 of a revolution.

19. The measure of a reflex angle is greater than that of a straight angle.

20. The angle of one revolution is a reflex angle.

21. Classify these triangles as right, acute or obtuse angled triangle.

(i)

(ii)

(iii)

(iv)

(v)
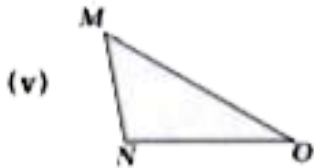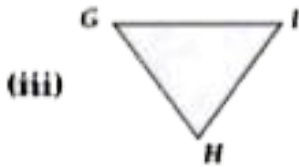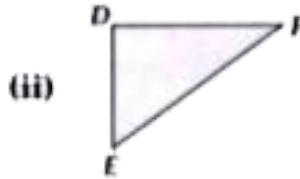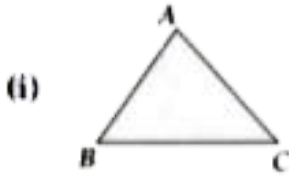
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Ncert Section Exercise 5 1

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

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

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

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 ?

5. Verify, whether D is the mid point of $\overline{AG}$.
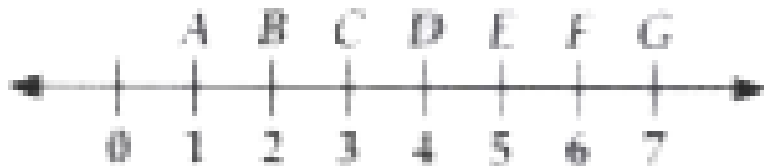
6. If B is the mid point of AC and C is the mid point of BD, where A,B,C,D lie on a straight line, say why AB{\rm{ }} = {\rm{ }}CD ▶

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.

Ncert Section Exercise 5 2

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

3 to 9

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

4 to 7

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

7 to 10

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

12 to 9

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

1 to 10

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

6 to 3

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7. Where will the hand of a clock stop if it

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

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8. Where will the hand of a clock stop if it

starts at 2 and makes $\dfrac{1}{2}$ of a revolution, clockwise ?

> ▶ Watch Video Solution

9. Where will the hand of a clock stop if it

starts at 5 and makes $\dfrac{1}{4}$ of a revolution, clockwise ?

> ▶ Watch Video Solution

10. Where will the hand of a clock stop if it

starts at 5 and makes $\dfrac{3}{4}$ of a revolution, clockwise ?

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11. Which direction will you face if you start facing

east and make $\dfrac{1}{2}$ of a revolution clockwise ?

(Should we specify clockwise or anti-clockwise for this last question ? Why

not ?)

12. Which direction will you face if you start facing

east and make $1\dfrac{1}{2}$ of a revolution clockwise ?

(Should we specify clockwise or anti-clockwise for this last question ? Why

not ?)

13. Which direction will you face if you start facing

west and make $\dfrac{3}{4}$ of a revolution anti-clockwise ?

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

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14. Which direction will you face if you start facing

south and make one full revolution ?

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

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

east and turn clockwise to face north ?

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16. What part of a revolution have you turned through if you stand facing south and turn clockwise to face east ?

17. What part of a revolution have you turned through if you stand facing west and turn clockwise to face east ?

18. Find the number of right angles turned through by the hour hand of a clock when it goes from

3 to 6

19. Find the number of right angles turned through by the hour hand of a clock when it goes from

2 to 8

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20. Find the number of right angles turned through by the hour hand of a clock when it goes from

5 to 11

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21. Find the number of right angles turned through by the hour hand of a clock when it goes from

10 to 1

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22. Find the number of right angles turned through by the hour hand of a clock when it goes from

12 to 9

23. Find the number of right angles turned through by the hour hand of a clock when it goes from

12 to 6

24. How many right angles do you make if you start facing

south and turn clockwise to west ?

25. How many right angles do you make if you start facing

north and turn anti-clockwise to east ?

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26. How many right angles do you make if you start facing

west and turn to west ?

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27. How many right angles do you make if you start facing

south and turn to north ?

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

from 6 and turns through 1 right angle ?

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

from 8 and turns through 2 right angles ?

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

from 10 and turns through 3 right angles ?

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

from 7 and turns through 2 straight angles ?

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Ncert Section Exercise 5 3

1. Match the following :

(i)	Straight angle of a revolution	(a)	Less than one-fourth of a revolut:
(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

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2. Classify each one of the following angles as right, straight, acute, obtuse or reflex :
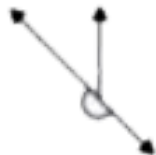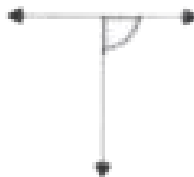
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1. What is the measure of (i) a right angle ?

(ii) a straight angle ?

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2. The measure of an acute angle $< 90°$.

▶ Watch Video Solution

3. The measure of an obtuse angle $< 90°$.

▶ Watch Video Solution

4. The measure of a reflex $> 180°$.

5. The measure of one complete revolution = 360°.

6. If $m\angle A = 53^\circ$ and $m\angle B = 35^\circ$, then $m\angle A > m\angle B$.

7. Write down the measures of

some acute angles.

(give at least two examples of each).

8. Write down the measures of

some obtuse angles.

(give at least two examples of each).
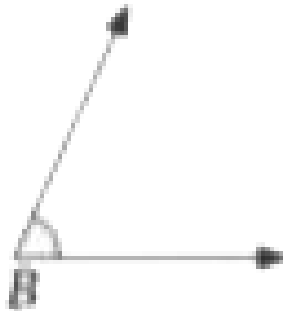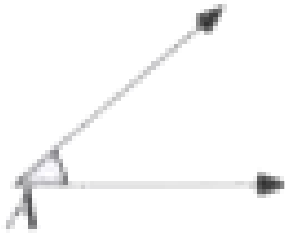
9. Which angle has a large measure ?

First estimate and then measure.
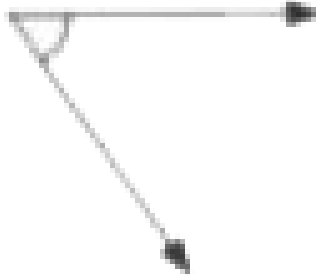
Measure of Angle A =

Measure of Angle B =

10. From these two angles which has larger measure ? Estimate and then confirm by measuring them.
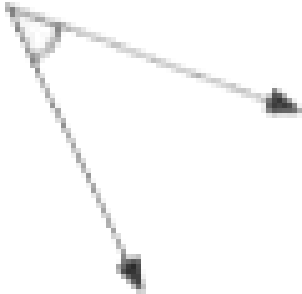
11. An angle whose measure is less than that of a right angle is _____.

12. An angle whose measure is greater than that of a right angle is _____.

13. An angle whose measure is the sum of the measures of two right angles is _____.

14. When the sum of the measures of two angles is that of a right angle, then each one of them is _____.

15. 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_____.

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

17. Find the angle measure between the hands of the clock in each figure :
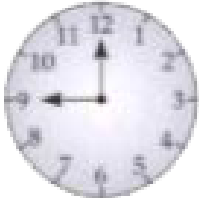
9.00 a.m.   1.00 p.m.   6.00 p.m.

18. Investigate

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

19. Measure and classify each angle :
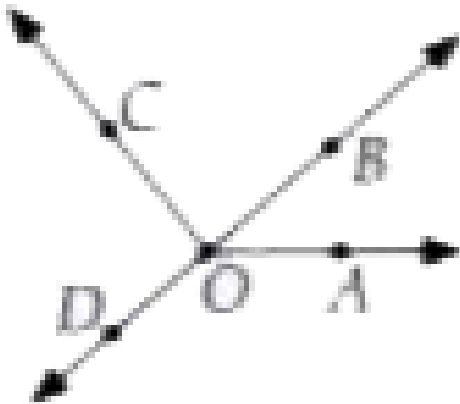
Angle	Measure	Type
$\angle AOB$		
$\angle AOC$		
$\angle BOC$		
$\angle DOC$		
$\angle DOA$		
$\angle DOB$		

Ncert Section Exercise 5 5

1. Which of the following are models for perpendicular lines :

The adjacent edges of a table top.

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2. Which of the following are models for perpendicular lines :

The lines of a railway track.

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3. Which of the following are models for perpendicular lines :

The line segments forming the letter 'L'.

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4. Which of the following are models for perpendicular lines :

The letter V.

5. Let PQ be the perpendicular to the line segment XY. Let PQ and XY intersect in the point A. What is the measure of PAY?

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

7. Study the diagram. The line l is perpendicular to line m (a) Is

Ncert Section Exercise 5 6

1. Name the types of following triangles :

Triangle with lengths of sides 7 cm, 8 cm and 9 cm.

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2. Name the types of following triangles :

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

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3. Name the types of following triangles :

△ PQR such that PQ = QR = PR = 5 cm.

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4. Name the types of following triangle :

△ DEF with $m\angle D = 90°$.

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5. Name the types of following triangles :

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

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6. Name the types of following triangles :

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

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7. Match the following :

	Measures of Triangle		Type of Triangle
(i)	3 sides of equal length	(a)	Scalene
(ii)	2 sides of equal length	(b)	Isosceles right angl
(iii)	All sides are of different length	(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 two sides of equal length	(g)	Isosceles

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Ncert Section Exercise 5 7

1. Each angle of a rectangle is a right angle.

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2. The opposite sides of a rectangle are equal in length.

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3. The diagonals of a square are perpendicular to one another.

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4. All the sides of a rhombus are of equal length.

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5. All the sides of a parallelogram are of equal length.

6. The opposite sides of a trapezium are parallel.

7. Give reasons for the following :

A square can be thought of as a special rectangle.

8. Give reasons for the following :

A rectangle can be thought of as a special parallelogram.

9. Give reasons for the following :

A square can be thought of as a special rhombus.

10. Give reasons for the following :

Squares, rectangles, parallelograms are all quadrilaterals.

11. Give reasons for the following :

Square is also a parallelogram.

12. 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 ?

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1. Name each polygon.

(a)　　(b)　　(c)　　(d)

Make two more examples of each of these.

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2. 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.

3. 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.

4. 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.

Ncert Section Exercise 5 9

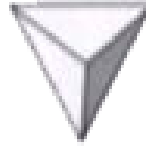**1.** Match the following :

(a)   Cone   (i)

(b)   Sphere   (ii)

(c)   Cylinder   (iii)
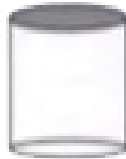
(d)   Cuboid   (iv)

(e)   Pyramid   (v)

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2. What shape is your instrument box ?

▶ Watch Video Solution

3. What shape is a brick ?

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4. What shape is a match box ?

▷ **Watch Video Solution**

5. What shape is a road-roller ?

▷ **Watch Video Solution**

6. What shape is a sweet laddu ?

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Exercise Multiple Choice Questions Level 1

1. Angle whose measure is more than $180°$ but less than $360°$ is_____.

A. Reflex angle

B. Obtuse angle

C. Acute angle

D. Zero angle

Answer: A

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2. Two line segments can be compared more accurately by_____.

A. Observation

B. Tracing

C. Ruler and divider

D. None of these

Answer: C

3. In a rectangle, diagonals are_____.

   A. Unequal

   B. Equal

   C. At right angles

   D. Perpendicular bisector

Answer: B

4. What angle is made by hour hand in 50 minutes ?

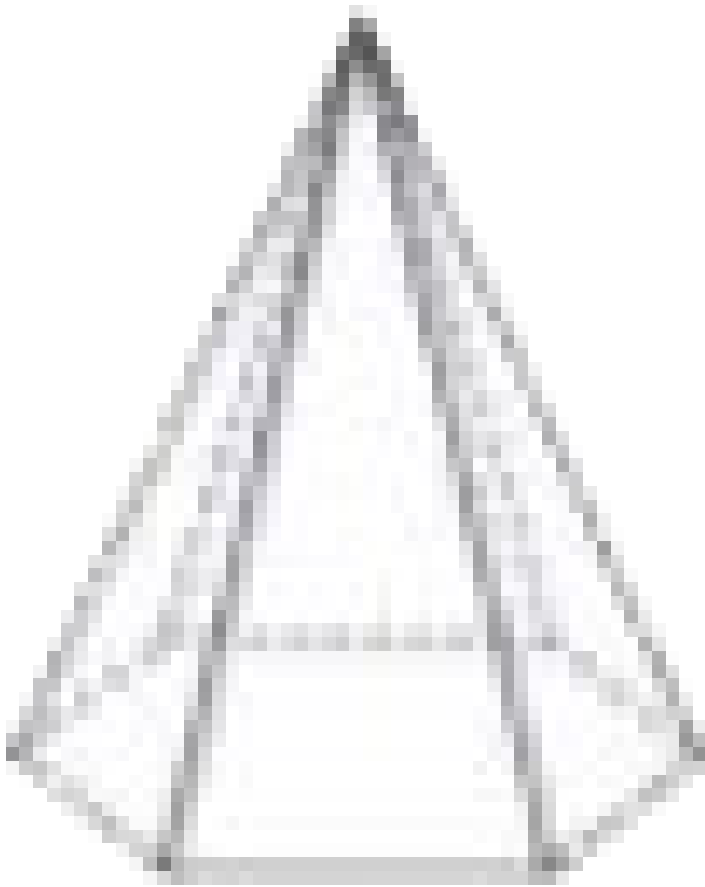   A. $40°$

B. $20°$

C. $25°$

D. $15°$

Answer: C

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5. The given figure has

(i) Faces : _____, (ii) Edges : _____, (iii) Corners : _____

A. 8, 12, 7

B. 6, 11, 6

C. 7, 12, 7

D. 5, 11, 7

Answer: C

6. 5/2 of right angle is _____.

    A. $450°$

    B. $180°$

    C. $225°$

    D. $135°$

Answer: C

7. How many edges are in triangular prism ?

    A. 5

B. 6

C. 8

D. 9

Answer: D

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8. Which of the following is INCORRECT ?

A. A right angle is 1/4 of a revolution.

B. A straight angle is one full revolution.

C. A reflex angle is larger than a straight angle.

D. The measure of straight angle is $180°$.

Answer: B

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9. Which of the following is true about a rhombus ?

A. All angles are of $90°$.

B. No side is of equal measure.

C. Diagonals are equal.

D. Diagonals bisect each other at right angles

Answer: D

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10. What is the name of the triangle whose all the three sides are unequal ?

A. Isosceles triangle

B. Equilateral triangle

C. Scalene triangle

D. None of these

Answer: C

---

11. Draw a cube and also find how many faces a cube has ?

---

12. If the three angles of a triangle measure $40°, 50°, 90°$, the triangle is_____.

    A. Acute angled

    B. Obtuse angled

    C. Right angled

    D. Isosceles

Answer: C

13. Choose the quadrilateral in which all the four sides are not equal.

A. Rhombus

B. Square

C. Rectangle

D. None of these

Answer: C

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14. Find the number of right angles turned through by the hour hand of a clock when it goes from

5 to 11

A. 4

B. 3

C. 2

D. 6

Answer: C

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15. Which solid has the least number of faces ?

A. Cylinder

B. Triangular prism

C. Cube

D. Cone

Answer: D

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16. Football is like a shape of a _____.

    A. Cylinder

    B. Cuboid

    C. Square

    D. Sphere

Answer: D

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17. The faces of a triangular pyramid are all_____.

    A. Squares

    B. Rectangles

    C. Spheres

    D. Triangles

Answer: D

---

18. Two right angles are _____ part of a revolution.

A. $\dfrac{1}{6}$

B. $\dfrac{1}{2}$

C. $\dfrac{1}{4}$

D. $\dfrac{3}{4}$

Answer: B

---

19. Which of the following group of angles form an acute-angled triangle ?

A. $30°$, $90°$, $60°$

B. $120°$, $30°$, $30°$

C. $40°$, $70°$, $70°$

D. $20°$, $60°$, $100°$

Answer: C

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20. What is the angle name for half a revolution ?

A. Obtuse angle

B. Reflex angle

C. Straight angle

D. Right angle

Answer: C

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21. Which of the following is not true about square ?

A. It is a parallelogram with all angles as right angle.

B. Diagonals of square are not equal.

C. Sides of square are equal.

D. Opposite sides of square are parallel.

Answer: B

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22. A cuboid with all the edges of same length is called a_____.

A. Cube

B. Square

C. Rhombus

D. Kite

Answer: A

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23. What direction you will be facing, if you are in East and makes 3 half revolutions ?

    A. East

    B. West

    C. North

    D. South

Answer: B

---

24. $120°$ is an example of an/a_____ angle.

A. Acute

B. Obtuse

C. Right

D. Straight

Answer: B

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25. Name of polygon having seven edges is _____.

A. Octagon

B. Heptagon

C. Nonagon

D. Hexagon

Answer: B

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26. Find the number of right angles turned through by the hour hand of a clock when it goes from 3 to 12.

    A. 1

    B. 2

    C. 3

    D. 4

Answer: C

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---

27. Which of the following group of angles from an obtuse angled triangle ?

    A. $85°$, $45°$, $50°$

    B. $43°$, $27°$, $110°$

    C. $80°$, $35°$, $65°$

D. None of these

28. The number of edges in the given figure is
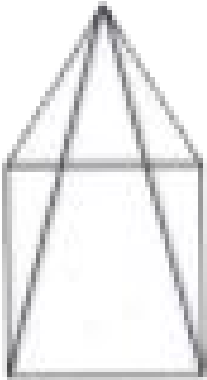
A. 4

B. 8

C. 10

D. 12

Answer: B

29. Make a square and its both diagonals

30. A triangular prism has_____as its base.

A. triangle

B. Square

C. circle

D. pentagon

Answer: A

31. Every rhombus is a

    A. square

    B. parallelogram

    C. rectangle

    D. None of these

Answer: B

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32. The quadrilateral in which only one pair of opposite sides are parallel is called a

    A. square

    B. parallelogram

    C. rhombus

    D. trapezium

Answer: D

---

33. Which of the following alphabets has perpendicular lines ?

A. L

B. X

C. Z

D. N

Answer: A

---

34. How many right angles are there in one and half of a revolution ?

A. 3

B. 4

C. 5

D. 6

Answer: D

35. The hour hand of a clock moves from 3 to 10. Which type of angle does it form ?

A. Right angle

B. Straight angle
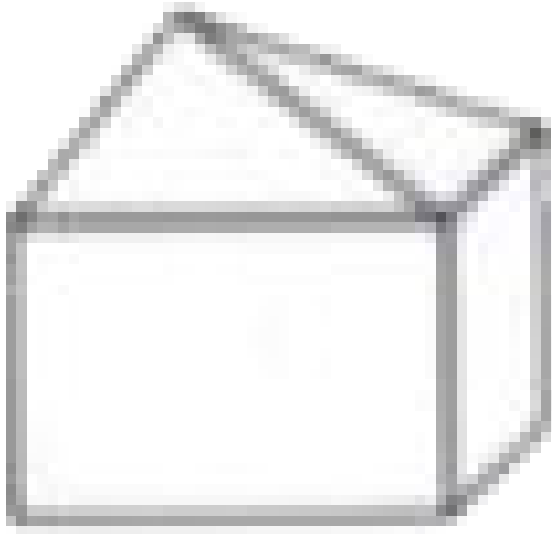
C. Reflex angle

D. Obtuse angle

Answer: C

1. Which two solid shapes have been combined to form this solid shape ?

A. Two pyramids

B. A pyramid and a triangular prism

C. A cuboid and a triangular prism

D. None of these

Answer: D

---

2. A man is standing facing North. In which direction will he face if he makes,

(i) $1\frac{1}{2}$ revolution clockwise ?

(ii) $\frac{3}{4}$ revolution anti-clockwise ?

A.
(i)	(ii)
East	East

B.
(i)	(ii)
South	West

C.
(i)	(ii)
South	East

D.
(i)	(ii)
West	West

Answer: C

3. Which direction will Seeta face if she start facing West and make 1/2 of a revolution anti-clockwise ?

    A. North

    B. East

    C. South

    D. North-East

Answer: B

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4. Which solid has sum of faces and vertices as 10 ?

    A. Cuboid

    B. Cone

    C. Square pyramid

    D. Triangular prism

Answer: C

5. What is the angle measure between the hands of the clock in the given figure ?
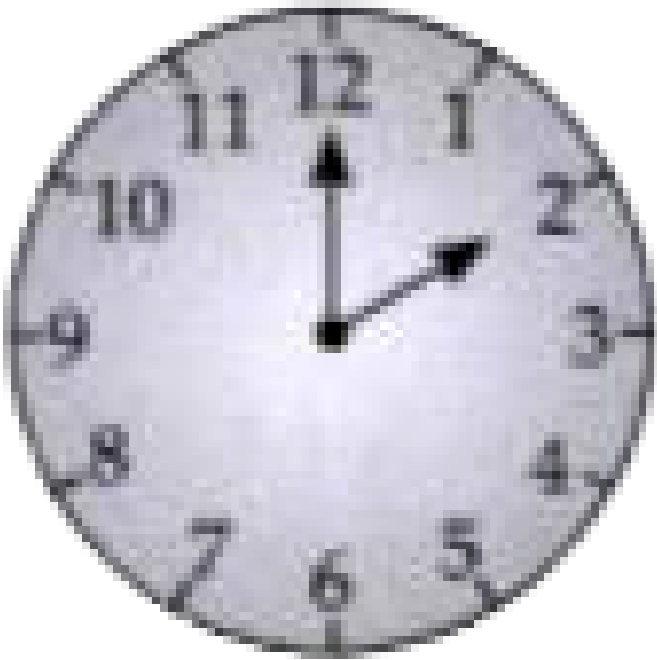
A. $10°$

B. $30°$

C. $90°$

D. $60°$

Answer: D

6. Which type of triangle can you make using all 5 matchsticks of equal size ?

    A. Scalene triangle

    B. Isosceles triangle

    C. Equilateral triangle

    D. Right angled triangle

Answer: B
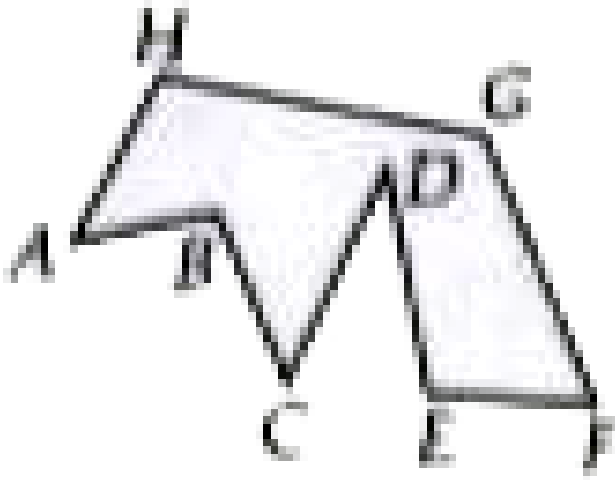
7. Which of the following triangle cannot be drawn ?

A. A scalene right angled triangle

B. An equilateral right angled triangle

C. An isosceles right angled triangle

D. All of these

Answer: B

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8. Which figure is shown here ?

A. Regular octagon

B. Irregular octagon

C. Regular septagon

D. Regular nonagon

Answer: B

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9. The number of faces and edges a tetrahedron respectively has

A. 6, 6

B. 4, 6

C. 4, 4

D. 5, 5

Answer: B

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10. A quadrilateral whose adjacent sides are equal with only 1 pair of opposite angles equal is known as a

A. Kite

B. rectangle

C. Rhombus

D. parallelogram

Answer: A

11. A prism which has only five rectangular faces is called a

    A. triangular prism

    B. rectangular prism

    C. hexagonal prism

    D. pentagonal prism

Answer: D

12. The number of faces in the given figure is

A. 2

B. 4

C. 5

D. 3

Answer: C

13. The number of faces in the given figure is

A. 2

B. 3

C. 4

D. 5
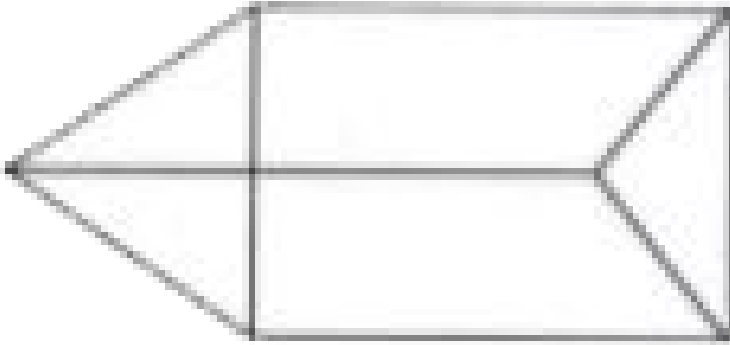
Answer: D

14. The number of vertices in a hexagonal prism is

    A. 12

    B. 6

    C. 18

    D. None of these

Answer: A

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15. Where will the hour hand of a clock stop, if it starts from 7 and turns through 3 right angles ?

    A. 2

    B. 3

    C. 4

D. 5

Answer: C

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1. Match the following.

	List-I		List-II
(P)	Five sixth of a straight angle $=$	1.	$72°$
(Q)	$\frac{4}{5}$ of a right angle $=$	2.	$270°$
(R)	Three right angles $=$	3.	$150°$
(S)	One right angle $=$	4.	$90°$

A. P - 3, Q - 1, R - 2, S - 4

B. P - 2, Q - 1, R - 3, S - 4

C. P - 4, Q - 3, R - 2, S - 1

D. P - 1, Q - 2, R - 3, S - 4

Answer: A

2. Match the following.

List-I		List-II

(P) Tetrahedron 1.

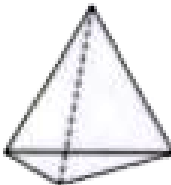(Q) Triangular prism 2.

(R) Square prism 3.
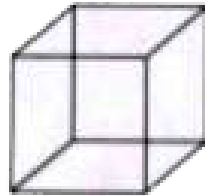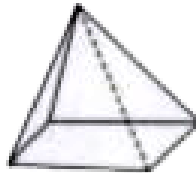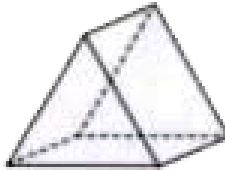
(S) Rectangular Pyramid 4.

A. P - 1, Q - 2, R - 3, S - 4

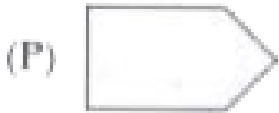B. P - 4, Q - 2, R - 1, S - 3

C. P - 4, Q - 3, R - 1, S - 2

D. P - 4, Q - 3, R - 2, S - 1

Answer: C

3. Match the following.

List-I		List-II
(P)		1. Hexagon
(Q)		2. Triangle
(R)		3. Pentagon
(S)		4. Octagon

A. P - 4, Q - 3, R - 2, S - 1

B. P - 4, Q - 3, R - 1, S - 2

C. P - 2, Q - 3, R - 4, S - 1

D. P - 3, Q - 4, R - 1, S - 2

Answer: D

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1. Assertion : A triangle is a polygon.

Reason : A polygon is a closed figure with more than three sides.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true

Answer: C
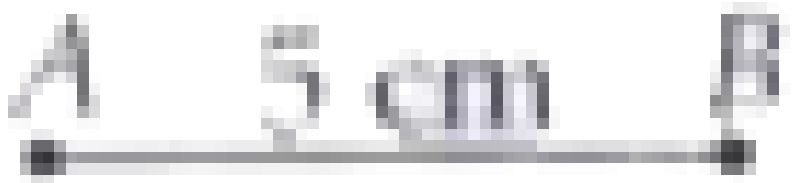
2. Assertion :

is   greater   than

.

Reason : Line segments can be compared by measuring their lengths using a ruler and divider.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

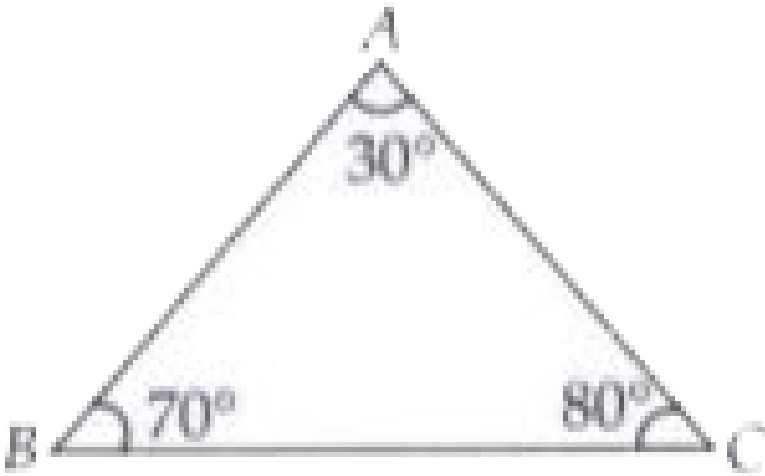B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true

Answer: A

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3. Assertion : Square is not a parallelogram.

Reason : The opposite sides of a square are parallel.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true

Answer: D

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4. Assertion : △ ABC is an acute angled triangle, $\angle A$, $\angle B$ and $\angle C$ are less than $90°$

Reason : Triangles are classified according to the sides and the angles.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true

Answer: B

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5. Assertion : A cricket ball has a shape of a sphere.

Reason : A ball-like shape is called a sphere.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true

Answer: A

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Exercise Multiple Choice Questions Comprehension Type

1. Faces : The flat surface of any solid is called face.

Edges : Line segments where two faces meet is called an edge.

Vertices : Corners of the solid are its vertices.

Find the number of faces, edges and vertices respectively of rectangular prism.

    A. 6, 12, 10

    B. 6, 8, 10

    C. 4, 6, 8

    D. 6, 12, 8

Answer: D

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2. Faces : The flat surface of any solid is called face.

Edges : Line segments where two faces meet is called an edge.

Vertices : Corners of the solid are its vertices.

Find the number of vertices of tetrahedron.

A. 3

B. 4

C. 6

D. 8

Answer: B

3. Faces : The flat surface of any solid is called face.

Edges : Line segments where two faces meet is called an edge.

Vertices : Corners of the solid are its vertices.

Find the number of edges and vertices respectively of octahedron.

A. 12, 6

B. 6, 12

C. 8, 12

D. 12, 8

Answer: A

1. What kind of angle is between the direction East and West ?

2. In which quadrilateral adjacent sides are equal and diagonals bisect each

other at $90°$?

3. Kirti is standing looking West. In which direction will she look, if she turns three right angles towards her left ?

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4. Name the polygon with 6 sides.

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5. How many edges does a dice have ?

> ▶ **Watch Video Solution**

6. How many degrees are there in one third of a revolution ?

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7. Name the given angle.

8. How many faces do a square pyramid has ?

9. How many right angles make one revolution ?

10. In which quadrilateral only one pair of opposite sides is parallel ?

Exercise Subjective Problems Short Answer Type

1. What is the sum of vertices of cube and cuboid ?

2. Draw the regular polygons with sides 5, 6, 7 and 8.

3. How many faces, edges, vertices in a triangular prism ? Draw the figure ?

4. Define prism and pyramid.

5. Draw a triangle PQR with $\angle$ PQR is equal to $90°$.

6. How many faces and edges does a triangular pyramid have ? What is the other name of the triangular pyramid ?

7. Where will the hour hand of a clock stop if it starts from 10 and turns through 3 right angles ?

8. Classify the angles whose magnitudes are $83°$ and $117°$.

9. Which has more vertices : a triangular prism or a square pyramid ?

10. Using a divider, compare :

(i) AD and DC

(ii) AC and BC
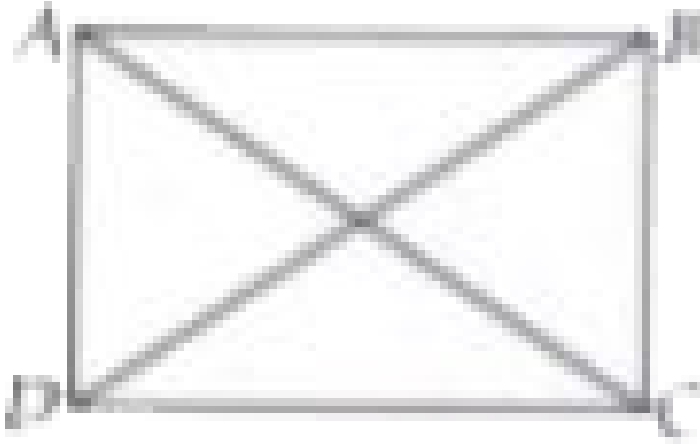
Exercise Subjective Problems Long Answer Type

1. Define regular, irregular, convex and concave polygons.

2. Find the values of P, Q, R, S and T.

Shape	Faces	Vertices	Edges
Hexagonal prism	P	12	Q
Octahedron	8	R	S
Square pyramid	5	5	T

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1. What is the sum of faces of a cube and a cuboid ?

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2. How many sides does this figure has ?

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3. How many right angles are there in a rectangle ?

4. How many line segments are there in the given figure ?

5. How many edges does a pentagonal prism has ?

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6. How many edges does a square pyramid has ?

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7. What is the difference between vertices and edges of a cube ?

▶ **Watch Video Solution**

8. How many right angles make $270°$?

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9. If a shape is completely bounded by plane faces, what is the least number of faces it may have ?

10. What is the sum of faces and vertices of a tetrahedron ?

Olympiad Hots Corner

1. A polygon has prime number of sides. If 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

Answer: B

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2. Which three-dimensional figure has 5 faces, 8 edges and 5 vertices ?

A.
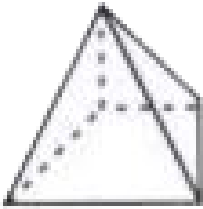
B.
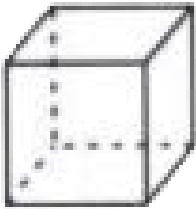
C.
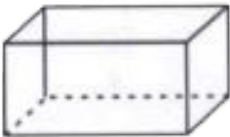
D.

Answer: A

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

A. One obtuse and one acute angle

B. One right angle and one acute angle
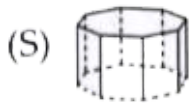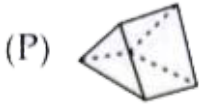
C. Two acute angles

D. Two right angles

Answer: D

4. Match the following.

Column-I   Column-II

(P)   (i)   Octagonal prism

(Q)   (ii) Triangular prism

(R)   (iii) Rectangular pyramid

(S)   (iv) Pentagonal pyramid

A. (P) - (i), (Q) - (ii), (R) - (iv), (S) - (iii)

B. (P) - (ii), (Q) - (iii), (R) - (iv), (S) - (i)

C. (P) - (ii), (Q) - (iv), (R) - (iii), (S) - (i)

D. (P) - (ii), (Q) - (iii), (R) - (i), (S) - (iv)

Answer: B

5. Which of the following statements is incorrect ?

   A. Each angle of a rectangle is a right angle.

   B. A straight angle is $\dfrac{1}{2}$ of a revolution.

   C. A reflex angle is larger than an acute angle.

   D. The perpendicular bisector of a line segment is a perpendicular to the

      line segment that divides it into two parts.

Answer: D

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6. The number of obtuse angles in the given figure is _____.
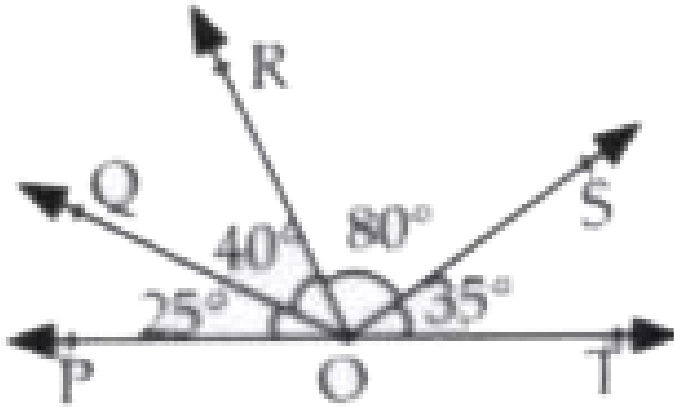
A. 2

B. 5

C. 4

D. 6

Answer: C

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7. Which of the following statements is incorrect ?

A. Each diagonal of a quadrilateral divides it into two triangles.
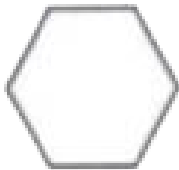
B. Parallelogram and trapezium are quadrilaterals.

C. A quadrilateral can have atmost three angles.

D. A quadrilateral has two diagonals.

Answer: C

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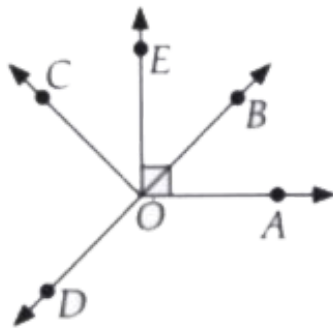**8.** Which of the following is not a polygon ?

A.

B.

C.
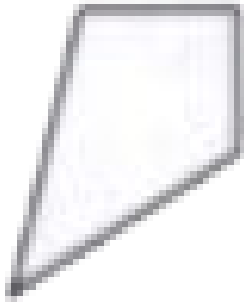
D.

Answer: B

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9. Study the given figure carefully. If DOB is a straight line, then match the columns.

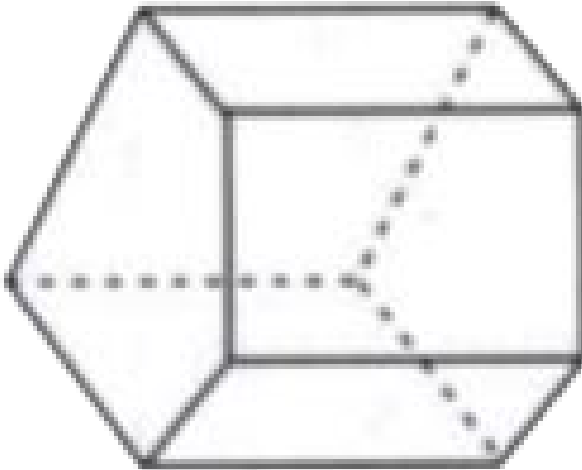| Column-I	Column-II
(P) $\angle AOB$	(i) Straight angle
(Q) $\angle AOE$	(ii) Acute angle
(R) $\angle AOC$	(iii) Right angle
(S) $\angle BOD$	(iv) Obtuse angle

Column - I		Column - II
(P) $\angle AOB$	(i)	Straight angle
(Q) $\angle AOE$	(ii)	Acute angle
(R) $\angle AOC$	(iii)	Right angle
(S) $\angle BOD$	(iv)	Obtuse angle

A. (P) - (i), (Q) - (iv), (R) - (ii), (S) - (iii)

B. (P) - (ii), (Q) - (i), (R) - (iii), (S) - (iv)

C. (P) - (ii), (Q) - (iii), (R) - (iv), (S) - (i)

D. (P) - (i), (Q) - (ii), (R) - (iii), (S) - (iv)

Answer: C

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10. How many faces does the given solid have ?



A. 5

B. 6

C. 7

D. 10

Answer: C

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11. Which of the following figures satisfy the given conditions ?

Figure (i) Faces : 4, Edges : 6, Vertices : 4

Figure (ii) Faces : 5, Edges : 9, Vertices : 6

A.

B.

C.

D.

Answer: C

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12. A quadrilateral shaped photo frame has all sides equal. Which of the following is not a possible shape for the photo frame ?
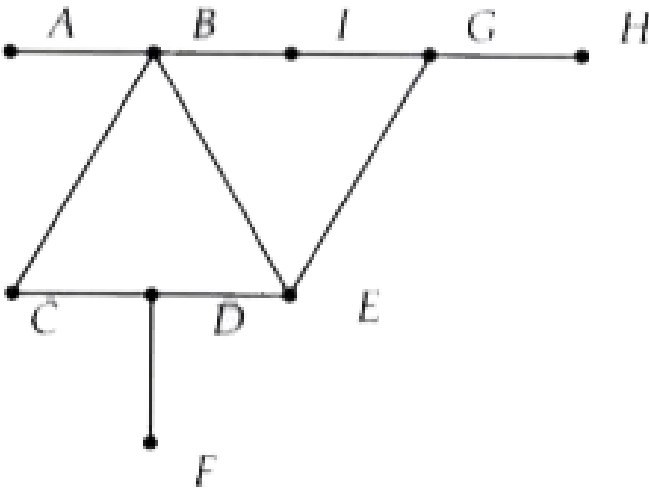
A. Square

B. Rectangle

C. Rhombus

D. None of these

Answer: B

13. How many obtuse angles are there in the given figure ?

A. 3

B. 4

C. 2

D. 5

Answer: A

14. Find the value of P, Q, R and S.

Shapes	Sum of number of faces and vertices	Difference of number of edges and vertices
Hexagonal Prism	P	Q
Pentagonal Pyramid	R	S

A.

P	Q	R	S
20	6	12	4

B.

P	Q	R	S
20	12	6	6

C.

P	Q	R	S
20	12	6	9

D.

P	Q	R	S
8	12	6	12

Answer: A

15. The given diagram is in the shape of a semi-circle. Which of the following options shows a right angle ?
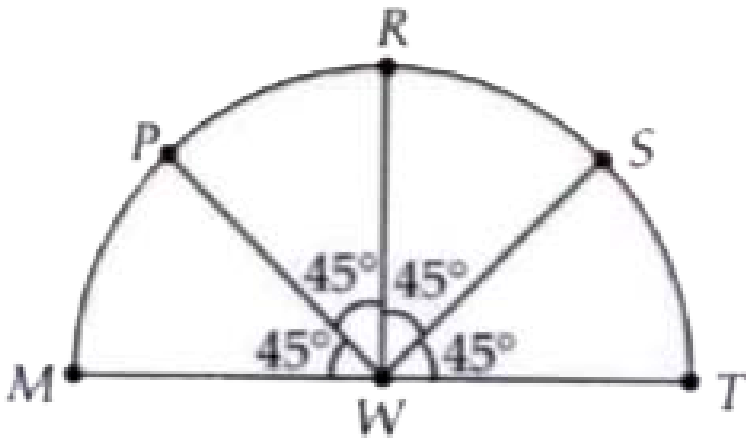
A. ∠ PWT

B. ∠ PWM

C. ∠ MWT

D. ∠ PWS

Answer: D

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16. Fill in the blanks.

(i) A right angle is (P)_____ of a revolution.

(ii) A figure whose all sides are equal and all angles are (Q)_____is called regular closed figure.

(iii) A line dividing a line segment into two equal parts and perpendicular to it is (R)_____of the line segment.

A.
P	Q	R
One-fourth	different	length

B.
P	Q	R
One-third	different	angle bisector

C.
P	Q	R
One-fourth	equal	perpendicular bisector

D.
P	Q	R
Half	equal	end point

Answer: C

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17. Select the incorrect match.

A. One pair of parallel side - Trapezium

B. Parallelogram with 4 right angles - Rectangle

C. Parallelogram with 4 sides of equal length - Rhombus

D. A quadrilateral with opposite sides equal - Kite

Answer: D

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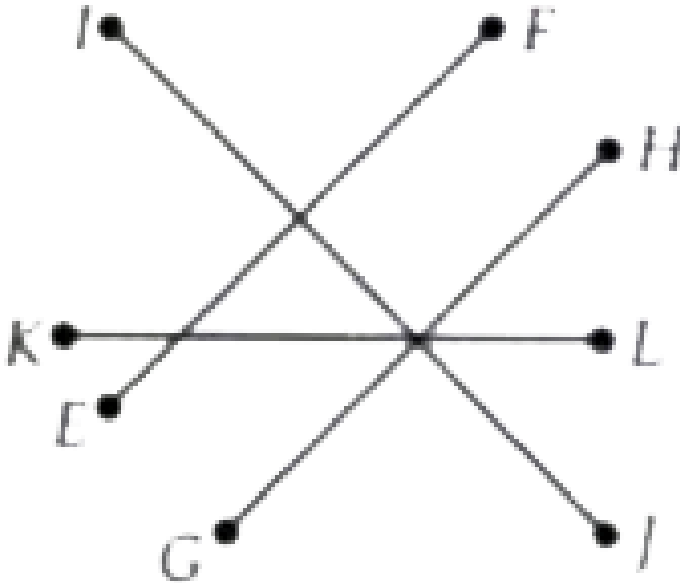
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18. Find P, Q, R and S respectively.

A square pyramid has (P)_____base, (Q)_____faces, (R)_____ edges and (S)_____corners.

A. Square 4, 10, 5

B. Rectangle 5, 10, 5

C. Square 5, 8, 5

D. Rectangle 6, 10, 5

Answer: C

19. Raghav drew the line segments shown here on a piece of paper. Which of the following pairs of line segments appears to be perpendicular ?

A. $\overline{GH}$ and $\overline{KL}$

B. $\overline{GH}$ and $\overline{IJ}$

C. $\overline{EF}$ and $\overline{KL}$

D. $\overline{EF}$ and $\overline{GH}$

Answer: B

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20. Which of the following three-dimensional shapes has 1 rectangular face and 4 triangular faces ?

A. Rectangular pyramid

B. Triangular pyramid

C. Rectangular prism

D. Triangular prism

Answer: A

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