

#### **MATHS**

#### **BOOKS - NAND LAL PUBLICATION**

# UNDERSTANDING ELEMENTARY SHAPES

Try These

1. How many millimetres make one centimetre?

Since 1 cm = 10 mm

What do we mean by 7.7 cm? **Watch Video Solution 2.** What is the angle name for half a revolutin? **Watch Video Solution 3.** What is the angle name for one-fourth

**Watch Video Solution** 

How will you write 2 cm? 3 mm?

revolution?

**4.** Draw five other situations of one-fourth, half and three-fourth revolution on a clock.

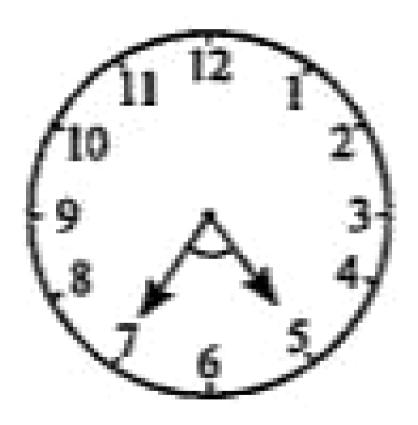


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5. The hour hand of a cllock moves from 12 to 5. Is the revolution of the hour hand more than 1 right angle?



**6.** What does the angle made by the hour hand of the clock look like when it moves from 5 to 7. Is the angle more than 1 right angle?





7. check the angle going from 12 to 2





**8.** check the angle

from 6 to 7



On checking the angle moved by hour hand of the clock while going from 6 to 7 by RA tester, we find that it is less than 1 right angle.



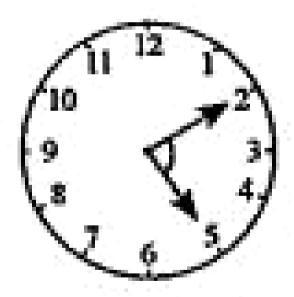
**9.** Draw the following and check the angle with you  $R \mbox{\normalfont A}$  tester

From 4 to 8



On checking the angle moved by hour hand of the clock while going from 4 to 8 by RA tester, we find that it is more than 1 right angle. 10. Draw the following and check the angle with you  $R \rm \AA$  tester

From 2 to 5



On checking the angle moved by hour hand of

the clock while going from 2 to 5 by RA testes, we find that it is equal to right-angle.



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# Think Discuss And Write Page 88

1. What is the sector of a circle?



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Think Discuss And Write Page 89

**1.** What kind of errors can occur if viewing the mark on the ruler is not proper?



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# Think Discuss And Write Page 90

 Take any post card. Use the ruler and devisor to measure its two adjacent sides.



#### **Think Discuss And Write Page 91**

**1.** Select any three objects having a flat top.

Measure all sides of the top. using a divider and a ruler.



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# Think Discuss And Write Page 92

1. Are these angles smaller than right angle?

Yes these angles are smaller than right angle.

Are these angles greater than right angle?



# Think Discuss And Write Page 93

**1.** How many degree are there in half a revolution?



Think Discuss And Write Page 94

1. In one right angle



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# Think Discuss And Write Page 95

1. In one straight angle



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Think Discuss And Write Page 96

**1.** If  $AB \perp CD$  then should we say that  $CD \perp AB$  also?



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#### **Think Discuss And Write Page 97**

**1.** Is there any other alphabet (other than T) which illustrates perpendicularity?



### Think Discuss And Write Page 98

1. Are the edges of postcard perpendicular?



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Do This

**1.** You think it is possible to sketch an obtuse angled equilateral triangle?



**2.** Try to draw rough sketches of a scalene acute angled triangle.



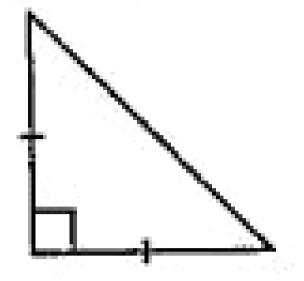


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**3.** Try to draw rough sketches of an obtuse angled isosceles triangle.



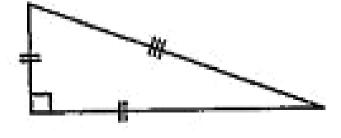
**4.** Try to draw rough sketches of a right angled isosceles triangle.





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**5.** Try to draw rough sketches of a scalene right angled triangle.

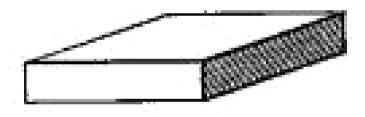




6. A cuboid looks like a reatangular box.

It has 6 faces. Each face has 4 edges.

Each face has 4 corners (called vertices).



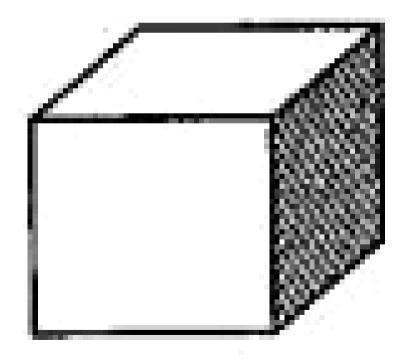


**7.** A cube is a cuboid whose edges are all of equal length.

It has 6 faces.

Each face has \_\_\_\_edges.

Each face has \_\_\_\_vertices.



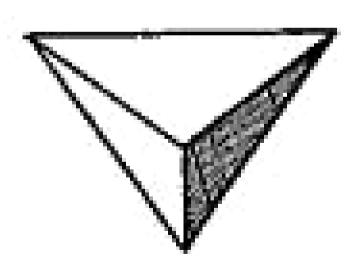
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**8.** A triangular pyramid has a triangle as its base. It is also known as a tetrahedron.

Faces - \_\_\_\_

Edges - \_\_\_\_

Vertices -



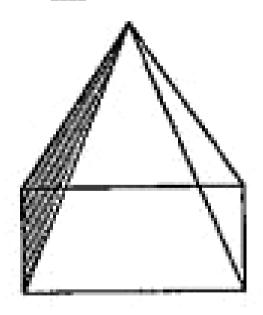


9. A square pyramid has a square as its base.

Faces - \_\_\_\_

Edges - \_\_\_\_

Vertices -



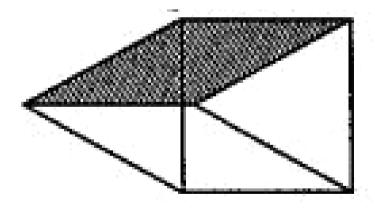
10. A Triangular prism looks like the shape of a

Kaleidoscope. It has triangles as its faces.

Faces - \_\_\_\_

Edges - \_\_\_\_

Vertices -





**11.** Name any five things which resemble a sphere.



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**12.** Name any five things which resemble a cone.



**1.** What is the disadvantage of 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 lkying in between A and B. Measure the lengths of AB, BC and AC. Is AB=AC+CB?

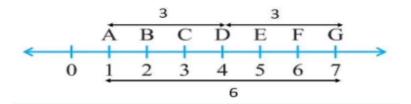


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**4.** If A,B,C are three points on a line such that AB= 5 cm,BC = 3 cm and AC = 8 cm,which one of them lkies between the other two?



**5.** Verify whether D is the mid point of  $\overline{AG}$ .





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



**7.** Draw five triangles and measure all the line segments of each. Check if the sum of any two sides is always less than the third side.



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## Exercise 5 2

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

12 to 6



- 2. Where will the hand of a clock if it
- (a) Starts at 12 and makes  $\frac{3}{4}$  of a revolution clockwise



**3.** Which direction will you face if you start facng:

East and make 1/2 of a revolution clockwise?



**4.** What part of revolution have you turned through if you start facing

(a)east and turn clockwise to face north

(b) South and turn clockwise to face east.

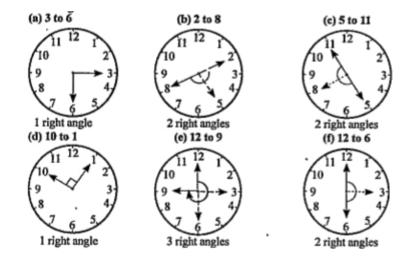
(c) West and turn clockwise to face east



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

#### goes from





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**6.** How many right angles do you make you start facing :

north and turn anitclockwise to east



**7.** Where will the hour hand of the clock stop if it starts

from 6 and turns through 2 right angle



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**8.** Where will the hour hand of the clock stop if it starts

from 8 and turns through 1 right angles



**9.** Where will the hour hand of the clock stop if it starts

from 10 and turns through 1 right angles



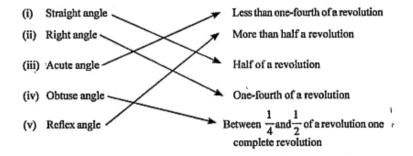
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**10.** Where will the hour hand of a clock stop if it starts:

from 7 and turns through 2 straight angles.

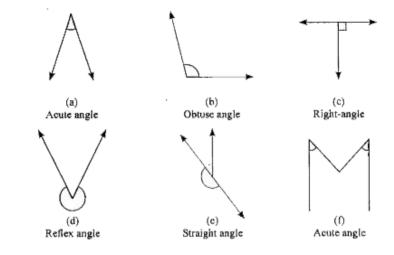


#### 1. Match the following.





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





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#### Exercise 5 4

**1.** What is the measure of a right angle?



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2. What is the measure of

a straight angle?



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**3.** Say True or False:

The measure of an acute angle  $< 90^{\circ}$  .



4. Say True of False:

The measure of an obtuse angle  $< 90^{\circ}$  .



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**5.** Say True of False:

The measure of a reflex angel  $> 180^{\circ}$  .



6. Say True or False.

The measure of 2 complete revolution  $=720^{\circ}$ 



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7. Say True or False.

If m  $\angle A=45^{\circ}$  and  $\angle B=20^{\circ}$  then m

$$\angle A > m < B$$



**8.** Write down the measures of Some reflex angles

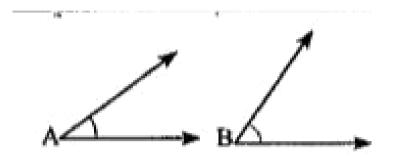


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**9.** Write down the measures of : some obtuse angles.



**10.** Which angle has large measure? First estimate and then measure.

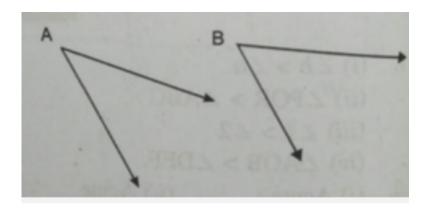




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**11.** From these two angles which has larger measure ?Estimate and then confirm by

measureing them.





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**12.** Fill in the blanks with acute, obtuse, right or straight:



**13.** Fill in the blanks with acute, obtuse, right or straight:

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



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**14.** Fill in the blanks with acute, obtuse, right, reflex or straight.

An angle whose measure is the sum of measures of four right angles is a \_\_\_\_\_



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**15.** Fill in the blanks with acute, obtuse, right or straight:

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



**16.** Fill in the blanks with acute, obtuse, right or straight:

When the sum of the measures of two angles is that of a straight angle, one of them should be ...... or ..........



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

protractor).



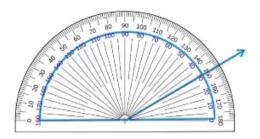


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## 18. Investigate:

In the givenfigure,protractor shows  $30^{\circ}$  .Look at the same figure through a magnifying galss.Does the angle become larger ?Does the

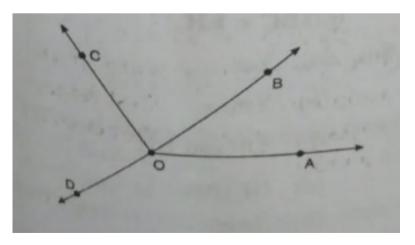
size of the angle change!.\





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# 19. Measure and classify each angle,





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Exercise 5 5

**1.** Which of the following are models for perpendicular line:

(i)The adjacent edges of a table top.

(ii)The lines of a railway track.

(iii) The letter V



**2.** Which of the following are models for perpendicular line:

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 T.



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

(i)The adjacent edges of a table top.

(ii)The lines of a railway track.

(iii) The letter V



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



**6.** There are two" set-square" in your box.What are the measures of the anles that ae formed at their corners?Do they have any angle measure that is common?



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**7.** Study the diagram. The line I is perpendicular to line m .

Is CF = FG?



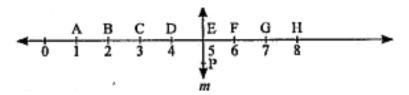
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8. Study the diagram. The line 1 is perpendicular to line m.

Does PE bisect CG?



**9.** Study the diagram. The line 1 is perpendicular to line m .



Identify two line segments for which PE is the perpendicular bisector.



**10.** Study the diagram. The line I is perpendicular to line m .

Are these true?



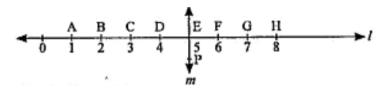
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11. Study the diagram. The line 1 is perpendicular to line m.

Are these true?

$$CD = GH$$

**12.** Study the diagram. The line I is perpendicular to line m .



Are these true?

BC < EH



1. Name the types of the following triangles.

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



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2. Name the types of the following triangles.

 $\Delta ABC$  with AB = 4.8 cm, AC = 5 cm, BC = 4 cm



3. Name the types of the following triangles.

 $\Delta PQR$  such that PQ=QR = PR= 9 cm



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4. Name the types of following triangles:

 $\triangle~(DEF)$  with  $m \angle D = 90^{\circ}$  .



**5.** Name the types of the following triangles.

$$\triangle ABC$$
 with  $m \angle B = 90^{\circ}$  and  $AB = BC$ 



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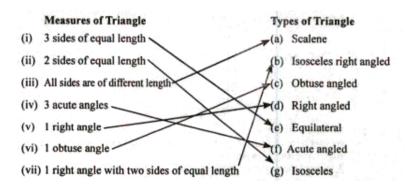
6. Name the types of the following triangles.

 $\Delta LMN$  with

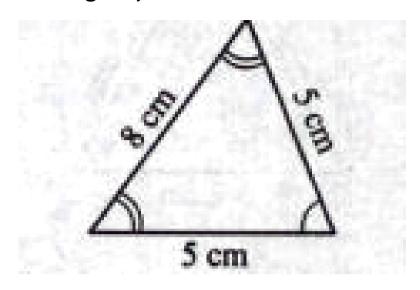
$$m \angle L = 40^{\circ}, \, m \angle M = 60^{\circ} \, \, \, ext{and} \, \, \, m \angle N = 80^{\circ}$$



## 7. Match the following



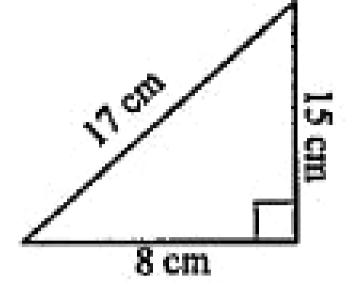






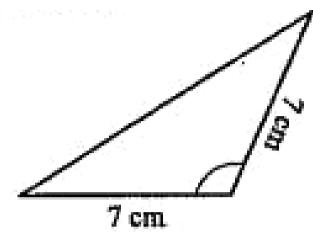
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**9.** Name each of the following triangles in two different ways: (you may judge the nature of the angle by observation)



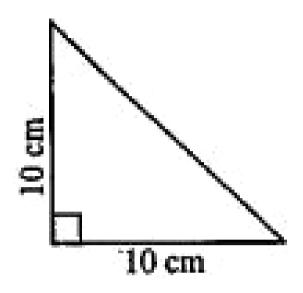
:



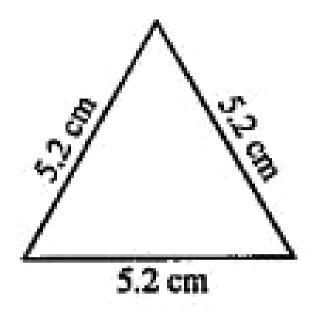




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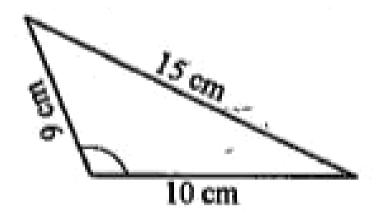






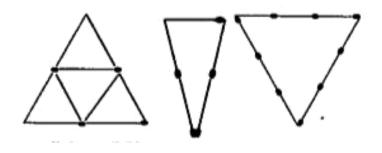


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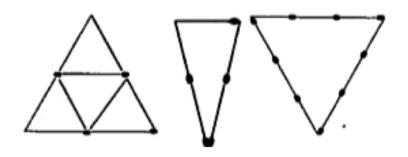




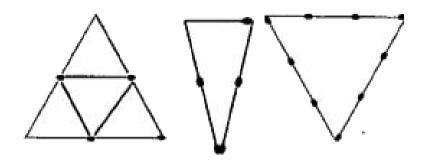
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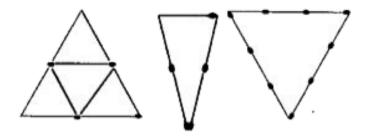








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## Exercise 5 7 True Or False

**1.** Say True or False:

Each angle of a rectangle is a right anlge.



## 2. Say True or False:

The opposite sides of a rectangle are equal in length.



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## 3. Say True or False:

The diagonals of a square are perpendiculare to one another.



**4.** Say True or False:

All the sides or rhombus are of equal length.



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5. Say True or False:

All the side of a parallelogram are of equal length.



**6.** Say True or False:

The opposite sides of a trapezium are parallel.



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Exercise 5 7

1. Give reasons for the following:

A square can be thought of as a special rectangle.



2. Give reasons for the following:

A square can be thought of as a special rhombus.



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3. Give reasons for the following:

A square can be thought of as a special rhombus.



4. Give reasons for the following:

Squares, rectangles , parallelograms are all quadrilaterals.



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**5.** Give reasons for the following:

Square is also a parallelogram.



**6.** 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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**Exercise 5 8** 

**1.** Examine whether the following are polygons.If any one among them is not,say

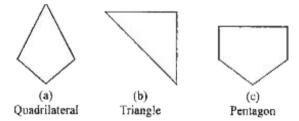
why.

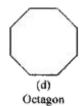




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### 2. Name each polygon.







**3.** Draw a rough sketch of a regular hexagon.Connecting any three of its vertices,draw a triangle.Identify the type of the triangle you have drawn.



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



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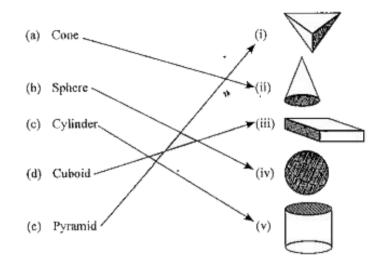
**5.** A diagonal is a line segment that joins any two vertices of the olygon and is not a side of the polygon.Draw a rough sketch of a pentagon and draw its diagonals.



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Exercise 5 9

#### 1. Match the following:



Give two new examples of each shape.



2. What shape is

Your Eraser?



3. What shape is

A football?



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4. What shape is

A geometry box?



5. What shape is

An ice-cream cone?



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6. What shape is

Pipes?



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Additional Questions For Practice Very Short Answer Types Questions 1. The measures of an isosceles triangle are

A. a cm, a cm, a cm

B. b cm, b cm, c cm

C. a cm, b cm, c cm

D. none of these

**Answer: B** 



2. The possible length of the triangle are

A. 6 cm, 8 cm, 10 cm

B. 2 cm, 3 cm, 6 cm

C. 4 cm, 5 cm, 9 cm

D. none of these

**Answer: A** 



**3.** If the clock starts at 5 and turns through 1 right angle it will stop at

- A. 6
- B. 8
- C. 7
- D. none of these

**Answer: B** 



**4.** If we are at north, after making 1/2 revolution clockwise, we will face the direction

A. West

B. East

C. South

D. none of these

**Answer: A** 



5. Adjac	ent sides	of rectan	gle are
----------	-----------	-----------	---------

- A. Perpendicular
- B. Parallel
- C. Both
- D. none of these

#### **Answer: A**



_						•
6.	<b>Figure</b>	that	has	one	vertex	IS

- A. Cylinder
- B. Cone
- C. Cube
- D. none of these

#### **Answer: B**



**7.** Number of right angles turned if you are facing north and turn clock wise to face South

- A. 3 right angles
- B. 2 right angles
- C. 1 right angle
- D. none of these

#### **Answer: A**



<b>8.</b> Quadrilateral	with	one	pair	of	paralle	: 1	sides
ic							

- A. Trapezium
- B. Kite
- C. Parallelogram
- D. none of these

#### **Answer: A**



**9.** Check whether the statement is true or false Polygon having six sides is an octagon.



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**10.** Check whether the statement is true or false

A polygon having 3 sides is called Triangle.



**11.** Check whether the given statement is true or false

All equilateral triangles are isosceles.



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**12.** Check whether the given statement is true or false

Rectangle is a regular quadrilateral.



**13.** Check whether the given statement is true or false

Cylinder has two plane surfaces and one curved surface.



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**14.** Check whether the statement is true or not All isosceles triangles are obtuse angles.



**15.** Check whether the statement is true or not

Angle of  $0^{\circ}$  is an acute angle.



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# Additional Questions For Practice State Whether The Given Statements Are True Or False

1. Check whether the statement is true or false

Every rectangle is a parallelogram



## Additional Questions For Practice Fill In The Blanks

1. Rectangle having all sides equal is a \_\_\_\_\_



**2.** Trapezium in which parallel sides are equal becomes

#### 3. Fill in the blanks

The measure of \_\_\_\_\_ is the sum of the measures of two right angles.



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#### 4. Fill in the blanks

The number of degree in  $\frac{4}{9}$  right angle is

\_\_\_\_



<b>5.</b> The magnitude of complete angle is
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<b>6.</b> A solid figure has no vertex and no edge.
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7. All polygons having 4 sides are  Watch Video Solution
Watch video Solution

8. A triangle cannot have two \_\_\_\_ angles.



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## Additional Questions For Practice Short Answer Type Questions

1. What is the measure of 3 Right angles?



**2.** What is Scalene triangle?



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**3.** In which of the following figures can you find

perpendicular bisector drawn



**4.** Can you have a triangle with all the three angles greater than  $60^{\circ}$ ?



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5. Can a triangle have

An obtuse angle and an acute angle



**6.** Can a triangle have

Obtuse angle and a right angle

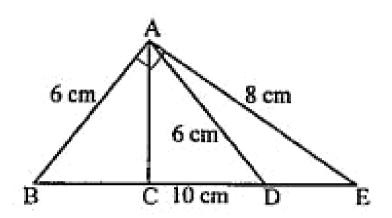


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7. Can a triangle have

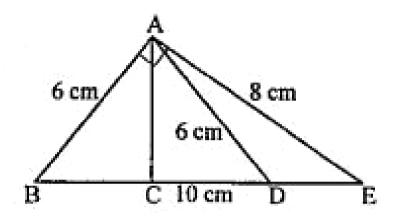
More than one right angle





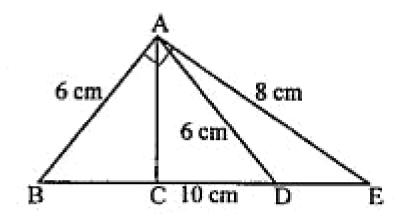
An obtuse angled triangle





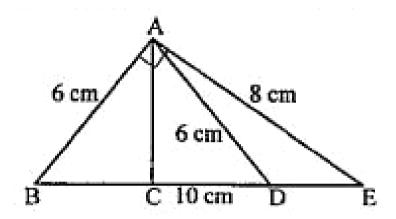
An isosceles triangle





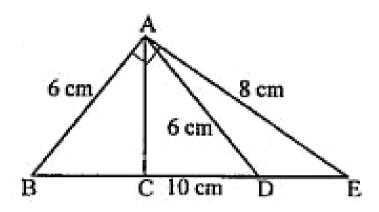
A scalene right angled triangle





Two right angled triangles





An acute angled triangle



#### 13. Match the following

- (a) A curved surface with two circular faces
- (b) No vertex no edge
- (c) Circular base, curved surface tapers into a point.
- (d) Three rectangular faces base are two congruent triangles
- (e) Tetrahedron
- (f) Base is square. Side faces are triangles having a common vertex
- (g) That has a curved lateral surface and two circular faces.

- (i) Triangular Prism
- (ii) Cone
- (iii) Triangular pyramid
- (iv) Triangular prism
- (v) Sphere
- (vi) Cylinder
- (vii) Square pyramid



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#### 14. Match the following angle names.

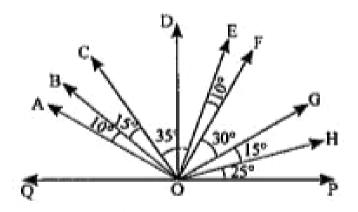
- (a) Straight angle
- (b) Right angle
- (c) Complete angle
- (d) Acute angle
- (e) Reflex angle
- (f) Obtuse angle

- Less than one-fourth revolution
- Half a revolution
- More than half a revolution
- One fourth revolution
- Between  $\frac{1}{4}$  and  $\frac{1}{2}$  of a revolution
- One complete revolution



## Additional Questions For Practice Long Answer Type Questions

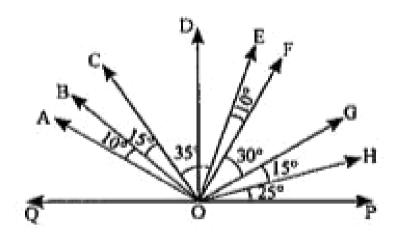
1. In the adjoining in figure



 $\angle POG$  is an \_\_\_\_ angle .



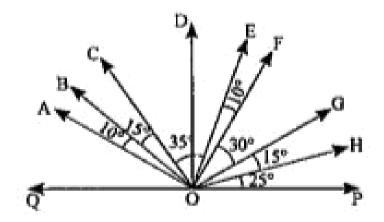
### 2. In the adjoining in figure



 $\angle GOB$  is an \_\_\_\_ angle .

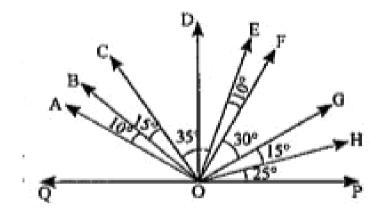


3. In the adjoining in figure



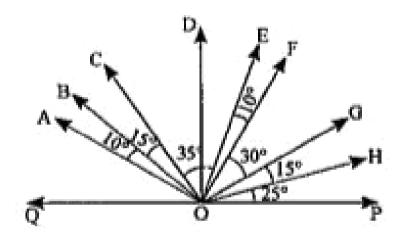
 $\angle QOP$  is an \_\_\_\_\_ angle .





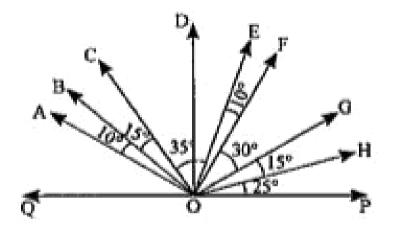
 $\angle AOH$  is an \_\_\_\_\_ angle .





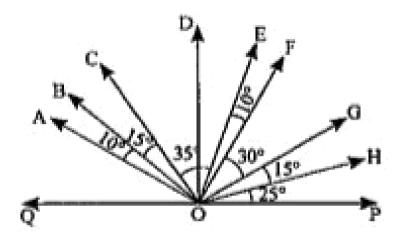
 $\angle POH$  is an \_\_\_\_\_ angle .





 $\angle AOE$  is an \_\_\_\_ angle .





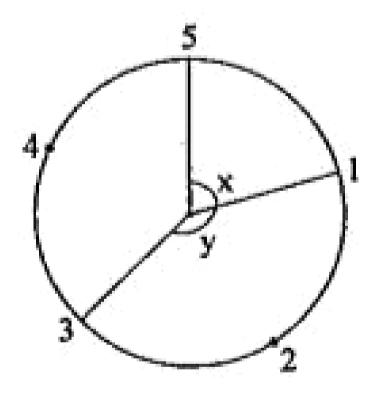
 $\angle COP$  is an \_\_\_\_ angle .



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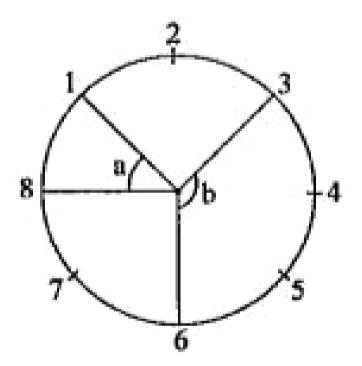
Hots High Order Thinking Skill

**1.** State the measure of the unknown angles x and y in the following





2. State the measure of the unknown angles x and y in the following





# Sample Paper For Practice Multiple Choice Questions

1. The measures of obtuse angled triangle are

A. 
$$108^{\circ}$$
 ,  $41^{\circ}$  ,  $31^{\circ}$ 

B. 
$$60^\circ$$
 ,  $60^\circ$  ,  $60^\circ$ 

C. 
$$40^\circ$$
 ,  $90^\circ$  ,  $50^\circ$ 

D. None of these

#### Answer: i



**2.** If the stop clock starts at 4 clock and after making half revolution it will stop at

A. 8

B. 9

C. 10

D. None of these

Answer: iii



**3.** The number of right angles turned by the hour hand of a clock when it goes from 5 to 8

- A. 2
- B. 1
- C. 3
- D. None of these

Answer: ii



<b>4.</b> Instrument used to	o measure angle
------------------------------	-----------------

A. Ruler

**B. Protractor** 

C. Compass

D. None of these

Answer: ii



**5.** Angle where measure is greater than  $90^{\circ}$  cannot be

A. Straight angle

B. reflex angle

C. acute angle

D. None of these

Answer: iii



**6.** The fraction of a clockwise revolution the hour hand of a clock tums through when it goes from 10 to 1 is

- A.  $\frac{1}{4}$
- $\mathsf{B.}\;\frac{1}{2}$
- C.  $\frac{3}{4}$

D. None of these

**Answer:** i



### **Sample Paper For Practice**

1. Correct the following statements

Adjacent angles of the parallelogram are equal.



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**2.** Correct the following statements

A cube has 14 edges.



3. Correct the following statements

Two non parallel line segments will always intersect.



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4. Correct the following statements

Every right angle forms a scalene triangle.



5. Correct the following statements

Every rhombus is a rectangle.



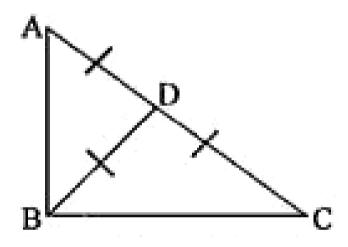
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**6.** Correct the following statements

A traingle may have two right angles.



7. In  $\Delta ABC$  AB=BC, AD=BD = DC. Find the number of isosceles triangles in the adjoining figure.





**8.** If three connecting sides of isosceles trapezium are 5 cm, 6 cm 11 cm respectively. What is the length of the fourth side.



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**9.** Draw the rough sketch of hexagen having (ii) Six lines of symmetry



**10.** What is the difference between a regular polygon. and an irregular polygon?

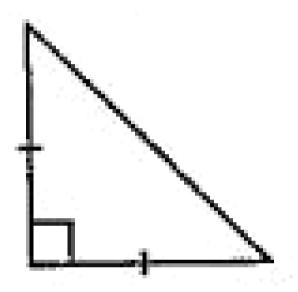


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11. Draw a rough sketch of the followingScalene right angled triangle



**12.** Try to draw rough sketches of a right angled isosceles triangle.





**13.** Draw a rough sketch of the following

Acute angled isosceles triangle



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**14.** Draw a rough sketch of the following

Scalene obtuse angled triangle.



15. Draw a rough sketch of the following

Equilateral acute angled triangle



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16. Draw a rough sketch of the following

Acute angled scalene triangle.



17. 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.



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**18.** 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.





## Sample Paper For Practice Fill In The Blanks

**1.** A tetrahedron has \_\_\_\_\_faces.



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2. A triangle has \_\_\_\_ parts.



**3.** A parallelogram with one right angle becomes a \_\_\_\_\_



**4.** A rhombus with each angle a right angle becomes a \_\_\_\_\_



**5.** The number of right angles in a straight angle are \_\_\_\_\_



**6.** Diagonals of the rhombus bisect each other

at \_\_\_\_\_

