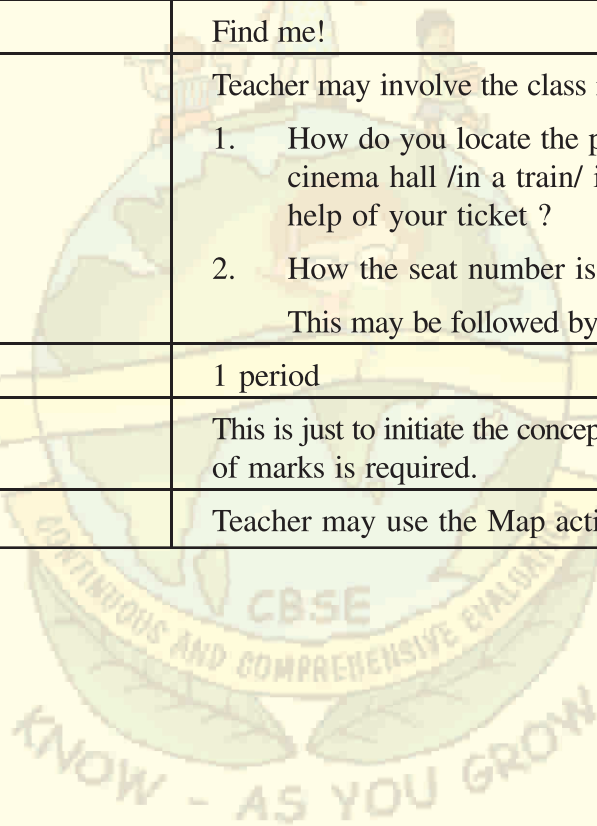


## CHAPTER-3

# Coordinate Geometry

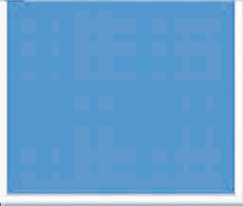

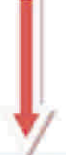



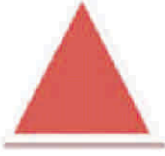














### Task-1: Find me!

Topic	Coordinate Geometry
Nature of task	Warm up
Content Coverage	Locating an object
Learning Objectives	To explore the idea of placement/ location of an object with frame of reference
Task	Find me!
Execution of task	Teacher may involve the class in a discussion by asking 1. How do you locate the position of your seat in a cinema hall /in a train/ in an aeroplane with the help of your ticket ? 2. How the seat number is written on tickets ? This may be followed by the worksheets attached.
Duration	1 period
Criteria for assessment	This is just to initiate the concept .No assessment in terms of marks is required.
Follow up	Teacher may use the Map activity. *



**Activity-1:**

The given grid may be shown on the screen or teacher may paste it on a card board.

	Column 1	Column2	Column3	Column4
				
Row1 				
Row2 				
Row3 				
Row4 				
Row5 				

Students would be asked to locate the position of objects in terms of their placement in rows and columns.



**Activity-2:**

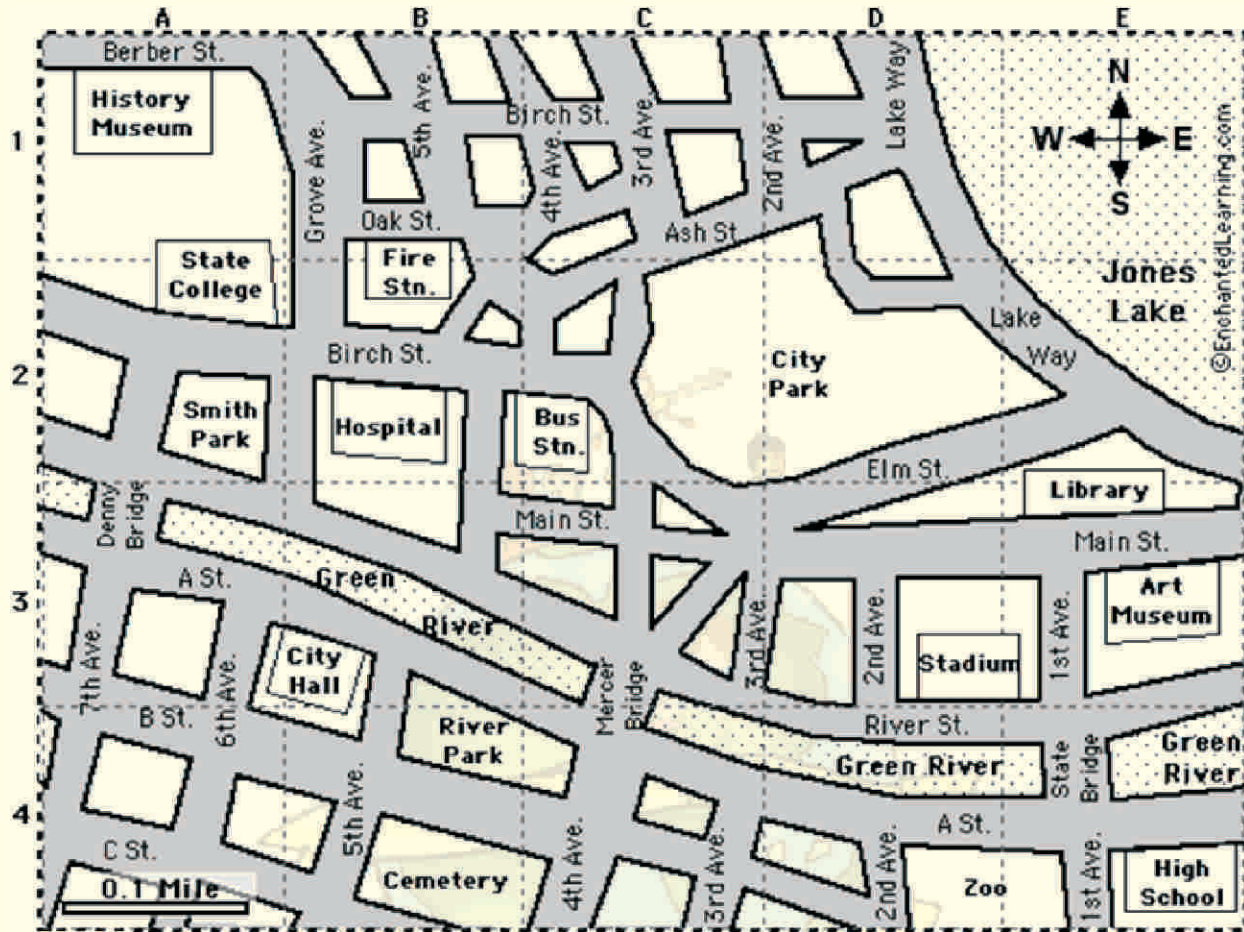
Imagine a standard classroom situation. Students are sitting in rows and columns with reference to the teacher. Ask the students to speak about their location in terms of row number and column number.

General layout is shown below.





Map activity\*: This may be a group or an individual activity.



Students may be asked questions

Describe the location of State college in your own words.

Discuss the moving path of Lake way.

Discuss the moving path of Green River.

Where is History Museum?

(Note: Teacher may take any other map for this task)



**Task-2: Project Work**

Topic	Coordinate Geometry
Nature of task	Project Work
Content Coverage	History of Coordinate Geometry

**TIME LINE- Coordinate geometry**

Coordinate geometry was first developed by French philosopher and mathematician Rene Descartes (<http://www-groups.dcs.st-and.ac.uk/~history/Mathematicians/Descartes.html>).



The following timeline gives some of the significant geometric contributions up to the time of Descartes.

- 1700 B.C.E - Egyptian: Used 3-4-5 triangles
- 600 B.C.E - Thales: Showed base angles of isosceles triangles are congruent
- 550 B.C.E - Pythagoras: Pythagoras theorem for right triangle
- 300 B.C.E - Euclid: Wrote THE ELEMENTS, on which Euclidian geometry is based
- AD 75 - Heron: Formula for the area of triangle
- AD 1637 - Descartes: Developed Analytic geometry

**Students may be asked to create picture Gallery of these Mathematicians and discuss their contributions. This activity is inspiring for students.**



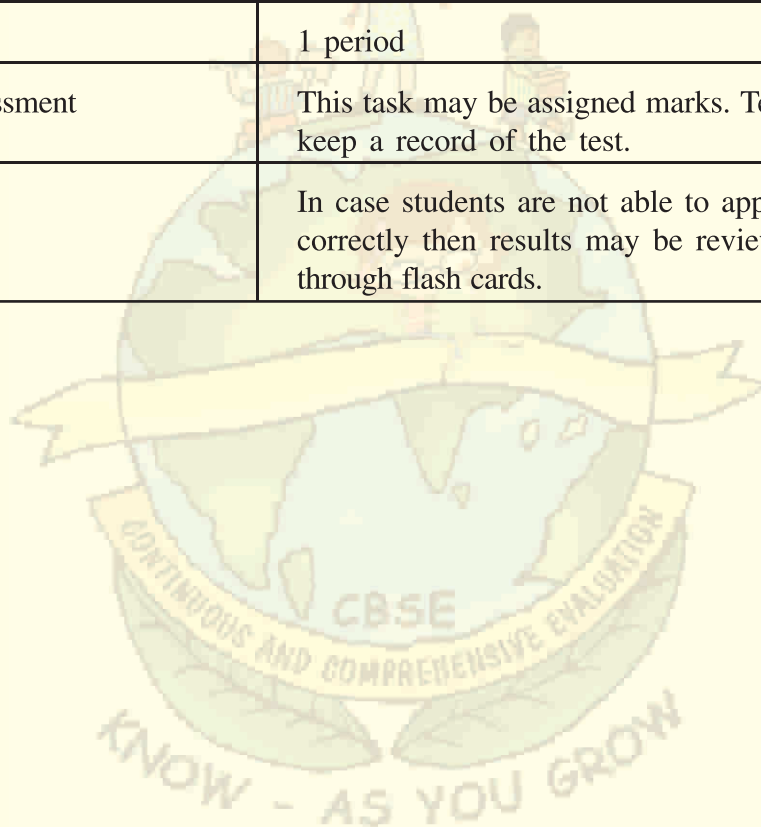
Sample picture Gallery: Life of Rene Descartes (Source- <http://www-groups.dcs.st-and.ac.uk/~history/PictDisplay/Descartes.html>)





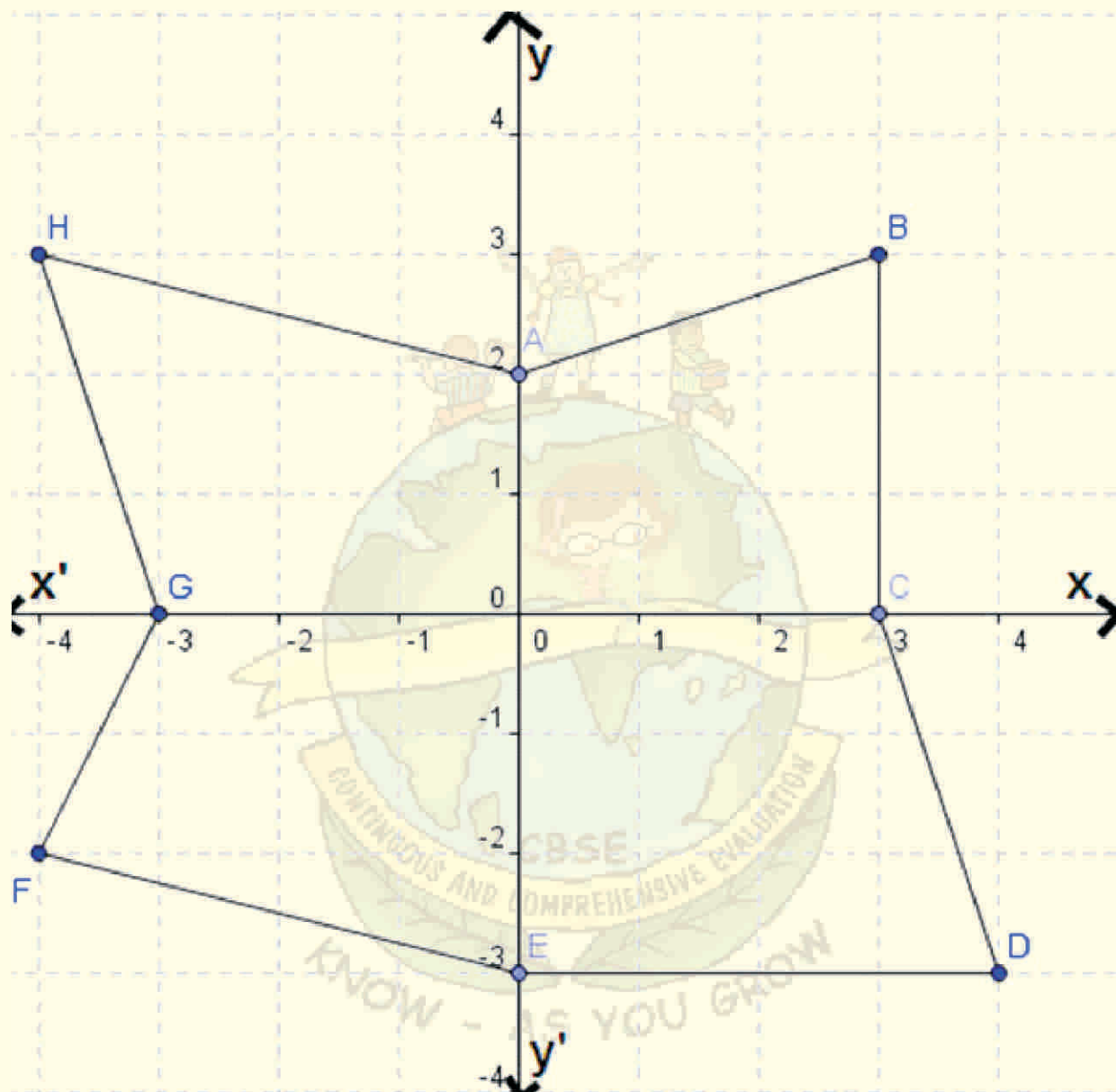
**Task-3:**

Topic	Coordinate Geometry
Nature of task	Content
Content Coverage	Location of a point in 4 quadrants and both axes.
Learning Objectives	To practice the skills of locating a point in four quadrants, on the x-axis and on the y-axis.
Task	Worksheet- Apply your knowledge
Execution of task	Teacher may provide this worksheet in the classroom. Students would be then asked to solve the questions.
Duration	1 period
Criteria for assessment	This task may be assigned marks. Teacher would then keep a record of the test.
Follow up	In case students are not able to apply the knowledge correctly then results may be reviewed and re learnt through flash cards.



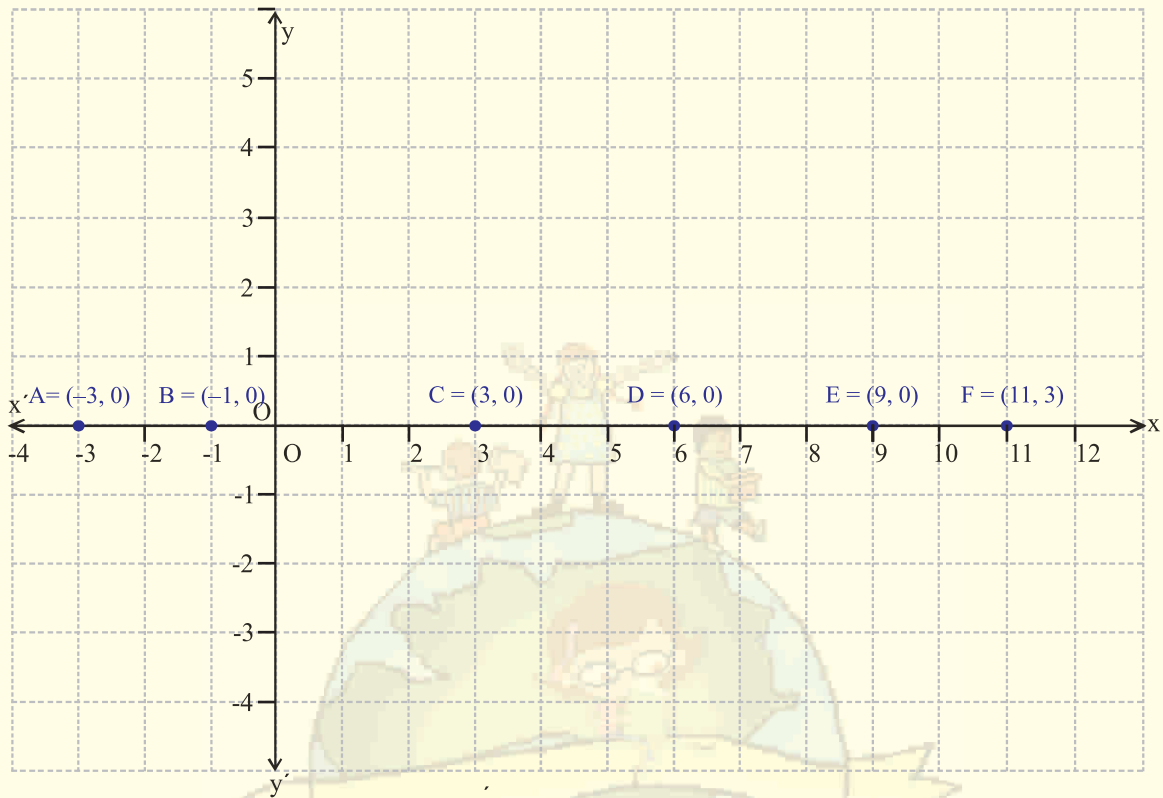
## Worksheet

Q.1. Locate the coordinates of labeled points A, B, C, D, E, F, G, and H in the following diagram.





Q.2. Read the given graph and answer the following questions:

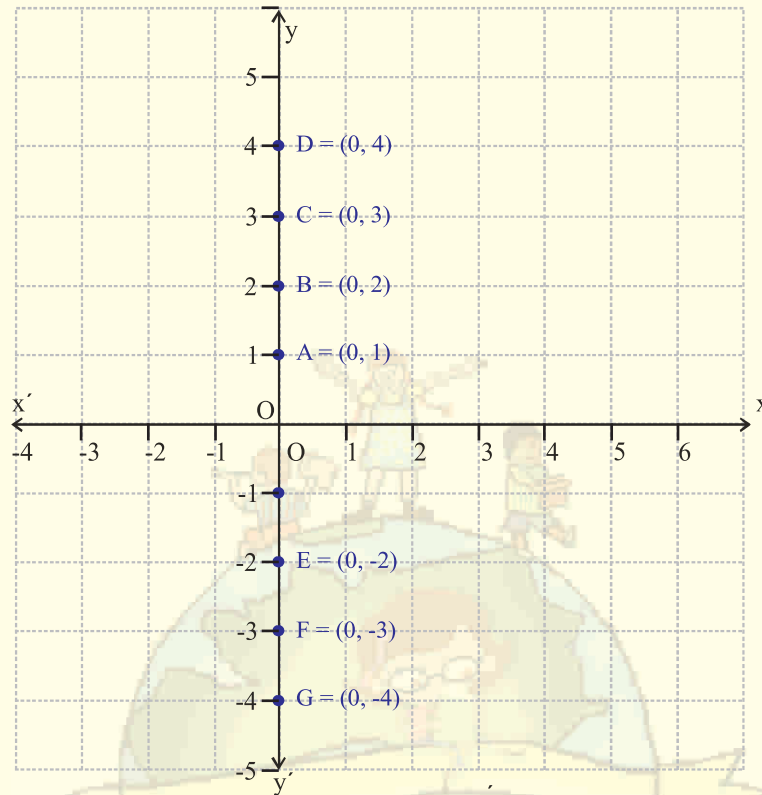


(a)	Point	Location	Coordinates	Abscissa	Ordinate
	A	x-axis	(-2, 0)	-3	0
	B				
	C				
	D				
	E				
	F				

(b) What are the coordinates of a general point on the  $x$ -axis ?



Q.3. Read the given graph and answer the following questions:



(a)	Point	Location	Coordinates	Abscissa	Ordinate
	A	y-axis	(0, 1)	0	1
	B				
	C				
	D				
	E				
	F				

(b) What are the coordinates of a general point on the y-axis ?



**Q.4.** What do you say about the following statements ? Justify

1. The Point  $(-5, 3)$  lies in the second quadrant.
2. The signs of abscissa and ordinate in the third quadrant are  $-$  and  $+$  respectively.
3. We can have 100 points between  $(0, 0)$  and  $(0,100)$  on the  $y$ -axis.
4. The coordinates of origin are  $(0, 0)$ .
5. The point  $(0, -10)$  lies on the negative direction of the  $x$ -axis.
6. The point  $(10, 0)$  lies on the positive direction of the  $x$ -axis.
7. The abscissa of all points on the  $y$ -axis is always 0.
8. The abscissa of all points on the  $x$ -axis is always 0.
9. A point whose both of coordinates are negative lies in the third quadrant.
10. The points  $(5, -2)$  and  $(-2, 5)$  lies in the different quadrant.

**Q.5.** Complete the following table by putting a tick or a cross for the given points and their location.

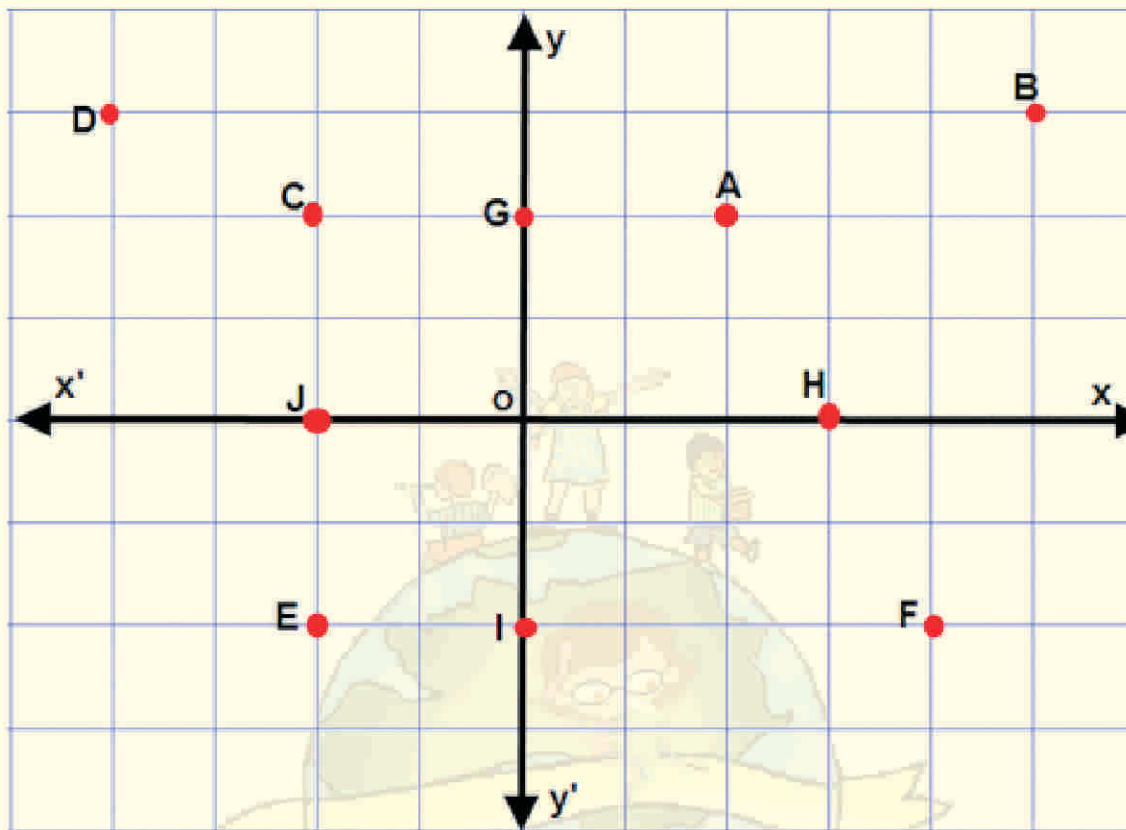
Point	I Quadrant	II Quadrant	III Quadrant	IV Quadrant	$x$ -axis	$y$ -axis
$(0,0)$						
$(1,2)$						
$(1, -2)$						
$(-2, 1)$						
$(-1, -2)$						
$(0, -2)$						
$(-2, 0)$						
$(7, 9)$						

**Q.6.** Give 5 examples each of the following in the corresponding box

Points in the I Quadrant	
Points in the II Quadrant	
Points in the III Quadrant	
Points in the IV Quadrant	
Points on the $x$ -axis	
Points on the $y$ -axis	



Q.7. Locate the position of marked points.



Q.8. If for any two points  $(x, y)$  and  $(y, x)$  on line  $(x, y) = (y, x)$ , then

1.  $x \neq y$
2.  $x = 0, y \neq 0$
3.  $x \neq 0, y = 0$
4.  $x = y$



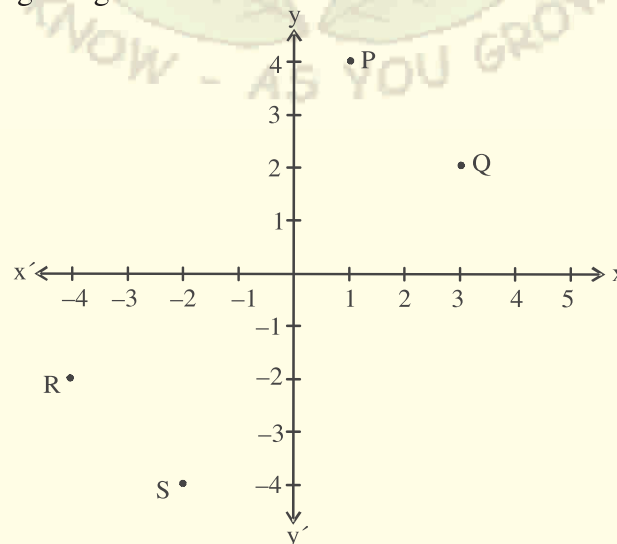


**Task-4: Home Assignment**

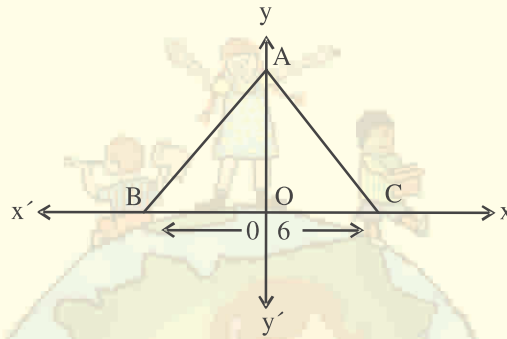
Topic	Coordinate Geometry
Nature of task	Post Content
Content Coverage	Complete chapter
Learning Objectives	To test the knowledge gained by students. To give extra practice of concepts taught in the classroom.
Task	Home Assignment
Execution of task	After the concept is taught in the classroom, teacher may write the questions on the board or give a Home assignment to students.
Duration	2 days
Criteria for assessment	This task may be assigned weightage. Worksheet can be assessed according to C.W./H.W./Assignment rubric.
Follow up	–

**Home Assignment**

- Which of the following points lie in I and II quadrants?  
(1, 1), (2, -3), (-2, 3), (-1, 1), (-3, -2), (4, 3)
- Which of the following points lie on (a)  $x$ -axis (b)  $y$ -axis?  
(5, 1), (8, 0), (0, 4), (-3, 0), (0, -3), (0, 5), (0, 0)
- If the  $x$ -coordinate of a point is negative, it can lie in which quadrants?
- From the figure, write the coordinates of the points P, Q, R and S. Does the line joining P and Q pass through origin?



5. Write the coordinates of the following points:
- lying on both axes
  - lying on  $x$ -axis and with  $x$ -coordinate 4
  - lying on  $y$ -axis with  $y$ -coordinate -3
6. The coordinates of the three vertices of a rectangle ABCD are A(3, 2), B (-4, 2), C(-4,5). Plot these points and write the coordinates of D.
7. ABC is an equilateral triangle as shown in the figure. Find the coordinates of its vertices



8. Plot the following points on a graph paper:

$x$	1	2	3	4	5
$y$	5	8	11	14	17

Join these points. What do you observe ?



**Task-5: MCQ Worksheet**

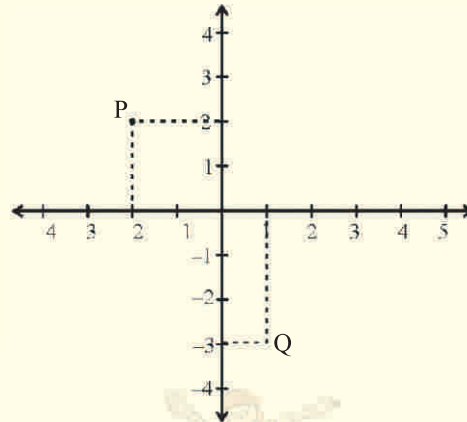
Topic	Coordinate Geometry
Period of task	Post Content
Content Coverage	Complete Chapter
Learning Objectives	–
Task	MCQ Worksheet
Execution of task	After the concept is taught in the classroom, teacher may provide printed worksheet to students for extra practice.
Duration	1 Day
Criteria for assessment	This task may be assigned weightage. Worksheet can be assessed according to C.W./H.W./Assignment rubric.

**MCQ Worksheet**

- The point  $(-2, 3)$  lies in the
  - I quadrant
  - II quadrant
  - III quadrant
  - IV quadrant
- The sign of  $x$ -coordinate of  $a$  point lying in third quadrant is
  - +
  - 
  - $\pm$
  - None of these
- The signs of respective  $x$ -coordinates and  $y$ -coordinates of  $a$  point lying in 2nd quadrant are
  - , +
  - , –
  - +, –
  - +, +
- The point  $(0, 4)$  lies on
  - positive side of  $x$ -axis
  - negative side of  $x$ -axis
  - at the origin
  - the negative side of  $y$ -axis
- The  $y$ -coordinate of any point lying on  $x$ -axis is
  - zero
  - 1
  - 1
  - Any number other than zero
- The point, where the two axes meet, is called
  - $x$ -coordinate
  - $y$ -coordinate
  - Quadrant
  - Origin
- The points  $(-5, 4)$  and  $(4, -5)$  are situated in
  - Same quadrant
  - Different quadrants
  - Quadrants IV and II respectively
  - Quadrants I and III respectively
- The figure obtained by plotting the points  $(2, 3)$ ,  $(-2, 3)$ ,  $(-2, -3)$  and  $(2, -3)$  is a
  - Trapezium
  - Rectangle
  - Square
  - Rhombus



9. In the given figure, on the sides the respective coordinates of points  $P$  and  $Q$  respectively are:



- A.  $(-2, -2), (1, 3)$       B.  $(-2, -2), (-1, 3)$   
 C.  $(-2, 2), (1, 3)$       D.  $(-2, 2), (1, -3)$
10. The point  $(0, -3)$  lies on  
 A. Positive side of  $x$ -axis      B. Negative side of  $x$ -axis  
 C. Positive side of  $y$ -axis      D. Negative side of  $y$ -axis
11. If the coordinates of two points  $P$  and  $Q$  are  $(2, -3)$  and  $(-6, 5)$ , then the value of  $(x$  coordinate of  $P) - (x$ -coordinate of  $Q)$  is  
 A. 2      B. -6      C. -8      D. 8
12. The point whose  $y$  - coordinate is 3 in the given figure is:



- A. P      B. Q      C. R      D. S
13. The coordinates of the point lying on the negative side of  $x$ -axis at a distance of 5 units from origin are  
 A.  $(0, 5)$       B.  $(0, -5)$       C.  $(-5, 0)$       D.  $(5, 0)$
14. The distance of the point  $(4, -3)$  from  $x$ -axis is  
 A. -3 units      B. 4 units      C. 3 units      D. 5 units
15. The origin lies on  
 A.  $x$ -axis only      B.  $y$ -axis only  
 C. Both axes      D. None of the axes

