TEXT BOOK EXERCISE 13.3

Q. 1. Draw the graph of the following :

(*i*)

Side of square in (cm)	3	4	5	6	7	8
Perimeter (in cm)	12	16	20	24	28	32

Is it a linear graph ?

(*ii*)

Side of square (in cm)	3	4	5	6	7
Area (in cm^2)	9	16	25	36	49

Is it a linear graph ?

Solution. (*i*)

(1) Let us take a suitable scale on both axes.

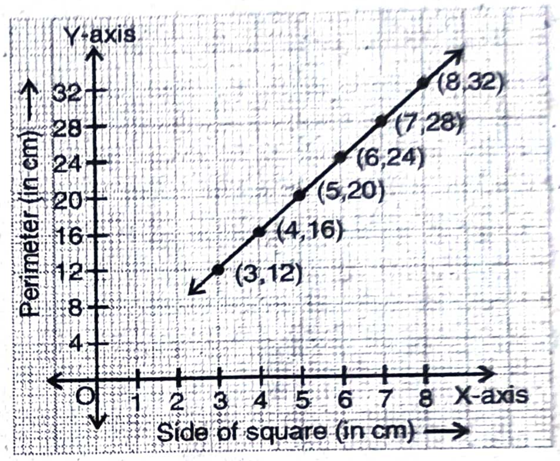
(2) We represent side of the square (in cm) along horizontal X-axis.

(3) We represent perimeter (in cm) along the vertical Y-axis.

(4) We plot the points (3, 12), (4, 16), (5, 20), (6, 24), (7, 28) and (8, 32).

(5) We join the points.

We find that the graph is a line. It is a linear graph.



(*ii*)

(1) Let us take a suitable scale on both axes.

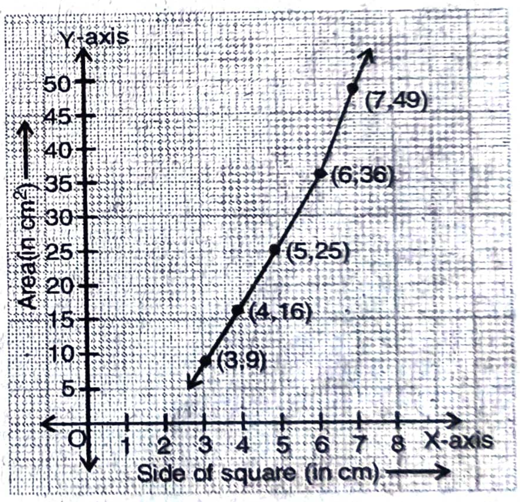
(2) We represent the side of square (in cm) along the horizontal axis (X-axis).

(3) We represent the area (in cm^2) along the vertical axis (Y-axis).

(4) We plot the points (3, 9), (4, 16), (5, 25), (6, 36) and (7, 49).

(5) We join the points.

We find that the graph is curved line such that it is not a linear graph.



Q. 2. Draw the graphs of the following tables of values.

(*i*) **Distance travelled by a car**

Time (in hours)	6 am	7 am	8 am	9 am
Distance (in km)	50	100	150	200

Whether it is a linear graph ?

(*ii*) **Interest on a deposits for a year**

Deposit (in ₹)	5000	10000	15000	20000
Simple interest (in ₹)	350	700	1050	1400

(*a*) Does the graph pass through the origin ?

(*b*) Use the graph to find the interest on ₹ 30,000 for a year.

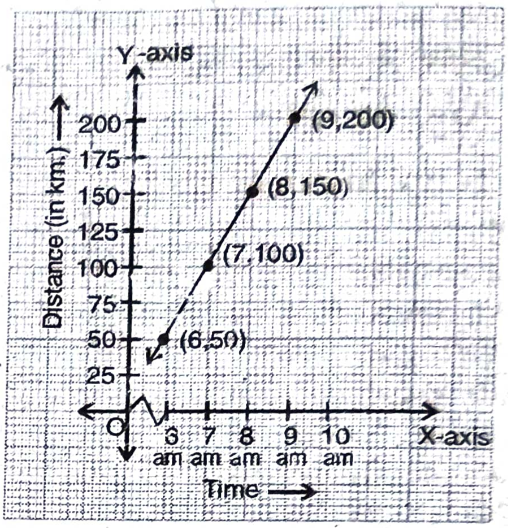
(*iii*) Cost of Sugar

Weight (in kg)	1	2	3	4	5	6
Cost (in ₹)	17	34	51	68	85	102

(*a*) Use graph to find the cost of 10 kg of sugar.
(*b*) What amount of sugar can be purchased with ₹ 136 ?

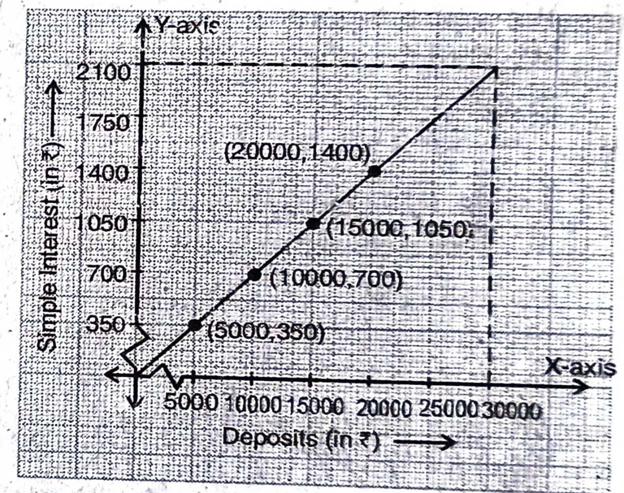
Solution. (*i*)

(1) Let us take a suitable scale on both axes.
(2) We represent time (in hours) along horizontal axis (X-axis).
(3) We represent distance travelled (in km) along vertical axis (Y-axis).
(4) We plot the points (6, 50), (7, 100), (8, 150) and (9, 200)
(5) We join these points.
We find that the graph is a line.
It is linear graph



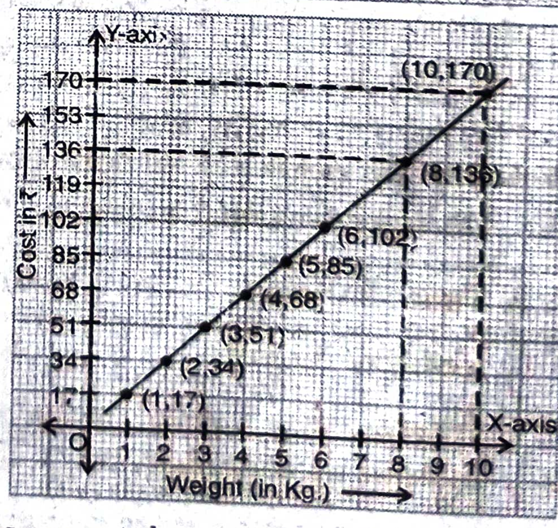
(*ii*)

(1) Let us take a suitable scale on both the axes.
(2) We represent deposits (in ₹) along horizontal axis.
(3) We represent simple interest along vertical axis.
(4) We plot the points (5000, 350), (10000, 700), (15000, 1050) and (20000, 1400)
(*a*) Yes, the graph passes through the origin.
(*b*) **To find interest on ₹ 30,000 for a year :** For ₹ 30,000 on X-axis, we get the corresponding interest of ₹ 2100 on vertical axis. So, required interest on ₹ 30,000 = ₹ 2100.



(*iii*)

(1) Let us take a suitable scale on both the axes.
(2) We represent weight (in kg) along horizontal axis.
(3) We represent cost (in ₹) along vertical axis.
(4) We plot the points (1, 17), (2, 34), (3, 51), (4, 68), (5, 85) and (6, 102) on the graph paper.
(5) We join the points. We find that the graph is a line.



(*a*) **The cost of 10 kg of sugar :** For 10 kg on X-axis we get the corresponding cost ₹ 170 on the vertical axis.

So, required cost of 10 kg of sugar is ₹ 170.

(v) **Amount of sugar purchased with ₹ 136 :** For ₹ 136 on Y-axis, we get corresponding amount of 8 kg of sugar on horizontal axis. So, amount of sugar purchased with ₹ 136 is 8 kg.

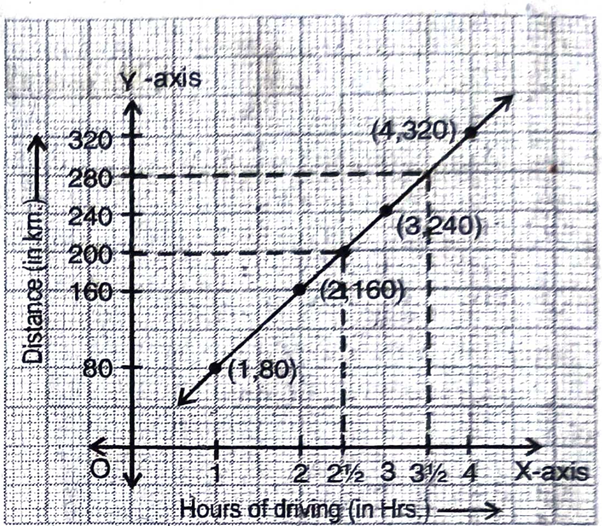
Q. 3. Yash can drive a car constantly at a speed of 80 km/h. Draw a time distance graph for this situation. Use it to find.

(*i*) The time taken by Yash to drive 200 km.

(*ii*) The distance covered by him in $3\frac{1}{2}$ hours.

Solution. Yash can drive a car constantly at a speed of 80 km/h. From this we can make the following table.

Hours of driving	Distance Covered
1 hour	80 km
2 hours	$2 \times 80 = 160$ km
3 hours	$3 \times 80 = 240$ km
4 hours	$4 \times 80 = 320$ km



Now (1) Let us take a suitable scale on both axes.
(2) We represent time (in hours) along X-axis.
(3) We represent distance (in km) along Y-axis.
(4) We plot (1, 80), (2, 160), (3, 240) (4, 320) on the graph paper.
(5) We join the points. We find that the graph is a line.

(*i*) The time taken by Yash to drive 200 km : For 200 km on Y-axis, we get corresponding time of $2\frac{1}{2}$ hours on the vertical axis. So, required time to drive 200 km is $2\frac{1}{2}$ hours.

(*ii*) The distance covered by hm in $3\frac{1}{2}$ hours : Corresponding to $3\frac{1}{2}$ hours on the X-axis there is 280 km on Y-axis.

So, required distance covered by him in $3\frac{1}{2}$ hours is 280 km.

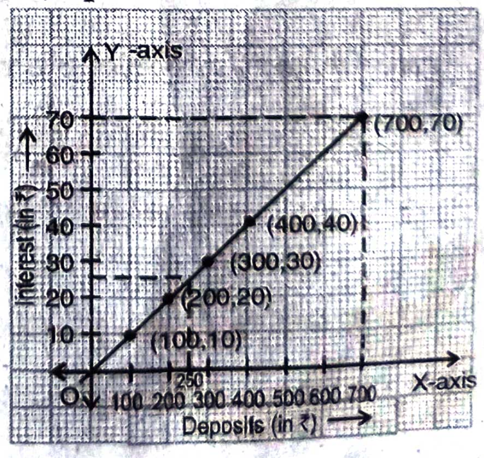
Q. 4. A bank gives 10% simple interest on deposits. Draw a graph to illustrate the sum deposited and simple interest earned. Find from graph.

(*i*) Annual interest obtain able for an investment of ₹ 250.

(*ii*) The investment one has to make to get an annual simple interest of ₹ 70.

Solution. A banks gives 10% interest on deposits. From this we can make the following table.

Deposits (in ₹)	Interest (in ₹)
100	10
200	20
300	30
400	40



(1) Let us take suitable scale on both axes.
(2) We represent deposits (in ₹) along the horizontal axis. (X-axis)
(3) We represent interest (in ₹) along the vertical axis. (Y-axis)

(4) We plot the points (100, 10), (200, 20), (300, 30) and (400, 40).

(5) We join the points. We find that graph is a line.

(*i*) **Annual interest for an investment of ₹ 250 :** For ₹ 250 on Y-axis, we get the corresponding interest of ₹ 25 on the vertical axis.

So, annual interest obtainable for an investment of ₹ 250 is ₹ 25.

(*ii*) **The investment one has to make to get an annual simple interest of ₹ 70 :** Corresponding to ₹ 70 interest on the Y-axis there is ₹ 700 on X-axis.

So, the investment one has to make to get an annual simple interest of ₹ 70 is ₹ 700.

Objective Type Questions

1. Multiple Choice Questions :

(*i*) The horizontal line in the plane is called :

(*a*) x-axis (*b*) y-axis
(*c*) origin (*d*) zero axis.

Ans. (*a*) x-axis.

(*ii*) The vertical line in the plane is called :

(*a*) x-axis (*b*) y-axis
(*c*) zero axis (*d*) origin.

Ans. (*a*) y-axis.

(*iii*) y-coordinate is also called :

(*a*) Abscissa
(*b*) Origin
(*c*) Ordinate
(*d*) Cartesian Plane.

Ans. (*c*) Ordinate.

(*iv*) x-coordinate is also called :

(*a*) Abscissa (*b*) Origin
(*c*) Ordinate (*d*) Cartesion plane.

Ans. (*a*) Abscissa.

(*v*) The distance of a print from y-axis is called its :

(*a*) x-coordinate (*b*) y-coordinate
(*c*) Origin (*d*) None of these.

Ans. (*a*) x-coordinate.

(*vi*) The distance of a point from x-axis is called its :

(*a*) Origin (*b*) x-coordinate
(*c*) y-coordinate (*d*) None of these.

Ans. (*c*) y-coordinate.

(*vii*) The coordinates of a point on the point on the x-axis are of the form :

(*a*) (x, y) (*b*) $(x, 0)$
(*c*) $(0, y)$ (*d*) $(0, 0)$

Ans. (*c*) $(x, 0)$.

(*viii*) The coordinates of point on y-axis are of the form :

(*a*) $(0, 0)$ (*b*) $(x, 0)$
(*c*) $(0, y)$ (*d*) (x, y)

Ans. (*c*) $(0, y)$.

(*ix*) The coordinate of origin are :

(*a*) $(0, y)$ (*b*) $(0, 0)$
(*c*) $(x, 0)$ (*d*) None.

Ans. (*b*) $(0, 0)$.

2. Choose True/False for the following questions :

(*i*) A point whose x-coordinate is zero and y-coordinate is non-zero will lie on the y-axis. (True/False)

Ans. True.

(*ii*) A point whose y-coordinate is zero and x-coordinate is 5 will lie on y-axis. (True/False)

Ans. False.

(*iii*) x-axis is also called the horizontal line. (True/False)

Ans. True.

(*iv*) Point (0, 5) lies on the x-axis. (True/False)

Ans. False.

(*v*) The coordinates of origin are (0, 0). (True/False)

Ans. True.

3. Fill in the blanks :

(*i*) A point whose x-coordinate is zero and y-coordinate is non-zero lies on ....

Ans. y-axis.

(*ii*) The coordinates of a point on x-axis are ....

Ans. $(x, 0)$

(*iii*) The coordinates of a point on the y-axis are ....

Ans. $(0, y)$

(*iv*) Point (4, 0) lies on the ....

Ans. x-axis.

(*v*) x-coordinate is also called ....

Ans. Abscissa.