INDIAN SCHOOL MUSCAT

CLASS IX

Some Points to Keep in Mind ……

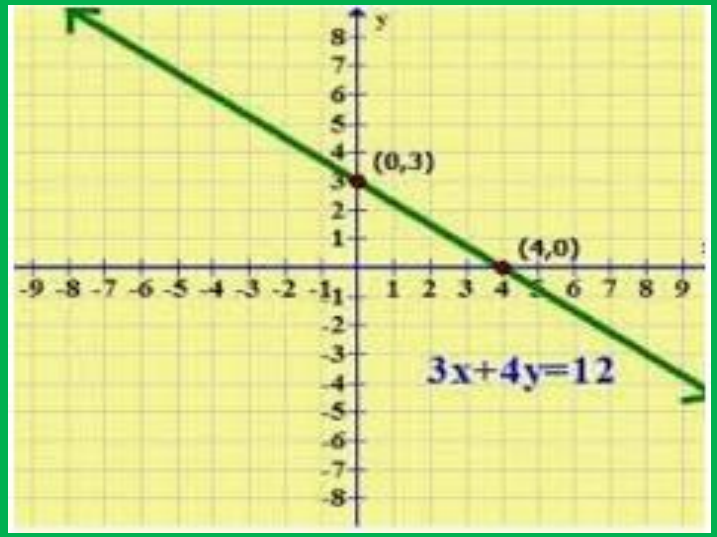
- We are learning together, therefore give space for EACH other.
- Please always keep your MIC and WEBCAM in MUTE mode.
- Please take down notes.
- Ask doubts as and when it comes and write in the CHAT box.
- Some times, technology fails, don’t panic, hold on - we will be back.

LINEAR EQUATIONS IN 2 VARIABLES

CLASS IX – MATHEMATICS

INDIAN SCHOOL MUSCAT

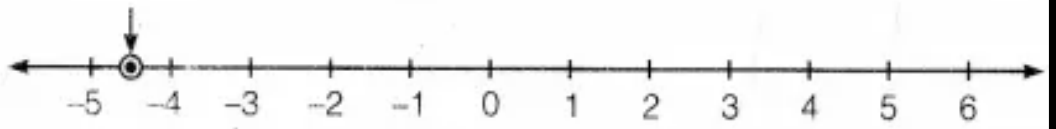
MODULE 6



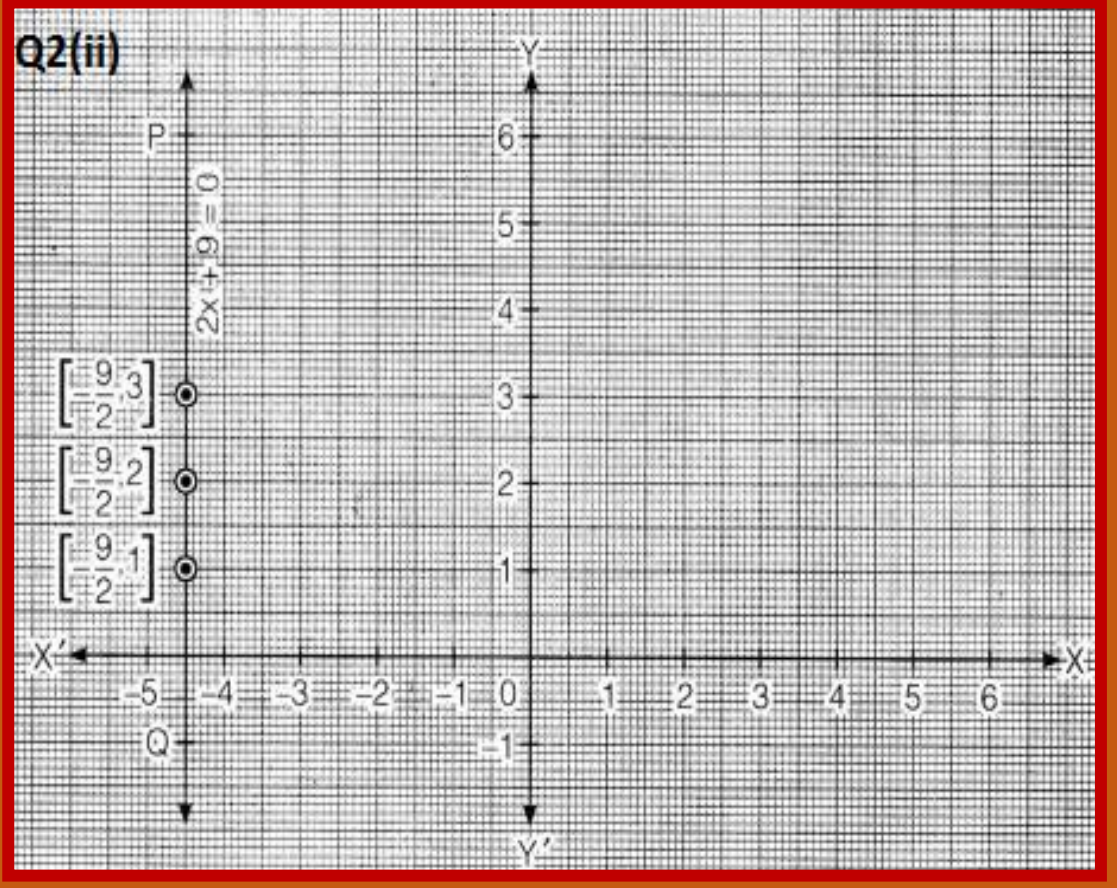
ANSWERS OF PREVIOUS DAY'S HOMEWORK

EX:4.4 Q2

Q2(i) $X = -\frac{9}{2}$



Q2(ii)



Assignment

Q5. Lines are parallel.

They don't intersect.

Q9. $2x + 1 = x - 4$

$x = -5$

RECAP

- **Standard form of *Linear Equation in two variables*.**
- **Graphical representation of $y = mx$ & $y = mx + c$.**
- **Graph of a linear equation in 2 variables is a *straight line*.**
- **A linear equation of the form $y = mx$ passes through *origin.***
- **To draw the *graph* of a linear equation in 2 variables, we can either express the equation as *x in terms of y* or *y in terms of x.***

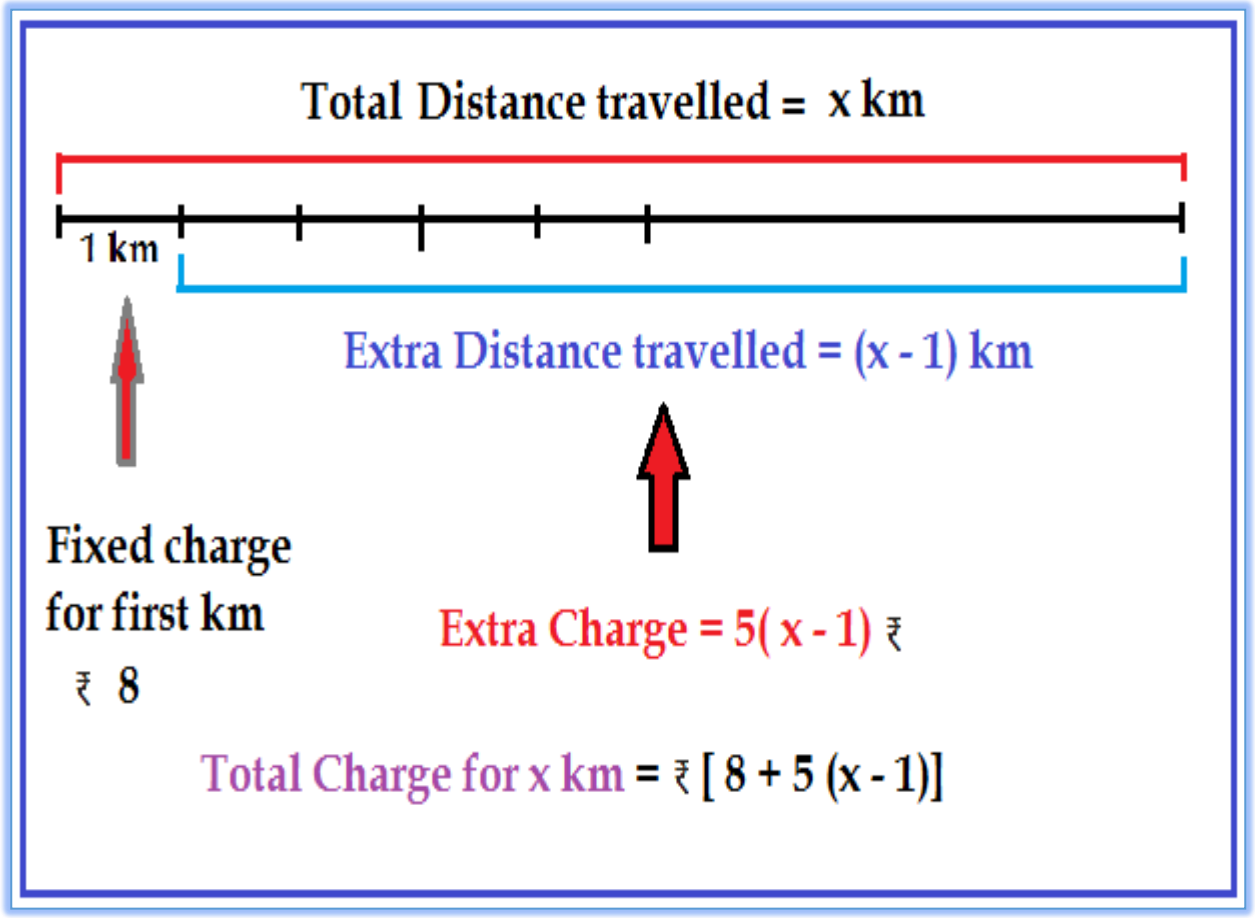
* ***Every point*** **on the graph of a linear equation in 2 variables is a *solution* of that equation.**

* ***Every solution*** **is a *point* on the straight line representing the linear equation.**

- **The graph of $x = k$ is a straight line parallel to *y- axis*.**
- **The graph of $y = k$ is a straight line parallel to *x- axis*.**
- **$x = 0$ is the equation of *y- axis*.**
- **$y = 0$ is the equation of *x- axis*.**

EX: 4.3 Q.4.The taxi fare in a city is as follows: For the first kilometer, the fare is `₹ 8 and for the subsequent distance it is `₹ 5 per km. Taking the distance covered as x km and total fare as Rs y, write a linear equation for this information, and draw its graph.

Total Distance travelled	Figure	Total Charge (in ₹)
1 km	8 1 km	8
2 km	8 5 1 km 1 km	8 + (5)
3 km	8 5 5 1 km 1 km 1 km 2 km	8 + 2 (5)
4 km	8 5 5 5 1 km 3 km	8 + 3 (5)
5 km	8 5 5 5 5 1 km 4 km	8 + 4 (5)



Given, total distance covered = x km

Total taxi fare = Rs. y

Fare for the first kilometer =Rs. 8

Fare for subsequent distance =Rs. 5 per km

Remaining distance = (x -1) km

Fare for next (x -1) km = Rs. 5 x (x -1)

Total taxi fare = Rs. 8 + Rs. 5(x -1)

According to the question,

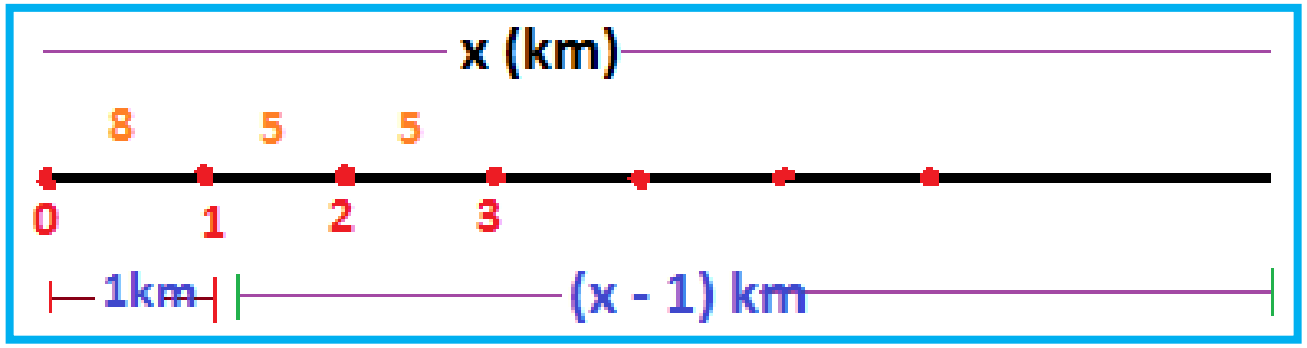
$\Rightarrow$ y = 8 + 5 (x-1)

$\Rightarrow$ y = 8 + 5x – 5

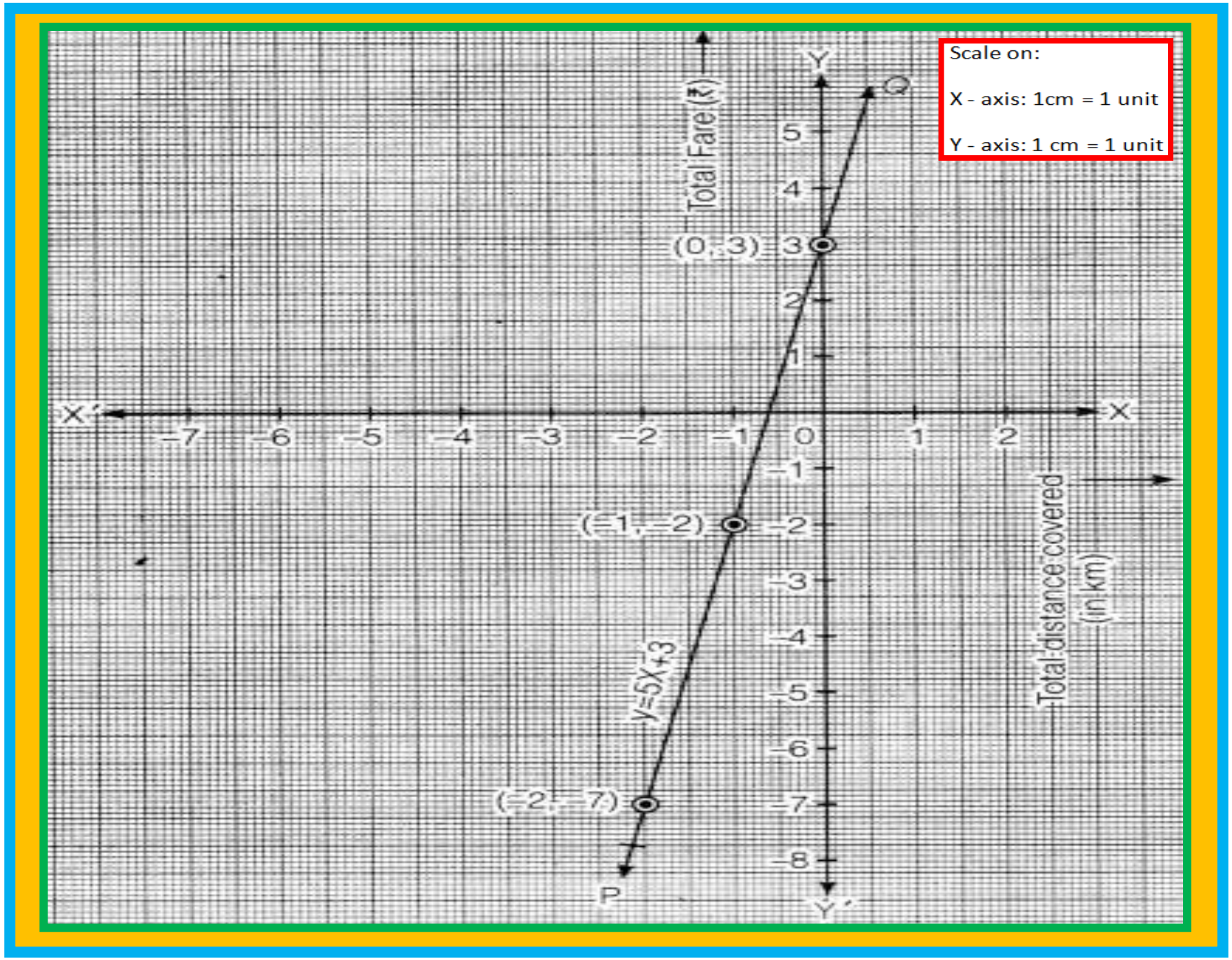
$\Rightarrow$ 5x – y + 3 = 0

$\Rightarrow$ y = 5x + 3

x	0	–1	–2
y	3	–2	–7



WRITE


Scale on:
X - axis: 1cm = 1 unit
Y - axis: 1 cm = 1 unit
Total Fare (₹)
Total distance covered (in km)
Y
Y'
X'
X
Q
P
(0, 3)
(−1, −2)
(−2, −7)
y=5X+3
−7
−6
−5
−4
−3
−2
−1
0
1
2
5
4
3
2
1
−1
−2
−3
−4
−5
−6
−7
−8

WRITE

Q6 If the work done by a body on application of a constant force is directly proportional to the distance traveled by the body, express this in the form of an equation in two variables and draw the graph of the same by taking the constant force as 5 units. Also read from the graph the work done when the distance travelled by the body is
(i) 2 units (ii) 0 units

Solution:

Let the work done by the constant force be y units and the distance traveled by the body be x units.

Constant force = 5 units

We know that

Work done = Force **x** Displacement

$\Rightarrow y = 5x$

$W \alpha D$

$\Rightarrow W = F \times D$

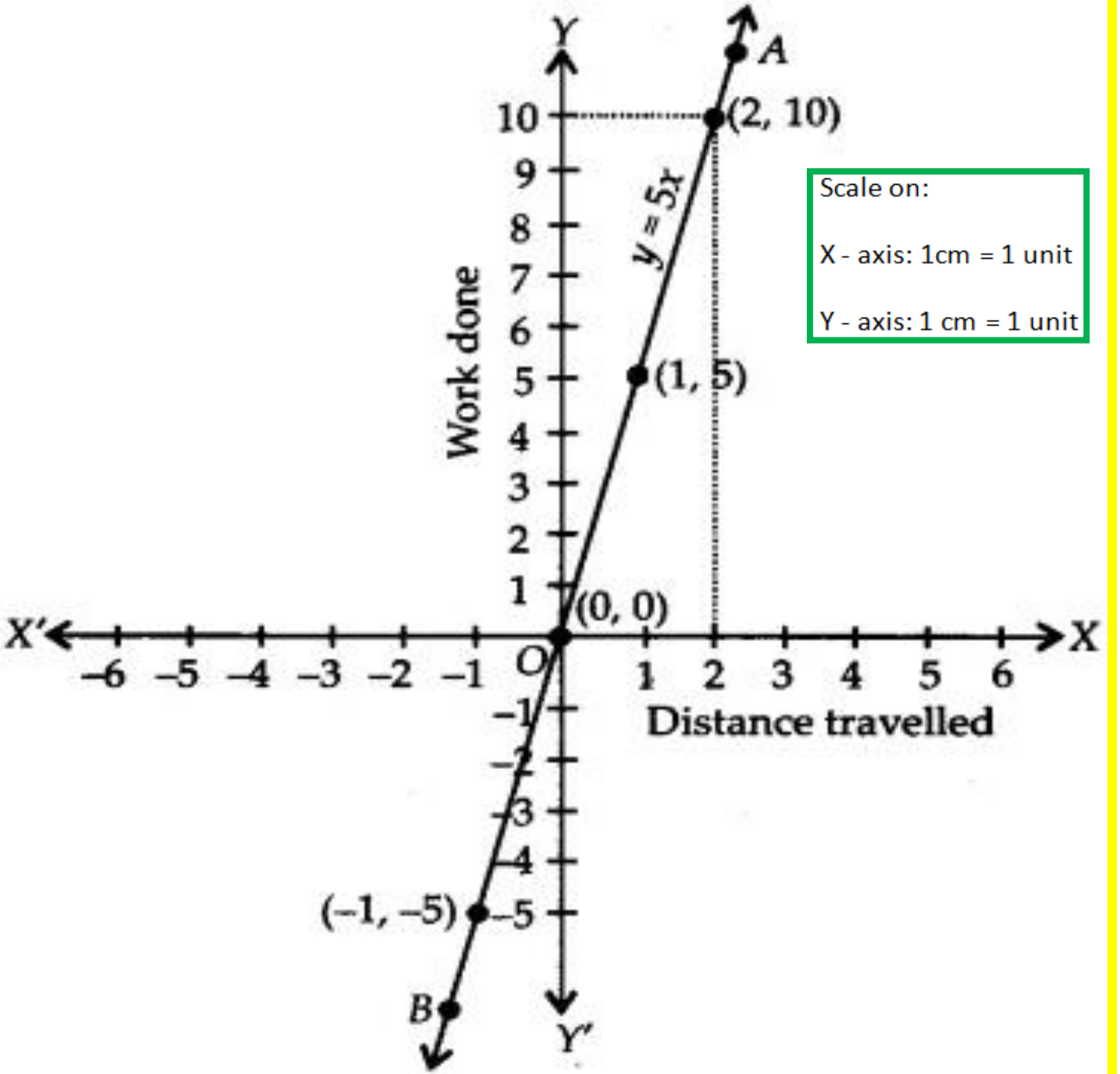
$\Rightarrow W = 5D$

$\Rightarrow Y = 5x$

Table of solutions

x	0	1	-1
y	0	5	-5

WRITE



From the graph, we get

(i) Distance travelled =2 units i.e., x = 2

∴ If x = 2, then y = 5(2) = 10

⇒ Work done = 10 units.

(ii) Distance travelled = 0 unit i.e., x = 0

∴ If x = 0 ⇒ y = 5(0) – 0

⇒ Work done = 0 unit.

WRITE

EX 4.3Q.8

In countries like USA and Canada, temperature is measured in Fahrenheit, whereas in countries like India, it is measured in Celsius. Here is a linear equation that converts Fahrenheit to Celsius:

$F = (9/5)C + 32$

(i)Draw the graph of the linear equation above using Celsius for x-axis and Fahrenheit for y-axis.

(ii)If the temperature is 30°C, what is the temperature in Fahrenheit?

(iii)If the temperature is 95°F, what is the temperature in Celsius?

(iv)If the temperature is 0°C, what is the temperature in Fahrenheit and if the temperature is 0°F, what is the temperature in Celsius?

(v)Is there a temperature which is numerically the same in both Fahrenheit and Celsius? If yes, find it.

Solution:

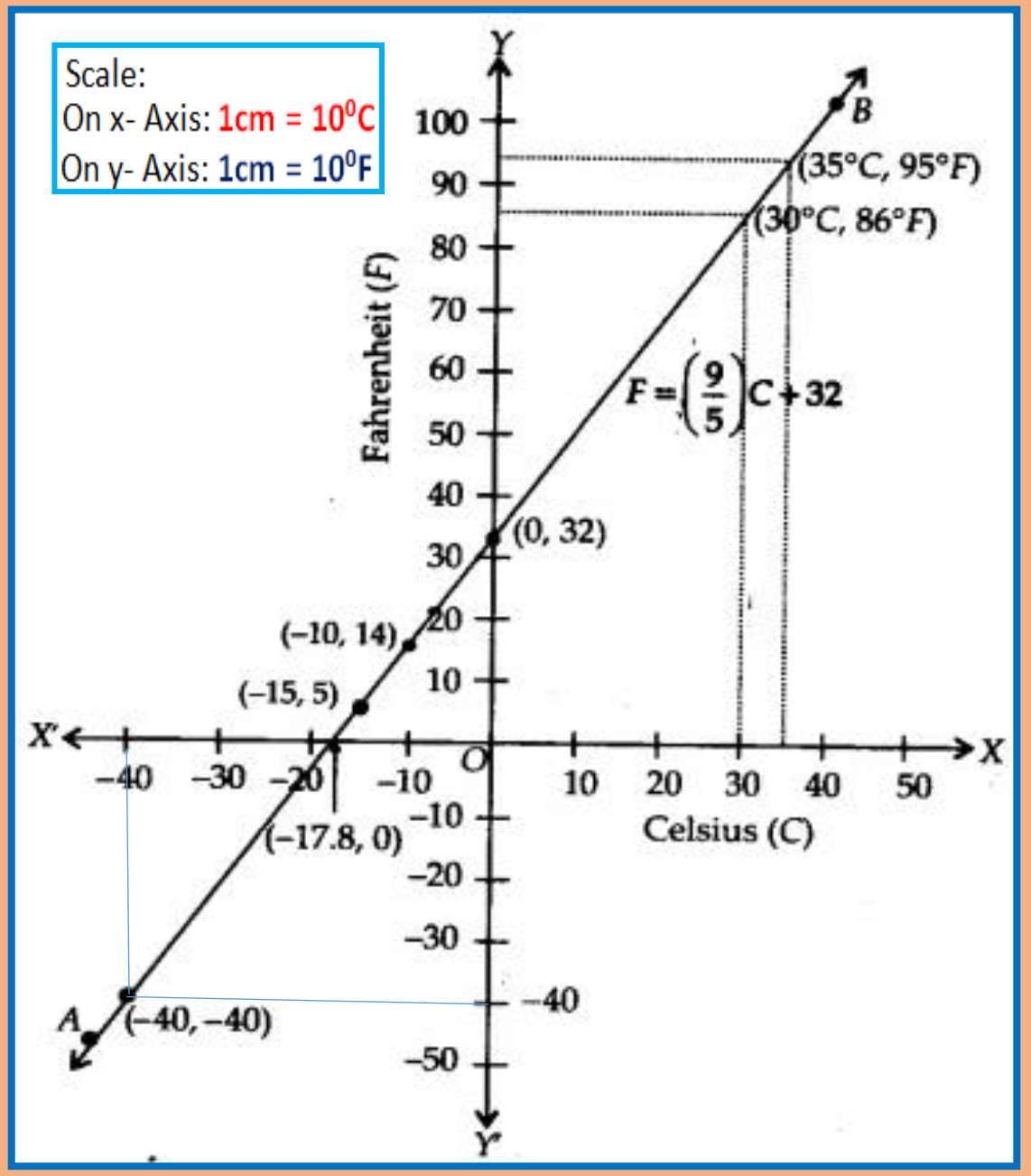
(i) we have $F = \left(\frac{9}{5}\right) C + 32$ .....(i)

when C = 0, then $F = \left(\frac{9}{5}\right) \times 0 + 32 = 32$

when C = -15, then $F = \frac{9}{5}(-15) + 32 = -27 + 32 = 5$

when C = − 10, then $F = \frac{9}{5}(-10) + 32 = 9(-2) + 32 = 14$

C	0	-15	-10
F	32	5	14



WRITE

(ii) From the graph, we have 86°F corresponds to 30°C.

(iii) From the graph, we have 95°F corresponds 35°C.

(iv) We have, C = 0

From (1), we get

$F = (\frac{9}{5})0 + 32 = 32$

Also, F = 0

From (1), we get

$(\frac{9}{5})C + 32 = 0$

$\Rightarrow C = \frac{-32 \times 5}{9}$

$\Rightarrow C = -17.8$

(V) When F = C (numerically)

From (1), we get

$F = \frac{9}{5}F + 32 \Rightarrow F - \frac{9}{5}F = 32$

$\Rightarrow \frac{-4}{5}F = 32 \Rightarrow F = -40$

∴ Temperature is − 40° both in F and C.

WRITE

HOME WORK

EX: 4. 3 Question 7

Yamini and Fatima, two students of Class IX of a school, together contributed Rs. 100 towards the Prime Minister's Relief Fund to help the earthquake victims. Write a linear equation which satisfies this data. (You may take their contributions as Rs.xand Rs.y.) Draw the graph of the same.

Q6 from Assignment

ASSIGNMENT

1. Find two solutions of the linear equation $5x - 4y = -8$
2. Draw the graph of the linear equation $2x + 3y = 12$. At what points the graph of the equation cuts the x – axis and the y axis
3. Draw the graphs of the equations $x + y = 6$ and $2x + 3y = 16$ on the same graph paper. Find the coordinates of the points where the two lines intersect
4. Draw the graph of the following equation $2(x + 1) = 3(y - 1) - 4$ and check whether the point (3, -1) lies on the line
5. Draw the graph of $y = -5$ and $y = 5$ on the same graph. Are the lines parallel? Find the point of intersection of two lines
6. The taxi fare in a city is such that Rs 50 is fixed amount and Rs 16 per km is charged. Taking the distance covered as x km and total fare as Rs y, write a linear equation in x and y
7. If present age of son and father are expressed by x and y respectively and after ten years father will be twice as old as his son. Write the relation between x and y
8. If the cost of 5 tables exceeds the cost of eight chairs by Rs. 150. Write the linear equation in two variables to represent the statement. Also find the cost of 1 table if the cost of one chair is RS. 240

ASSIGNMENT (Contnd…)

8. If the cost of 5 tables exceeds the cost of eight chairs by Rs. 150. Write the linear equation in two variables to represent the statement. Also find the cost of 1 table if the cost of one chair is RS. 240
9. Give the geometric representation of $2x + 1 = x - 4$ as an equation in (a)one variable (b) two variable
10. Give the equation of two lines passing throw (2, 14). How many more such lines are there and why
11. If (2, 5) is a solution of the equation $2x + 3y = m$, find the value of m (m = 19)
12. For what value of k does the point (k, -3) lies on the line $3x - y = 6$ (k = 1)
13. Write $13x - 12y = 25$ as $y = mx + c$. Hence find m and c. Verify if x = 1, y = 1 is a solution (m= 13/12, c = - 25/12)
14. If (2, 3) and (4, 0) lie on the graph of the equation $ax + by = 1$. Find the value of a and b. Plot the graph of the equation obtained (a =1/4, b = 1/6)
15. Express y in terms of x, given that $x/5 + 2y = 3$. Check whether (-5, 2) is asolution of the given equation
16. Write each of the following as an equation in two variables (in standard form):
    (a) $x = -5$ (b) $y = 2$ (c) $2x = 3$ (d) $5y = 2$
17. Frame a linear equation in the form $ax + by + c = 0$ by using the given values of a, b and c : a = -2 , b = 3, c = 4

THANK YOU

STAY SAFE

HAPPY LEARNING

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