EXERCISE # 1

Q.1 Write the three solutions for each of the following
(i) $x = 9y$
(ii) $x + \sqrt{3}y = 6$
(iii) $2x + \pi y = 3.4$

Q.2 Find the solutions of the form $x = a$, $y = 0$ and $x = 0$, $y = b$ for the following equations :
$2x + 5y = 10$ and $2x + 3y = 6$.
Is there any common solution?

Q.3 Check which of the following are solutions of the equation $2x - y = 6$ and which are not :
(i) (3, 0)
(ii) (0, 6)
(iii) (2, –2)
(iv) $(\sqrt{3}, 0)$
(v) $\left(\frac{1}{2}, -5\right)$

Q.4 If $x = -1$, $y = 2$ is a solution of the equation $3x + 4y = k$, find the value of k.

Q.5 Find the value of λ, if $x = -\lambda$ and $y = \frac{5}{2}$ is a solution of the equation $x + 4y - 7 = 0$.

Q.6 If $x = 2\alpha + 1$ and $y = \alpha - 1$ is a solution of the equation $2x - 3y + 5 = 0$, find the value of α.

Q.7 Find the value of a & b if (–1, 2) is solution of $ax + y + 1 = 0$ and $2x + by + 8 = 0$.

Q.8 Draw the graph of
(i) $2y - x = 9$
(ii) $2x - 3y = 15$

Q.9 Represent geometrically $3x + 15 = 0$ on
(i) the number line (ii) on Cartesian plane

Q.10 Draw the graph of line $2y - 7 = 0$ in
(i) form of 1 variable
(ii) in form of two variables

Q.11 Find the value of x for which $y = 20$ is a solution of the equation $5x + 20y = 200$.

Q.12 Find the condition such that ordered pair (m, n) satisfies the equation $ax + by + c = 0$.

Q.13 Express x in terms of y given that $\frac{x}{3} + 2y = 5$.
Check whether (3, 2) is a solution of the given equation.

Q.14 The cost of petrol in a city is ₹50 per litre. Set up a linear equation with x representing the number of litres any y representing the total cost in ₹.

Q.15 The work done by a body on application of a constant force is directly proportional to the distance travelled by the body. Express this in the form of an equation in few variables and draw the graph of the same by taking the constant as 4 units. Read from the graph the work done when the distance travelled by the body is (i) 2 units (ii) 3 units.

Q.16(a) The taxi fare in a city is as follows :
For the first kilometer, the fare is ₹50 and for the subsequent distance it is ₹20 per km, taking the distance covered as x km and total fare as ₹y. Write a linear equation for this information and draw its graph.
(b) The Autorikshaw fare in a city is charged ₹10 for the first kilometer and @ ₹4 per kilometer for subsequent distance covered. Write the linear equations to express the above statement. Draw the graph of the linear equation.

Q.17 A man leaves half of his property for his wife, one third for his daughter and remaining for his son. If son's share is 60,000, how much money did he leave and how much money did his wife and son get ?

ANSWER KEY

1. (i) (0, 0), (9, 1), (18, 2) (ii) (6, 0), $(6-\sqrt{3}, 1)$, $(6+\sqrt{3}, -1)$ (iii) (1.7, 0), $\left(\frac{3.4+\pi}{2}, -1\right)$, $(1.7-\pi, -2)$.

2. x = 5, y = 0 and x = 0, y = 2 are two solutions of 2x + 5y = 10.

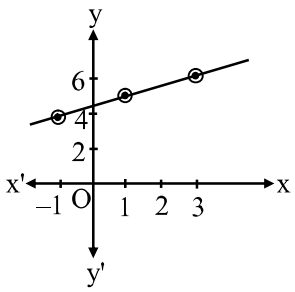
x = 0, y = 2 and x = 3, y = 0 are two solutions of 2x + 3y = 6.

Yes, x = 0, y = 2 is common solution.

3. (i) Yes (ii) No (iii) Yes (iv) No (v) Yes

4. k = 5 **5.** $\lambda = 3$ **6.** $\alpha = -10$ **7.** a = 3, b = –3

8. (i)



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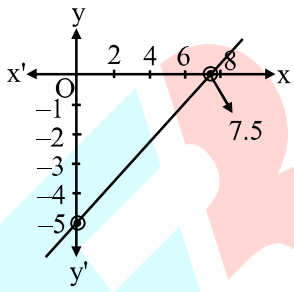
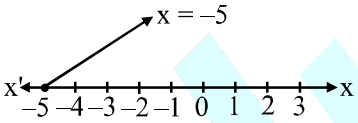


9. (i)



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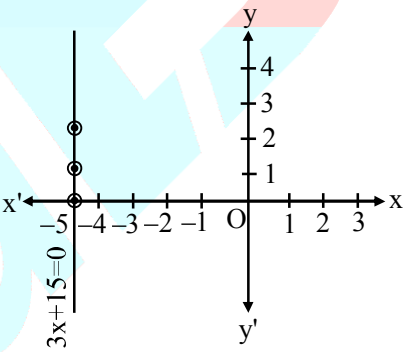
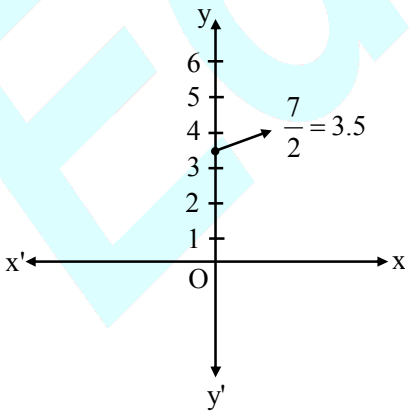
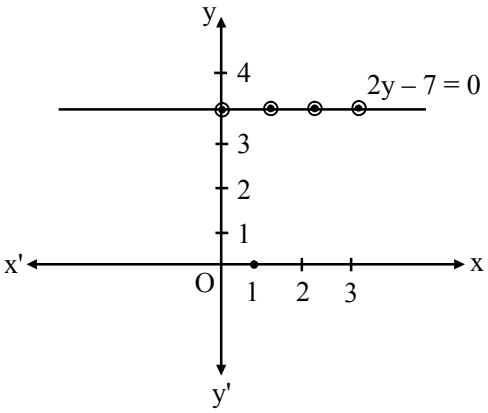


10. (i)



(ii)



11. – 40

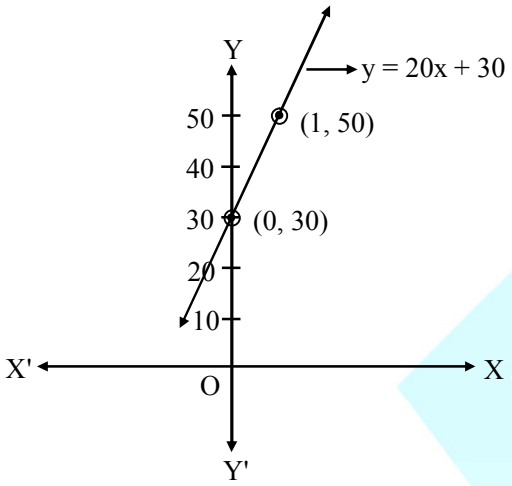
12. am + bn + c = 0

13. x = – 6y + 15 ; Yes.

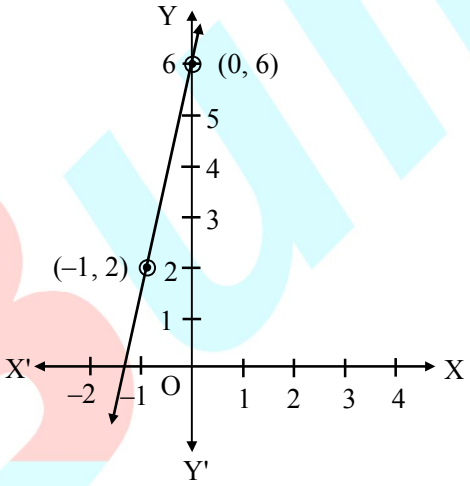
14. y = 50 x.

15. y = Kx ; If K = 4, y = 4x ; Again for x = 2, y = 8 ; x = 3, y = 12

16. (a) y = 20x + 30



(b) y = 4x + 6



17. ₹ 3,60,000, ₹ 1,80,000 and ₹ 1,20,000.

EXERCISE # 2

Q.1 Draw the graph of the following linear equations

(i) $x + y = 4$ (ii) $x - y = 2$ (iii) $y = 3x$

(iv) $3 = 2x + y$ (v) $x = y$ (vi) $x + y = 0$

(vii) $y = -x + 2$

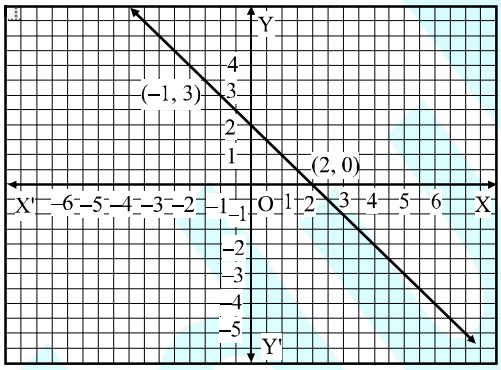
Q.2 Find the value of p if (3, 2) is a solution of $px - 5y + p^2 = 0$.

Q.3 Draw the graphs of the equations $x - y = 1$ and $2x + y = 8$. Shade the area bounded by these two lines and y-axis. Also, determine this area.

Q.4 From the choices given below, choose the equation whose graph is given in figure

(i) $y = x + 2$ (ii) $y = x - 2$

(iii) $y = -x + 2$ (iv) $x + 2y = 6$



Q.5 Draw the graph of the equation $2x + y = 6$. Shade the region bounded by the graph and the coordinate axes. Also, find the area of the shaded region.

Q.6 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 :

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

(i) Draw the graph of the linear equation given 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.

Q.7 The taxi fare in a city is as follows. For the first kilometer, the fare is ₹ 8, for the subsequent distance it is ₹ 5 per km. Taking the distance covered as x km and total fare as ₹ y, write a linear equation for this information, and draw its graph.

Q.8 Yamini and Fatima, two students of class IX of a school, together contributed ₹ 100 towards the Prime Minister's Relief Fund to help the earthquake victims. Write a linear equation which satisfies this data and draw the graph of the same.

Q.9 If the work done by a body on application of a constant force is directly proportional to the distance travelled 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 unit. Also, read from the graph the work done when the distance traveled by the body is (i) 2 units (ii) 0 units.

Q.10 If x = 1, y = 2 is a solution of the equation $a^2x + ay = 3$, then find the values of a.

Q.11 In a ΔABC, ∠C = 3∠B = 2(∠A + ∠B). Find the angles.

Q.12 If the length of a rectangle is reduced by 5 units and its breadth is increased by 2 units, then the area of the rectangle is reduced by 80 sq units. However, if we increase its length by 10 units and decrease the breadth by 5 units, its area is increased by 50 sq units. Make linear equations to find the length and breadth of the rectangle.

Q.13 If three times the larger of two numbers is divided by the smaller one, we get 4 as the quotient and 3 as the remainder. Also, if seven times the smaller number is divided by the large one, we get 5 as the quotient and 1 as the remainder. Find the linear equation to find the numbers.

Q.14 The sum of the digits of a two-digit number is 12. The number obtained by interchanging its digits exceeds the given number by 18. Find the number.

Q.15 Each one of A and B has some money. If A gives ₹ 30 to B then B will have twice the money left with A. But, if B gives ₹ 10 to A then A will have thrice as much as is left with B. How much money does each have?

Q.16 The coach of a cricket team buys 7 bats and 6 balls for Rs. 3800. Later, he buys 3 bats and 5 balls for Rs. 1750. Find the cost of each bat and each ball.

Q.17 What number must be added to each of the numbers, 5, 9, 17, 27 to make the numbers in proportion ?

Q.18 The difference between two numbers is 26 and one number is three times the other. Find them.

Q.19 The sum of the digits of a two-digit number is 9. Also, nine times this number is twice the number obtained by reversing the order of the number. Find the number.

Q.20 A fraction becomes $\frac{4}{5}$ if 1 is added to each of the numerator and denominator. However, if we subtract 5 from each, the fraction becomes $\frac{1}{2}$. Find the fraction.

Q.21 Draw the graph of the equation 2y + x = 7 and determine from the graph whether x = 3 and y = 2 is a solution.

Q.22 Solve the following system of equations graphically. Also, find out the points, where these lines meet the x-axis.

$x - 2y = 1$

$2x + y = 7$

Q.23 For what value of k will the following system of equations have a unique solution.

(i) $2x + ky = 1$ and $3x - 5y = 7$

(ii) $x - 2y = 3$ and $3x + ky = 1$

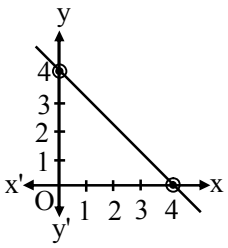
(iii) $2x + 5y = 7$ and $3x - ky = 5$

Q.24 In ΔABC, ∠A = y°, ∠B = (y – 9)°, ∠C = x°. Also ∠B – ∠C = 48°, find the three angles.

Q.25 Draw the graph of 6 – 1.5x = 0.

ANSWER KEY

1. (i)



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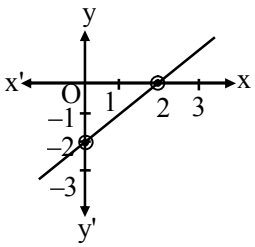
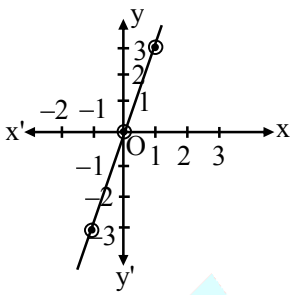


(iii)



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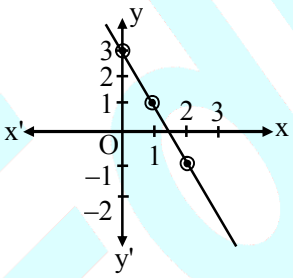
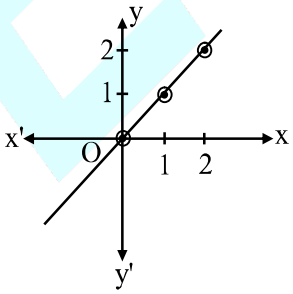
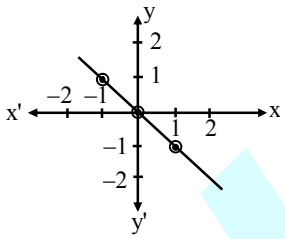


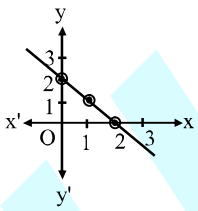
(v)



(vi)

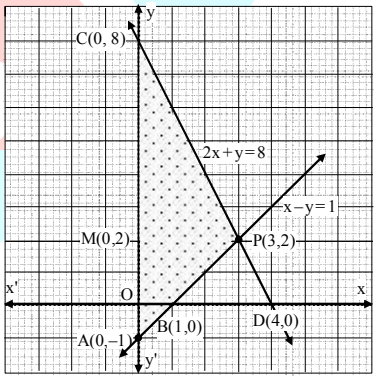


(vii)



2. p = –5 or 2

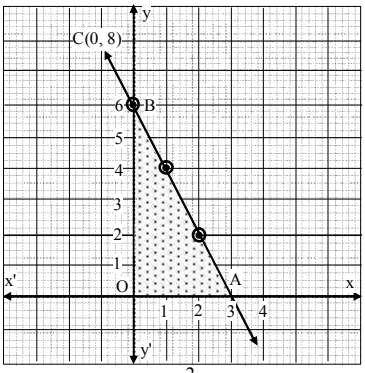
3.



Area = 13.5 sq. units.

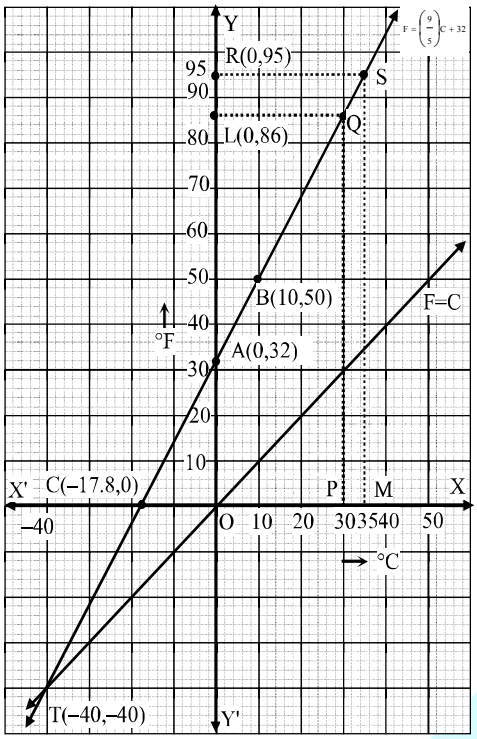
4. (iii) y = –x + 2

5.



Area = 9 cm^2

6.(i)



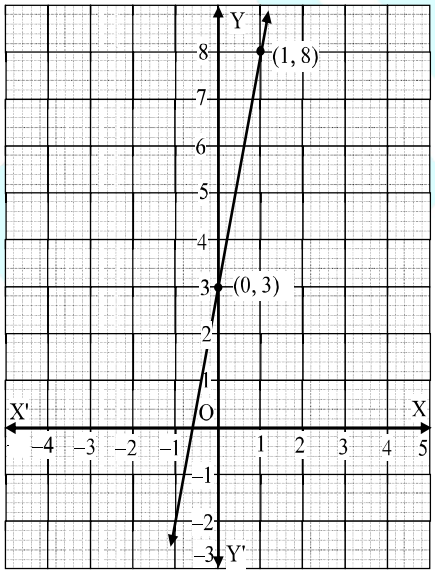
(ii) 86° F

(iii) 35°C

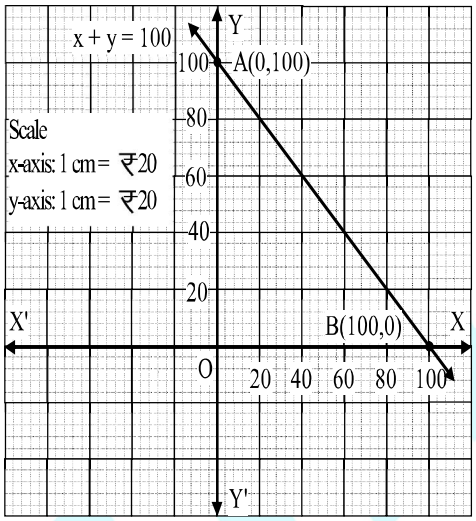
(iv) –17.8°C

(v) Yes, – 40°C = – 40°F

7. y = 5x + 3



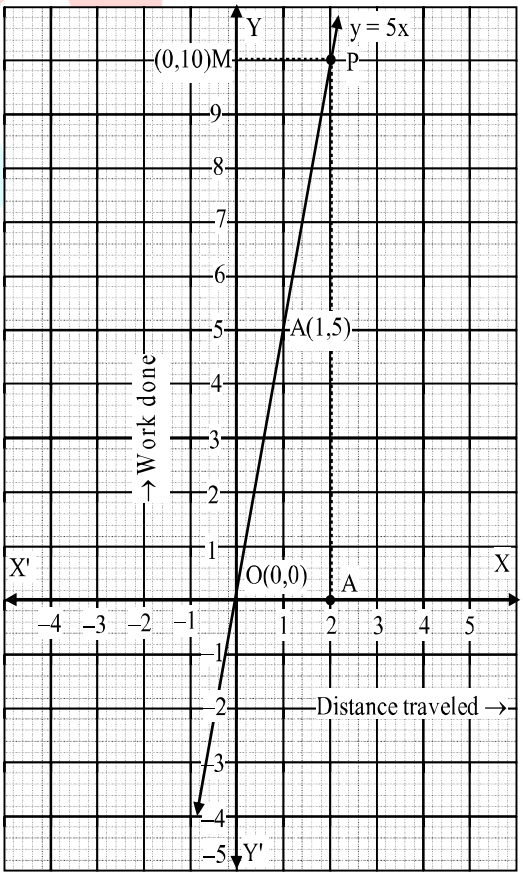
8. x + y = 100



9. y = 5x

(i) 10 units

(ii) 0



10. a = 1, –3

11. ∠A = 20°, ∠B = 40°, ∠C = 120°

12. 5y – 2x = 70, 2y – x = 20

13. 3x – 4y = 3, 5x – 7y = –1

14. 57

15. A = ₹62, B = ₹34

16. ₹500, ₹50.

17. 3

18. 39, 13

19. 18

20. $\frac{7}{9}$

21. Yes

22. x = 3, y = 1, (1, 0), $\left(\frac{7}{2}, 0\right)$

23. (i) $k \neq \frac{-10}{3}$ (ii) $k \neq -6$ (iii) $k \neq \frac{-15}{2}$

24. 82º, 73º, 25º

25.