# Pair of Linear Equations in Two Variables

# MATHEMATICS Comprehensive Book

# **QUESTIONS**

#### 1. Graphically, the pair of equations 3x + 2y = 16, 5x + y = 18 represents two lines which are \_\_\_\_\_

- (a) intersecting at exactly one point
- (b) parallel
- (c) intersecting at exactly two points
- (d) Coincident
- (e) None of these

#### 2. If a pair of linear equations is consistent then the lines will \_\_\_\_\_

- (a) intersect
- (b) be coincident
- (c) be parallel
- (d) intersect or coincident
- (e) None of these

#### 3. The pair of equations x = 2 and y = - 2 has \_\_\_\_\_

- (a) one solution
- (b) two solutions
- (c) infinitely many solutions
- (d) no solution
- (e) None of these

4. If the lines given by  $ax - y^3 = 3$  and 21x - 3y = 9 will have infinitely many solutions, then the value of

a is	
(a) 4	(b) 3
(c) 7	(d) 9

(e) None of these

#### 5. Find the values of p and q for which the pair of linear equations have infinitely many solutions.

(3 p + 2q) x + (q + 2p) y = 3p - q + 14x + 7y = 29

(a) $\frac{-5}{7}, \frac{2}{7}$	(b) $\frac{2}{7}, \frac{13}{14}$
(c) $\frac{-5}{7}, \frac{13}{14}$	(d) $\frac{-3}{7}, \frac{11}{14}$

(e) None of these

### 6. The equations given by the lines x = h and y = k represent\_\_\_\_\_

(a) coincident lines	(b) parallel lines
(c) intersecting lines at point (h, k)	(d) intersecting lines at $(0, 0)$
(e) None of these	

7. Indetify which one among the following is the pair of linear equations having a unique solution x = -3, y = 2.

(a) 
$$\frac{2}{3}x + \frac{7}{2}y = 10$$
 and  $5x + 3y = 9$ 

- (b)  $\sqrt{3}x 3y = 3\sqrt{3}$  and x + 7y = 11
- (c) 3y = 13x + 45 and -7x + 3y = 27
- (d) All the above
- (e) None of these

8. Prisha has only Rs. 1 and Rs. 2 coins with her. If she has a sum of Rs. 85 where total number of coins with her is 66, then the numbers of Rs. 1 and Rs. 2 Coins are, respectively \_\_\_\_\_

- (a) 35, 31 (b) 47, 19
- (c) 42, 24 (d) 50, 16
- (e) None of these

10.

11.

12.

9. Find the values of x and y of the rectangle whose diagonals and breadths are shown below:



- (c) 60 (d) Cannot be determined
- (e) None of these

13. The cost of 6 burgers, 12 sandwiches 5 cup of is Rs 525. of 3 burgres, 5 sandwiches 8 cup of is Rs 325. The of 2 Burgers, 3 sandwiches and 1 cup of It is of 1 cup of coffee is Rs 20 less than the burger.

(a) Rs 225	(b) Rs 150

- (c) Rs 145 (d) Rs 135
- (e) None of these

14. Amit can row 16 km downstream and 12 km upstream in 5 hours He row 24 km downstream and 4 km upstream in 4 hours. Find the of Amit in Still water.

(a) 3 km/hr	(b) 4 km/hr
(c) 6 km/hr	(d) 5 km/hr

(e) None of these

15. A three digit number p q r is 378 more than the sum of its digits, the sum of the 1-digit number p and the two digit number pq.

(a) 18	(b) 22
(c) 42	(d) 30

(e) None of these

16.

Solve:  $\frac{1}{\sqrt{x}} + \frac{3}{\sqrt{y}} = 1$  $\frac{3}{\sqrt{x}} + \frac{15}{\sqrt{y}} = -1$ (a) x = 3, y = 12 (b) x = 4, y = 36(c) x = 16, y = 25 (d) x = 9, y = 49

(e) None of these

The semiperimeter of a triangle exceeds each of its side by 8 units, 6 units and 5 units, respectively.
Find the perimeter of the triangle.

(a) 30 units	(b) 25 units
(c) 38 units	(d) 32 units

(e) None of these

18. The sum of a two digit number and the number obtained by reversing the order of its digits is 143. Also the difference between the two digits is 5. Find the number when sum of its digit is multiplied

to	it.

(a) 1079	(b) 1022
(c) 937 or 1022	(d) 637 or 1222

(e) None of these

19. A two digit number is formed by either subtracting 17 from eleven times the sum of the digit or by addling to 8 times the difference of the digit. Find the number.

(a) 91	(b) 71
(c) 63	(d) 81
(e) None of these	

- 20. Point P and Q are 90 km apart on a highway. A car starts from P and another car starts from Q a. he same time. If they travel in the same direction, they meet in hour but if they travel towards each other, they meet in 1 hour. Find the speed of both the cars.
  - (a) 30 km/hr and 60 km/hr
  - (b) 25 km/hr and 65 km/hr
  - (c) 55 km/hr and 35 km/hr
  - (d) 50 km/hr and 40 km/hr
  - (e) None of these

**21.** For a quadratic polynomial  $p(x) = x^2 - 8x + 15$  for all  $x \in r$ , which one among the following can be true?

- (a)  $p(x) \ge 0$ , when  $3 \le x \le 5$  and  $p(x) \le 0$ , when  $x \le 3$  or  $x \le 5$
- (b)  $p(x) \ge 0$ , when  $-3 \le x \le -5$  and  $p(x) \le 0$ , when  $x \le -3$  or  $x \ge -5$
- (c)  $p(x) \ge 0$ , when  $x \le 3$  or  $x \ge 5$  and  $p(x) \le 0$ , when  $3 \le x \le 5$
- (d)  $p(x) \ge 0$ , when  $x \le -3$  or  $x \ge -5$  and  $p(x) \le 0$ , when  $-5 \le x \le -3$
- (e) None of these

#### 22. Solve form, m, $m^2 - 4m + 3 \ge 0$

(a) $m \in (-\infty, 1] U[3, \infty)$	(b) $m \in (-\infty, 1) U(3, \infty)$
(c) $m \in (1,2) \cup (2,3)$	(d) $m \in (-\infty, 1] U[2, \infty)$

(e) None of these

#### **23.** Find the solution set of $a^2 + 21 + 8a > 0$

(a) $(-\infty,\infty)$	(b) (4,∞)
(c) (−4,∞)	(d) (-4,-4)

(e) None of these

#### 24. If $x^4 - 26x^2 + 25 = 0$ then, find the sum of the squares of the roots

(a) 52	(b) 48
(c) 626	(d) 320
(e) None of these	

25. If roots of the equation  $3x^2 + 7x + 6 = 0$  are in the ratio m : n, then find the value of  $\sqrt{\frac{m}{n}} + \sqrt{\frac{n}{m}}$ .

(a) 
$$\frac{-7\sqrt{2}}{2}$$
 (b)  $\frac{-7\sqrt{2}}{6}$   
(c)  $-\frac{7\sqrt{2}}{6}$  (d)  $\frac{\sqrt{2}}{2}$ 

26. In a right triangle, the base is 7 units more than the height. If the of the triangle is less than 72 sq units, the possible of the lie in the region will be \_\_\_\_\_.

- (a) (7, 9) (b) (9, 16) (c) (7, 16) (d) (9, 12)
- (d) (9, 12)
- (e) None of these
- **27.** For what value of m, the equation  $-2m^2 + 5m 12$  has maximum value?
  - (a)  $\frac{5}{2}$  (b)  $\frac{-5}{2}$ (c)  $\frac{5}{4}$  (d)  $\frac{-5}{4}$

(e) None of these

#### 28. Find the values of x which satisfies the equation.

(c) 
$$7, \frac{21}{16}$$
 (d)  $4, \frac{27}{16}$ 

(e) None of these

29. If  $\mathbf{p} - \mathbf{q}$ ,  $\mathbf{q} - \mathbf{r}$  are the roots of the equation  $px^2 + qx + r = 0$ , then the value of  $\frac{(\mathbf{p} - \mathbf{q})(\mathbf{q} - \mathbf{r})}{(\mathbf{r} - \mathbf{q})}$  is\_\_\_\_\_

(a)  $\frac{r}{q}$  (b)  $\frac{p}{q}$ 

(c) 
$$\frac{p}{r}$$
 (d)  $\frac{q}{r}$ 

(e) None of these

**30.** Find the value of 
$$\sqrt{42 + \sqrt{42 + \sqrt{42 + \dots + \infty}}}$$
  
(a) 7 (b) -6  
(c) either 7 or -6 (d) 8

(e) None of these

## 31. If $x^2 - 7x + 4m = 0$ and $x^2 - 8x + 5m = 0$ have a common root then the Possible values of m can be

#### (where m is a contant)

(a) 0, 2	(b) 0, 3
(c) 0, 1	(d) 0, 5

- **32.** For a quadratic equation  $\alpha x^2 + \beta x + \gamma = 0$ , if roots are In the ratio **3** : **4**, then
  - (a)  $12\beta^2 = 49\alpha\gamma$  (b)  $6\beta^2 = 7\alpha^2\gamma$
  - (c)  $15\beta^2 = 49\alpha\gamma$  (d)  $16\beta^2 = 7\alpha\gamma$
  - (e) None of these
- 33. If one root of the equation  $ax^2 5x + 16 = 0$  is 4 times the other, then the value of a is
  - (a) 0 (b)  $\frac{1}{8}$ (c)  $\frac{1}{4}$  (d)  $\frac{1}{2}$
  - (e) None of these

**34.** Find the value of m if the equation  $3p^2 - 2p + m = 0$  and  $6p^2 - 17p + 12 = 0$  have a common root.

- (a)  $\frac{-8}{3}, \frac{-15}{4}$  (b)  $\frac{-3}{5}, \frac{-15}{7}$ (c)  $\frac{-7}{3}, \frac{-12}{5}$  (d)  $\frac{-5}{3}, \frac{7}{3}$
- (e) None of these

35. If p q, r belong to real number and equations  $px^2 + qx + r = 0$  and  $x^2 + 3x + 11 = 0$  have a common root, then p : q : r =

(a) 1 : 3: 11	(b) 2: 6: 7
(c) 1: 2: 3	(d) 3: 2: 1

(e) None of these

36. James opened his mathematics book and found that the product of the two pages in front of him was equal to 1406. What were the sum of these pages?

(a) 79	(b) 75
(c) 69	(d) 77

(e) None of these

# 37. The length of a rectangle is 15 cm more that its width and the of the rectangle is 1134 cm<sup>2</sup>. Find the perimeter of the rectangle.

(a) 88 cm	(b) 86 cm
(c) 84 cm	(d) 92 cm

(e) None of these

38. The highest integral value of m for which the equation  $x^2 - 8x + m = 0$  have two real and distinct roots?

(a) 17	(b) 15
(c) 13	(d) 12

39.	For which value of m, the quadratic equation $4x^2 - mx + 9 = 0$ have real and equal roots?		
	(a) -12	(b) 8	
	(c) 16	(d) 18	
	(e) None of these		
40.	. For a quadratic equation $m^2 + am + 72 = 0$ , if roots are integers and distinct then how many such value are possible for 'a'?		
	(a) 6	(b) 8	
	(c) 12	(d) 9	

ANSWER - KEY				
<b>1.</b> (a)	<b>2.</b> (d)	<b>3.</b> (a)	<b>4.</b> (c)	<b>5.</b> (c)
<b>6.</b> (c)	<b>7.</b> (c)	<b>8.</b> (b)	<b>9.</b> (b)	<b>10.</b> (d)
<b>11.</b> (a)	<b>12.</b> (a)	<b>13.</b> (c)	<b>14.</b> (c)	<b>15.</b> (c)
<b>16.</b> (b)	<b>17.</b> (c)	<b>18.</b> (d)	<b>19.</b> (b)	<b>20.</b> (c)
<b>21.</b> (c)	<b>22.</b> (a)	<b>23.</b> (a)	<b>24.</b> (a)	<b>25.</b> (b)
<b>26.</b> (c)	<b>27.</b> (c)	<b>28.</b> (b)	<b>29.</b> (a)	<b>30.</b> (a)
<b>31.</b> (b)	<b>32.</b> (a)	<b>33.</b> (c)	<b>34.</b> (a)	<b>35.</b> (a)
<b>36.</b> (b)	<b>37.</b> (c)	<b>38.</b> (b)	<b>39.</b> (a)	<b>40.</b> (c)