EXERCISE # 1

A. **Very Short Answer Type Questions**

In each of the following verify whether the given value of the x is a solution or not :

Q.1
$$\frac{x}{3} + \frac{x}{4} = 8, x = 12$$

- (4x + 7) 2 = 3x + 1, x = -4Q.2
- $\frac{5x+4}{4} \frac{3x-2}{2} = 5, x = \frac{1}{2}$ Q.3
- **Q.4** 2x - 4 + 1 = 3x - 6, x = 3

Solve : $\frac{6}{x} + 11 = \frac{3}{x} + 12$ Q.5

- Q.6 If 2x - 8 = 8, then find the value of $x^2 + x - 70$.
- For each of the following, state the quadrant Q.7 in which the point lies. (i)(3,3)(ii) (-3, 2) (iii)(2, -4)(iv)(-1, -2)(v)(-5, -5)(vi) (5, 3).
- Draw the graph of y = x. Show that point Q.8 (4, 4) is on the graph.
- Express x in terms of y, given that 3x + 4y =Q.9 6. Check whether the point (3, 2) is on the given line.
- Q.10 Draw the graph of y = -2x. Show that the point (2, -5) is not on the graph.

B. Short answer type Questions

- Indicate the quadrants in which the following Q.11 points lie and plot them on a graph paper. (i) (-2, 0) (ii) (0, 1)(iii)(-2, -3)
- Q.12 Draw the graph of (i) x = 3 (ii) y = -2.
- Find the value of k, if line represented by the 0.13 equation 2x - ky = 9 passes through the point (-1, -1).
- Q.14 Express x in terms of y, it is being given that 7x - 3y = 15. Check if the line represented by the given equation intersects the y-axis at y = -5
- Draw the graph of 6 1.5x = 0. 0.15
- Q.16 The following observed values of x and y are thought to fulfil the law y = ax + b. Find the values of a and b.

х	1	2	-3	0	5
у	12	19	-16	5	-30

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- Q.17 Show that the points A (1, 2), B (-1, -16), C(0, -7) are on the graph y = 9x - 7.
- Q.18 Find the point of intersection of the line represented by the equation 7x + y = -2 with x-axis. Check whether the point (2, 1) is a solution set of the given equation.
- Express y in terms of x, given that 2x 5y = 7. Q.19 Check whether the point (-3, -2) is on the given line.
- Q.20 Verify whether x = 2, y = 1 and x = 1 and y = 2are the solutions of the linear equation 2x + y = 5. Find two more solutions.
- 0.21 Draw the graph of the equation 4x - 5y = 20and check whether the points (3, 1) and and (5, 0) lie on the graph.
- Q.22 Draw the graph of the equation 3x + 4y = 14and check whether x = 1 and y = 2 is a solution or not.
- Draw the graph of the equation 2y + x = 7Q.23 and determine from the graph whether x = 3and y = 2 is a solution
- Q.24 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.25 Solve the following system of equations graphically. Also, find out the points, where these lines meet the y-axis.

(i)
$$x + 2y - 7 = 0$$

 $2x - y + 1 = 0$
(ii) $2x + y = 8$
 $x + 1 = 2y$
(iii) $2x + 3y = 12$
 $2y - 1 = x$

Q.26 Draw the graphs of the following systems of equations, state whether it is consistent (dependent), consistent (independent) or inconsistent :

(i)
$$x + y = 7$$

 $2x - 3y = 9$
(ii) $2x + 4y = 7$
 $3x + 6y = 10$
(iii) $2x + 3y - 12 = 0$
 $2x + 3y - 6 = 0$
(iv) $3x - 5y + 4 = 0$
 $9x = 15y - 12$
(v) $x + 3y = 1$
 $2x + 6y = 2$
(vi) $x + 4y = 7$
 $2x - 3y = 9$
 $2x - 3y = 9$
(vi) $3x - 5y + 4 = 0$
 $9x = 15y - 12$
(vi) $x + 4y = 7$
 $2x - 3y = 9$
 $2x - 3y = 9$
 $3x + 6y = 10$
(vi) $3x - 5y + 4 = 0$
 $9x = 15y - 12$
(vi) $x + 4y = 7$
 $2x - y = 5$

- Q.27 Solve the following pair of linear equations by the substitution method :
 - (ii) 2x + 3y = 9(i) 7x - 15y = 2x + 2y = 3
 - 4x + 6y = 18

(iii)
$$x + 2y = 5$$
(iv) $0.2x + 0.3y = 1.3$ $2x + 3y = 8$ $0.4x + 0.5y = 2.3$ (v) $x + 2y = -1$ (vi) $3x - 5y + 1 = 0$ $2x - 3y = 12$ $x - y + 1 = 0$

Q.28 Solve the following equations by the method of elimination by equating the coefficients. (i) 12x + 5y = 17; 7x - y = 6(ii) 17x + 12y = -2; 15x + 8y = 6(iii) 23x + 17y = 6; 39x - 19y = 58(iv) 43x - 37y = 31; 13x + 23y = -59(v) $0.4x + 3y = 1.2, 7x - 2y = \frac{17}{6}$ (vi) (a + 2b) x + (2a - b) y = 2, (a-2b) x + (2a+b) y = 3(vii) $a(x + y) + b(x - y) = a^2 - ab + b^2$, $a(x + y) - b(x - y) = a^2 + ab + b^2$ Solve the following system of equations by Q.29 cross-multiplication method : (i) 3x - 4y = 7(ii) 3x - 5y = 15x + 2y = 37x + 2y = 16(iii) 2x + 3y = 8(iv) 3x - 4y = 14x - 3y = 63x + 2y = 7(v) 3x - 4y = 10(vi) 2x - 6y + 10 = 04x + 3y = 53x - 9y + 15 = 0(vii) $\frac{2}{x-1} + \frac{3}{y+1} = 2$ $\frac{3}{x-1} + \frac{2}{y+1} = \frac{13}{6}, x \neq 1, y \neq -1$

(viii)
$$\frac{5}{x+y} - \frac{2}{x-y} = -1$$

 $\frac{15}{x+y} + \frac{7}{x-y} = 10; x+y \neq 0, x-y \neq 0$

Q.30 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.31 For what value of k will the following system of equations have infinitely many solutions. (i) 7x - y = 5 and 21x - 3y = k(ii) 5x + 2y = k and 10x + 4y = 3(iii) kx + 4y = k - 4 and 16x + ky = k
- **Q.32** Find the conditions so that the following systems of equations have infinitely many solutions.

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Power by: VISIONet Info Solution Pvt. Ltd Website : www.edubull.com (i) 3x − (a + 1) y = 2b − 1 and 5x + (1 − 2a) y = 3b, find a and b.

(ii)
$$2x + 3y = 7$$
 and $(p + q) x + (2p - q)$
 $y = 3(p + q + 1)$, find p and q.

(iii) 2x - (2a + 5) y = 5 and (2b + 1) x - 9y = 15, find a and b.

Q.33 Show that the following systems of equation are inconsistent.

(i)
$$x - 2y = 6$$

 $3x - 6y = 0$
(ii) $2y - x = 9$
 $6y - 3x = 21$
(iii) $2x - y = 9$
 $4x - 2y = 15$

Q.34 For what value of k the following systems of equations have no solution.

- (i) 8x + 5y = 9 and kx + 10y = 8
- (ii) x 4y = 6 and 3x + ky = 5
- (iii) kx 5y = 2 and 6x + 2y = 7(iv) 4x + 6y = 11 and 2x + ky = 7
- (v) 2x + ky = 11 and 5x 7y = 5

Q.35 Solve the following pair of linear equations

(i)
$$\frac{1}{2x} - \frac{1}{y} = -1.$$

 $\frac{1}{x} + \frac{1}{2y} = 8, x \neq 0, y \neq 0$

(ii)
$$\frac{2}{x} + \frac{2}{3y} = \frac{1}{6}, \ \frac{3}{x} + \frac{2}{y} = 0; \ x \neq 0 \ y \neq 0$$

and hence, find a for which y = ax - 4.

(iii)
$$\frac{1}{7x} + \frac{1}{6y} = 3$$
,
 $\frac{1}{2x} - \frac{1}{3y} = 5$; $x \neq 0 \ y \neq 0$

(iv)
$$\frac{m}{x} - \frac{n}{y} = a$$
,
 $px - qy = 0$: $x \neq 0$ $y \neq 0$

(v)
$$\frac{2}{y} + \frac{3}{x} = \frac{7}{xy}$$
,
 $\frac{1}{y} + \frac{9}{x} = \frac{11}{xy}$; $x \neq 0, y \neq 0$

(vi)
$$\frac{xy}{x+y} = \frac{6}{5},$$
$$\frac{xy}{y-x} = 6; xy \neq 0, y \neq 0$$

(vii)
$$x + y = 5xy$$

 $3x + 2y = 13xy$

Q.36 Solve the following pair of linear equations. (i) 3(a+3b) = 11 ab,

3(2a + b) = 7ab

(ii)
$$5x + \frac{4}{y} = 9$$
,
 $7x - \frac{2}{y} = 5; y \neq 0$
(iii) $3/x + 4y = 7$,
 $\frac{-2}{x} + 7y = \frac{19}{3}; x \neq 0$
(iv) $\frac{5}{x+1} - \frac{2}{y-1} = \frac{1}{2}$
 $\frac{10}{(x+1)} + \frac{2}{(y-1)} = \frac{5}{2}, x \neq -1, y \neq 1$
(v) $\frac{6}{x+y} = \frac{7}{x-y} + 3$,
 $\frac{1}{2(x+y)} = \frac{1}{3(x-y)}, x + y \neq 0 \ x - y \neq 0$
(vi) $ax + by = c$,
 $bx + ay = 1 + c$
(vii) $ax + by = 1$,
 $bx + ay = \frac{(a+b)^2}{a^2 + b^2} - 1$
(viii) $\frac{148}{x} + \frac{231}{y} = \frac{527}{xy};$
 $\frac{231}{x} + \frac{148}{y} = \frac{610}{xy}; x \neq 0, y \neq 0$

- **Q.37** 2 tables and 3 chairs together cost + 2000 whereas 3 tables and 2 chairs together cost - 2500. Find the total cost of 1 table and 5 chairs.
- **O.38** 3 bags and 4 pens together cost + 257 whereas 4 bags and 3 pens together cost \vdash 324. Find the total cost of 1 bag and 10 pens.
- Two numbers differ by 4 and their product is Q.39 192. Find the numbers.
- Q.40 Five years hence, father's age will be three times the age of his son. Five years ago, father was seven times as old as his son Find their present ages.
- **O.41** The age of father is 4 times the age of his son. 5 years hence, the age of father will be three times the age of his son. Find their present ages.
- Q.42 The sum of a two-digit number and the number formed by interchanging its digits is 110. If 10 is subtracted from the first number,

the new number is 4 more than 5 times the sum of the digits in the first number. Find the first number.

- 0.43 The sum of a two-digit number and the number formed by interchanging the digits is 132. If 12 is added to the number, the new number becomes 5 times the sum of the digits. Find the number.
- **Q.44** If 2 be added to the numerator of a fraction, it reduces to 1/2 and if 1 be subtracted from the denominator, it reduces to 1/3. Find the fraction.
- 0.45 The sum of the numerator and denominator of a fraction is 18. If the denominator is increased by 2, the fraction reduces to 1/3. Find the fraction.
- Q.46 The length of a rectangle exceeds its width by 8 cm and the area of the rectangle is 240 sq. cm. Find the dimensions of the rectangle.
- 0.47 The side of a square exceeds the side of another square by 4 cm and the sum of the area of the two squares is 400 sq. cm. Find the dimensions of the squares.
- **O.48** The area of a rectangle gets reduced by 8 sq. metres, if its length is reduced by 5 metres and width is increased by 3 metres. If we increase the length by 3 metres and breadth by 2 metres, the area is increased by 74 sq. metres. Find the length and breadth of the rectangle.
- Q.49 In a triangle, the sum of two angles is equal to the third. If the difference between them is 50°, find the angles.
- **O.50** Find the four angles of the following cyclic quadrilateral ABCD in which
 - (i) $\angle A = 5x^{\circ}, \angle B = 9x^{\circ} + 2y^{\circ}, \angle C = x^{\circ} + 8y^{\circ}$ and $\angle D = x^{o} + 4y^{o}$.
 - (ii) $\angle A = (2x+y)^{\circ}, \angle B = 2(x+y)^{\circ}, \angle C = (3x+2y)^{\circ},$ $\angle D = (4x - 2y)^{\circ}$.

Long answer type Questions

Q.51 The ages of Ram and Mohan are in ratio 2 : 3. If sum of their ages is 65, find the difference of their ages.

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- Q.52 The difference between two numbers is 1365. When larger is divided by the smaller one, the quotient is 6 and remainder is 15. Find the numbers.
- **Q.53** The denominator of a fraction is 1 more than its numerator. If 1 is subtracted from both the numerator and denominator, the fraction becomes 1/2. Find the fraction.
- **Q.54** The measures of angles of a triangle in degrees are x, x + 12 and x + 27. Find the measure of angles.
- Q.55 Solve for x $\frac{4x+17}{18} - \frac{13x-2}{17x-32} + \frac{x}{3} = \frac{7x}{12} - \frac{x+16}{36}$
- Q.56 The coach of a cricket team buys 3 bats and 6 balls for j- 3900. Later, she buys another bat and 2 balls of the same kind for j- 1300. Represent this situation algebraically and geometrically.
- Q.57 Gloria is walking along the path joining (-2, 3) and (2, -2) while Suresh is walking along the path joining (0, 5) and (4, 0). Represent this situation graphically.
- **Q.58** Solve the following system of equations by cross-multiplication method :

(i)
$$ax + by - a^{2}$$

 $bx + ay = b^{2}$
(ii) $\frac{2x}{a} + \frac{y}{b} = 2$.
 $\frac{x}{a} - \frac{y}{b} = 4$; $a \neq 0, b \neq 0$
(iii) $x - y = a + b$
 $ax + by = a^{2} - b^{2}$
(iv) $\frac{x}{a} + \frac{y}{b} = 2$,
 $ax - by = a^{2} - b^{2}$; $a \neq 0, b \neq 0$
(v) $x + y = a + b$
 $ax - by = a^{2} - b^{2}$

(i) $ax + bx = a^2$

- Q.59 Two numbers differ by 4 and their product is 96. Find the numbers.
- **Q.60** Two numbers are in the ratio of 3 : 5, If 5 is subtracted from each of the number, they become in ratio of 1 : 2. Find the numbers.
- **Q.61** Two numbers are in the ratio of 3 : 4. If 8 is added to each number, they become in the ratio of 4 : 5. Find the numbers.

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ANSWER KEY

- A. VERY SHORT ANSWER TYPE QUESTIONS:
- 1. No 2. Yes 3. No 4. Yes 3 5. **6.** 2 7. (i) Ist (ii) IInd (iii) IVth (iv) IIIrd (v) IIIrd (vi) Ist
- 9. (i) $x = \frac{6-4y}{3}$, (ii) No
- **B. SHORT ANSWER TYPE QUESTIONS :**
- **11.** (i) lies on x-axis on negative side
 - (ii) lies on y-axis on + ve side.
 - (iii) IIIrd quadrant
- 12. (i) The graph of x = 3 is a straight line parallel to y-axis.
 - (ii) The graph of y = -2 is a straight line below x-axis.
- **13.** k = 11

11 **14.** (i)
$$x = \frac{15+3y}{7}$$
, (ii) Yes

16. a = 7, b = 5 **18.** (i) (-2/7, 0) (ii) No **19.** (i) $y = \frac{2x-7}{5}$ (ii) No

- **20.** x = 2, y = 1 is the solution but x = 1 and y = 2 is not the solution. Other solutions are x = 3, y = -1 and x = 1, y = 3.
- 21. Point (3, 1) does not lie on the lines and the point (5, 0) lies on the line.
- **22.** Not **23.** Yes

24.
$$x = 3, y = 1, (1, 0), \left(\frac{7}{2}, 0\right)$$

25. (i) $x = 1, y = 3, \left(0, \frac{7}{2}\right), (0, 1)$
(ii) $x = 3, y = 2, (0, 8), \left(0, \frac{1}{2}\right)$
(iii) $x = 3, y = 2, (0, 4), \left(0, \frac{1}{2}\right)$

- 26. (i) Consistent (independent) with unique solution(ii) Inconsistent
 - (iii) Inconsistent
 - (iv) Consistent (dependent) with infinitely many solutions
 - (v) Consistent (dependent) with infinitely many solutions

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	(vi) Consistent (dependent) with unique solution
77	(i) $\mathbf{x} = \frac{49}{10}$ $\mathbf{y} = \frac{19}{10}$
27.	(1) $X = \frac{1}{29}, y = \frac{1}{29}$
	(ii) $x = 3$, $y = 1$; $x = 0$, $y = 3$
	(iii) $x = 1, y = 2$ (iv) $x = 2, y = 3$
	(v) $x = 3, y = -2$ (vi) $x = -2, y = -1$
28	(i) $\mathbf{x} = 1$ $\mathbf{y} = 1$ (ii) $\mathbf{x} = 2$ $\mathbf{y} = 3$
20.	(ii) $x = 1, y = 1$ (iii) $x = 2, y = -3$ (iii) $x = -1, y = -2$
	$1 \qquad 1 \qquad 5b-2a \qquad a+10b$
	(v) $x = \frac{1}{2}, y = \frac{1}{3}$ (vi) $x = \frac{30^{\circ} 2u}{10ab}, y = \frac{u+100}{10ab}$
	$1^2 - 2^2 + 1^2$
	(vii) $x = \frac{b^2}{a^2}, y = \frac{2a^2 + b^2}{a^2}$
20	2a $2a$ $2a$
29.	(i) $x = 1, y = -1$ (ii) $x = 2, y = 1$ (iii) $x = 2, y = 1$
	(iii) $x = 1, y = 2$ (iv) $x = 3, y = 2$ (v) $x = 2, y = 1$ (vi) Infinite solutions
	$(v_i) x = 2, y = -1$ (v) infinite solutions (vii) x = 3 y = 2 (viii) x = 3 y = 2
	-10 -15
30.	(i) $k \neq \frac{10}{3}$ (ii) $k \neq -6$ (iii) $k \neq \frac{13}{2}$
	3
31.	(i) $k = 15$ (ii) $k = \frac{3}{2}$ (iii) $k = 8$
32.	(i) $a = 8, b = 5$ (ii) $p = 5, a = 1$
	(-)
	(iii) $a = -1, b = \frac{1}{2}$
34.	(i) $k = 16$ (ii) $k = -12$ (iii) $k = -15$
	(-14)
	(1V) $K = 3$ (V) $K = \frac{1}{5}$
35.	(1) $x = \frac{1}{6}, y = \frac{1}{4}$ (11) $x = 6, y = -4, a = 0$
	1 1 mp - nq mp - nq
	(iii) $x = \frac{1}{14}, y = \frac{1}{6}$ (iv) $x = \frac{1}{16}, y = \frac{1}{16}$
	(v) $x = 2$ $y = 1$ (vi) $x = 2$ $y = 3$
	1 1
	(vii) $x = \frac{1}{2}, y = \frac{1}{3}$
	2 3
36.	(i) $a = 1, b = \frac{3}{2}$ (ii) $x = 1, y = 1$
	87 33
	(iii) $x = \frac{37}{71}$, $y = \frac{37}{29}$ (iv) $x = 4$, $y = 5$
	-5 1
	(v) $x = \frac{1}{4}, y = -\frac{1}{4}$

(vi) $x = \frac{c}{a+b} - \frac{b}{a^2 - b^2}$, $y = \frac{c}{a+b} + \frac{a}{a^2 - b^2}$ (vii) $x = \frac{a}{a^2 + b^2}, y = \frac{b}{a^2 + b^2}$ (viii) x = 1, y = 2**37.** j 1700 **38.** j 155 **39.** 12 and 16 **40.** Son's age = 10 years, father's age = 40 years **41.** Son's age = 10 years, father's age = 40 years **44.** $\frac{3}{10}$ **45.** $\frac{5}{13}$ **43.** 48 **42.** 64 **46.** Length = 20 cm, Width = 12 cm47. 12 cm and 16 cm **48.** Length = 19 m, Breadth = 10 m**49.** 70°, 20° **50.** (i) $\angle A = 50^{\circ}$, $\angle B = 120^{\circ}$, $\angle C = 130^{\circ}$, $\angle D = 70^{\circ}$ (ii) $\angle A = 70^{\circ}$, $\angle B = 80^{\circ}$, $\angle C = 110^{\circ}$, $\angle D = 100^{\circ}$ **C. LONG ANSWER TYPE QUESTIONS : 51.** 13 **52.** 1635, 270 **53.** 2/3 54. 47°, 59°, 74° **55.** 4 56. 650 1300



EXERCISE # 2

- Q.1 Reena has pens and pencils which together are 40 in number. If she has 5 more pencils and 5 less pens, then number of pencils would become 4 times the number of pens. Find the original number of pens and pencils.
- Q.2 5 pens and 6 pencils together cost j 9.00, and 3 pens and 2 pencils cost j 5.00. Find the cost of 1 pen 1 pencil.
- **Q.3** Two numbers differ by 2 and their product is 360. Find the numbers.
- Q.4 A two-digit number is 3 more than 4 times the sum of its digits. If 18 is added to the number, the digits are reversed. Find the number.
- Q.5 A two-digit number is 4 times the sum of its digits. If 18 is added to the number, the digit are reversed. Find the number.
- Q.6 The denominator of a fraction is 4 more than twice the numerator. When both the numerator and denominator are decreased by 6, then the denominator becomes 12 times the numerator. Determine the fraction.
- Q.7 The area of a rectangle gets reduced by 80 sq. units if its length is reduced by 5 units and the breadth is increased by 2 units. If we increase the length by 10 units and decrease the breadth by 5 units, the area is increased by 50 sq. units. Find the length and breadth of the rectangle.
- **Q.8** In $\triangle ABC$, $\angle A = y^{\circ}$, $\angle B = (y 9)^{\circ}$, $\angle C = x^{\circ}$. Also $\angle B - \angle C = 48^{\circ}$, find the three angles.
- Q.9 The largest angles of the triangle is twice the sum of the other two, the smallest is one-sixth of the largest. Find the angles in degrees.
- Q.10 The difference between two numbers is 642. When the greater is divided by the smaller, the quotient is 8 and remainder is 19. Find the numbers.
- **Q.11** Of the three angles of a triangle the second is one-third the first and third is 26° more than the first. How many degrees are there in each angle ?
- Q.12 In a factory, women are 35% of all the workers, the rest of the workers being men. The number of men exceeds that of women

by 252. Find the total number of workers in the factory.

- **Q.13** A total of 1400 kg of potatoes were sold in three days. On the first day 100 kg less potatoes were sold than on the second day and on the third day, 3/5 of the amount sold on the first day. How many kilograms of potatoes were sold on each day ?
- Q.14 The sum of a certain even number and the fourth even number after it is 68. Find the numbers.
- Q.15 Fifty nine pens and forty seven pencils together cost j- 513, while forty seven pens and fifty nine pencils together cost j- 441. Find the cost of a pen and that of a pencil.
- Q.16 The sum of two numbers is 15 and sum of their reciprocals is $\frac{3}{10}$. Find the numbers.
- Q.17 The sum of two numbers is 16 and the sum of their reciprocals is $\frac{1}{3}$. Find the numbers.
- Q.18 Solution of the equation Column 1 Column 2 (i) $\frac{2x-3}{5} + \frac{x+3}{4} = \frac{4x+1}{7}$ is (A) 7

(ii)
$$\frac{7x-1}{4} - \frac{1}{3} \left[2x - \frac{1-x}{2} \right] = \frac{19}{3}$$
 (B) $-\frac{41}{11}$
(iii) $\frac{4x+5}{6} - \frac{2(2x+7)}{3} = \frac{3}{2}$, is (C) $\frac{1}{11}$

Q.19 Solution of the equation Column 1

Column 1
(i)
$$\frac{2y-3}{5} + \frac{y-3}{4} = \frac{4y+1}{7}$$
 (A) $\frac{8}{5}$

(ii)
$$\frac{3}{x-1} + \frac{4}{x-2} = \frac{7}{x-3}$$
, (B) $\frac{209}{11}$
 $x \neq 1, 2, 3$ is

- (iii) (x + 1) (2x + 1) (C) 1 = (x + 3) (2x + 3) - 14, is
- Q.20 The age of a father is twice that of the elder son. Ten years hence the age of the father will be three times that of the younger son. If the difference of ages of the two sons is 15 years, then find the age of the father.

Q.21 If $2^x - 2^{x-1} = 4$, then find x^x .

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Linear Equation in Two variables

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- Q.22 If $2x^2 + xy 3y^2 + x + ay 10$ = (2x + 3y + b) (x - y - 2), then find the value of a and b.
- **Q.23** A & B together have 45 coins. Both of them loast 5 coins each, and the product of the number of coins they now have is 124. Form the quadratic equation to find how many coins they had to start with, if A had x coins ?
- Q.24 If we divide 64 into two parts such that one part is three times the other, then find two parts.
- **Q.25** For what values of k will the following pair of linear equations have infinitely many solutions:

$$2x - 3y = 7,$$

(k + 1)x + (1 - 2k)y = (5k - 4).

Q.26 Find the values of k for which the system of equations

kx - y = 2, 6x - 2y = 3

has (i) a unique solution, (ii) no solution, (iii) is there a value of k for which the given system has infinitely many solutions?

- Q.27 The students of a class are made to stand in rows. If 4 students are extra in each row, there would be 2 rows less. If 4 students are less in each row, there would be 4 rows more. Find the number of students in the class.
- Q.28 The monthly incomes of A and B are in the ratio 8 : 7 and their expenditures are in the ratio 19 : 16. If each saves j 5000 per month, find the monthly income of each.

- Q.29 The sum of two numbers is 1000 and the difference between their squares is 256000. Find the numbers.
- Q.30 Places A and B are 160 km apart on a highway. One car starts from A and another from B at the same time. If they travel in the same direction, they meet in 8 hours. But, if they travel towards each other, they meet in 2 hours. Find the speed of each car.
- **Q.31** The area of a rectangle gets reduced by 8 m², when its length is reduced by 5 m and its breadth is increased by 3 m. If we increase the length by 3 m and breadth by 2 m, the area is increased by 74 m². Find the length and the breadth of the rectangle.
- Q.32 Taxi charges in a city consist of fixed charges per day and the remaining depending upon the distance travelled in kilometers. If a person travels 110 km, he pays j-1130, and for travelling 200 km, he pays j-1850. Find the fixed charges per day and the rate per km.
- Q.33 Points A and B are 70 km apart on a highway. A car starts from A and another car starts from B simultaneously. If they travel in the same direction, they meet in 7 hours. But, if they travel towards each other, they meet in 1 hour. Find the speed of each car.
- Q.34 If twice the son's age in years is added to the mother's age, the sum is 70 years. But, if twice the mother's age is added to the son's age, the sum is 95 years. Find the age of the mother and that of the son.

ANSWER KEY

1. No. of pens = 13, No. of pencils = 27 **2.** Cost of pen = $\ddagger 1.50$, cost of pencil = 0.25 **3.** 18 and 20 **6.** $\frac{7}{18}$ 4.35 **5.**24 7. Length = 40, Breadth = 30**8.** 82°, 73°, 25° 9. 120°, 40°, 20° 10. 89, 731 11. 66°, 22°, 92° **12.** 840 **13.** 500 kg, 600 kg, 300 kg 14.30,38 15. Cost of pen = \vdash 7.50, cost of pencil 1.50 **16.** 5 and 10 **17.** 12 and 4 **18.** (i) – (C), (ii) – (A), (iii)–(B) **19.** (i) – (B), (ii) – (A), (iii) – (C) 20. 50 years **21.** 27 **23.** $x^2 - 45x + 324 = 0$ **24.** 48 **22.** –11 and 5 **25.** k = 5 **27.** 96 **26.** (i) $k \neq 3$, (ii) k = 3, (iii) no **28.** A = j - 24000, B = j - 21000**29.** 628, 372 **30.** A = 50 km/hr., B = 30 km/hr.**31.** 19m, 10m **32.** ⊨ 250, ⊨ 8 per km **33.** A = 40 kmph, B = 30 kmph **34.** 40 years, 15 years.