

Solution

① 95×95
समान

$$= 9(9+1)/5 \times 5$$

$$= 9 \times 10 / 25$$

$$= 9025$$

② $\frac{17}{8} = \frac{17}{2 \times 2 \times 2}$ (हर के अभाज्य गुणनखंड 2 का 5
दोनों पर दशमलव सौब होता है।)
सौब

दशमलव में बदलना

$$\frac{17 \times 5 \times 5 \times 5}{2 \times 2 \times 2 \times 5 \times 5 \times 5}$$

(2 एवं 5 का जोड़ा बनाना)

$$\frac{2125}{10 \times 10 \times 10} = \frac{2125}{1000} = 2.125$$

③ $3x + 4y = 25$
समीकरण में $x = -1$ रखने पर

$$3(-1) + 4y = 25$$

$$-3 + 4y = 25$$

$$4y = 25 + 3$$

$$4y = 28$$

$$y = \frac{28}{4} = 7$$

अतः $\frac{2}{13}$ $x = -1$, तो $y = 7$

④ $\sin A = \frac{1}{2}$ को $\frac{1 - \sin^2 A}{\sin A}$ में रखने पर

$$\frac{1 - \frac{1}{4}}{\frac{1}{2}} = \frac{\frac{4-1}{4} \times 2}{1} = \frac{3}{2} \times \frac{2}{1} = \frac{3}{1}$$

$$\begin{aligned}
 (5) \quad & \cos^2 15^\circ + \cos^2 75^\circ \\
 & \cos^2 (90-75) + \cos^2 75 \\
 & \sin^2 75^\circ + \cos^2 75 \quad (\cos^2 (90-0) = \sin^2 0) \\
 & = 1 \quad (\cos^2 0 + \sin^2 0 = 1)
 \end{aligned}$$

$$\begin{aligned}
 (6) \quad & 144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3 = 2^4 \times 3^2 \\
 & 180 = 2 \times 2 \times 3 \times 3 \times 5 = 2^2 \times 3^2 \times 5^1 \\
 & 192 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 = 2^6 \times 3^1 \\
 & \text{H.C.F} = 2^2 \times 3^1 \quad (\text{उभयनिष्ठ पदों की सबसे छोटी घात}) \\
 & \quad = 4 \times 3 = 12 \\
 & \text{L.C.M} = 2^6 \times 3^2 \times 5^1 \quad (\text{सभी पदों की सबसे अधिकतम घात}) \\
 & \quad = 64 \times 9 \times 5 \\
 & \quad = 2880
 \end{aligned}$$

$$\begin{aligned}
 (7) \quad & x^2 + 5x - 6 = 0 \\
 & \text{मध्य पद को 2 भाग करवा कि गुणा करने पर 6 म} \\
 & \text{एवं जोड़ने पर 5x आये। (6x, -x)} \\
 & x^2 + 6x - x - 6 = 0 \\
 & x(x+6) - 1(x+6) = 0 \\
 & (x+6)(x-1) = 0 \\
 & x = -6, 1 \quad (\alpha = -6, \beta = 1) \\
 & x^2 + 5x - 6 \text{ में } a=1, b=5, c=-6 \quad (ax^2+bx+c) \\
 & \text{जोड़ करवा}
 \end{aligned}$$

$$\begin{aligned}
 (I) \quad & \alpha + \beta = -\frac{b}{a} \\
 & -6 + 1 = -\frac{5}{1} \\
 & -5 = -5
 \end{aligned}$$

$$\text{बायाँ पक्ष} = \text{दायाँ पक्ष}$$

$$\begin{aligned}
 (II) \quad & \alpha \beta = \frac{c}{a} \\
 & -6(1) = \frac{-6}{1} \\
 & -6 = -6
 \end{aligned}$$

⑧ 19, 17, 15, 13 — — —

(A.P.)

$$S_n = 100$$

$$a = 19$$

$$d = 17 - 19 \\ = -2$$

$$S_n = \frac{n}{2} [2a + (n-1)d]$$

$$100 = \frac{n}{2} [38 + (n-1)(-2)]$$

$$100 = \frac{n}{2} [38 - 2n + 2]$$

$$100 = \frac{n}{2} [40 - 2n]$$

$$100 = \frac{\cancel{2}n}{\cancel{2}} [20 - n]$$

$$100 = 20n - n^2$$

$$n^2 - 20n + 100 = 0$$

$$(n-10)^2 = 0 \quad [A^2 - 2AB + B^2 = (A-B)^2]$$

$$n = 10 \quad (\text{4th term of series} = 10)$$

⑨ $3x - 5y = -1$

$$3x = -1 + 5y$$

$$x = \frac{-1 + 5y}{3}$$

$$\begin{array}{c|c|c} x & 3 & -2 \\ \hline y & 2 & -1 \end{array} \quad (1)$$

$$y = 2, \quad x = \frac{-1 + 10}{3}$$

$$= \frac{9}{3}$$

$$= 3$$

$$y = -1, \quad x = \frac{-1 + 5(-1)}{3} = \frac{-1 - 5}{3} = \frac{-6}{3} = -2$$

$$2x - y = -3$$

$$2x = -3 + y$$

$$x = \frac{-3 + y}{2}$$

$$\begin{array}{c|c|c} x & -2 & -1 \\ \hline y & -1 & 1 \end{array} \quad (2)$$

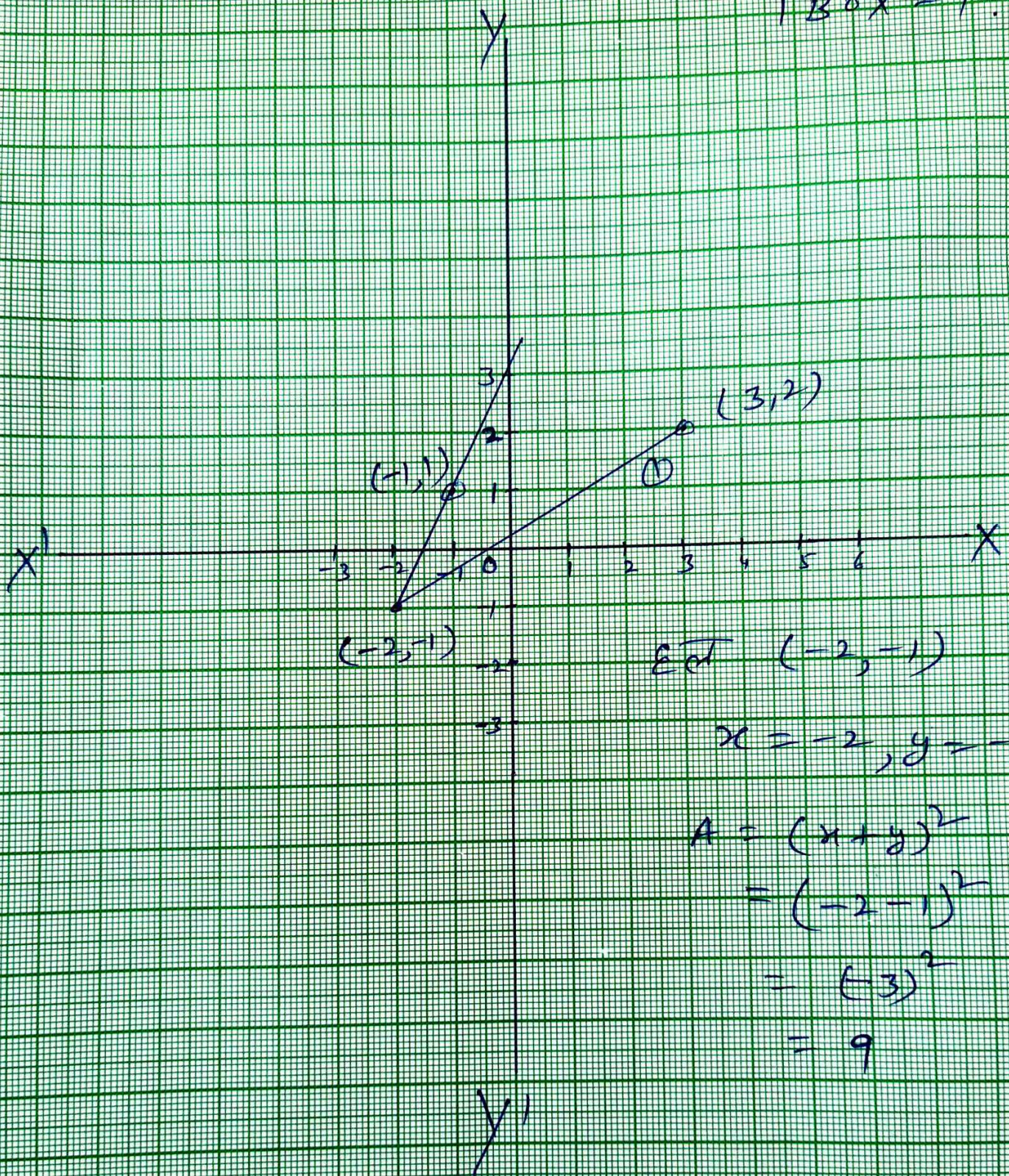
$$y = -1, \quad x = \frac{-3 + (-1)}{2}$$

$$= \frac{-4}{2} = -2$$

$$y = 1, \quad x = \frac{-3 + 1}{2} = \frac{-2}{2} = -1$$

Scale

1 Box = 1.



(10) $\left(\frac{9+6}{2}\right)$

qst	x	f	xf
5-15	10	6	60
15-25	20	11	220
25-35	30	21	630
35-45	40	23	920
45-55	50	14	700
55-65	60	5	300
	<u>80</u>		<u>2830</u>

$$\bar{x} (4125) = \frac{\sum xf}{\sum f}$$

$$= \frac{2830}{80}$$

$$= \frac{283}{8} = 35.375$$

$$8 \overline{) 283} (35.375$$

$$\begin{array}{r} 24 \\ \underline{43} \\ 40 \\ \underline{30} \\ 29 \\ \underline{60} \\ 56 \\ \underline{40} \\ 40 \end{array}$$

अनुपात

qst	f
5-15	6
15-25	11
25-35	(21) f_1
35-45	(23) f
45-55	(14) f_2
55-65	5

अनुपात $f = 23$

अनुपात qst 35-45
 $h = 45 - 35 = 10$

$$\text{अनुपात} = l + \frac{f - f_1}{2f - f_1 - f_2} \times h$$

$$= 35 + \frac{23 - 21}{46 - 21 - 14} \times 10$$

$$= 35 + \frac{20}{46 - 35}$$

$$= 35 + \frac{20}{11}$$

$$= 35 + 1.82$$

$$= \underline{36.82}$$