

Course: IBPS clerk Prelims

Subject: Quadratic, Miscellaneous

Time: 12 Minutes

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Solutions

S1. Ans.(b)

Sol. I. $5x + 2y = 31$

II. $3x + 7y = 36$

On $eq^n(i) \times 3 - eq^n(ii) \times 5$

We get, $y = 3$ and, $x = 5$

$$\therefore x > y$$

S2. Ans.(e)

Sol. I. $2x^2 + 11x + 12 = 0$

$$\Rightarrow 2x^2 + 8x + 3x + 12 = 0$$

$$\Rightarrow 2x(x + 4) + 3(x + 4) = 0$$

$$\Rightarrow (2x + 3)(x + 4) = 0$$

$$\Rightarrow x = -\frac{3}{2}, -4$$

II. $5y^2 + 27y + 10 = 0$

$$\Rightarrow 5y^2 + 25y + 2y + 10 = 0$$

$$\Rightarrow 5y(y + 5) + 2(y + 5) = 0$$

$$\Rightarrow (5y + 2)(y + 5) = 0$$

$$\Rightarrow y = -\frac{2}{5}, -5$$

No relation can be established

S3. Ans(b);

I. $21x = 84$

$$x = 4$$

II. $\sqrt{y + 222} = 9 + 6$

$$y = 225 - 222$$

$$y = 3$$

$$\therefore x > y$$

Q4 Ans(e);

$$\begin{aligned} \text{I. } 2x^2 - 7x - 15 &= 0 \\ 2x^2 - 10x + 3x - 15 &= 0 \\ 2x(x - 5) + 3(x - 5) &= 0 \\ (x - 5)(2x + 3) &= 0 \end{aligned}$$

$$x = 5, -\frac{3}{2}$$

$$\begin{aligned} \text{II. } 6y^2 + 17y + 7 &= 0 \\ 6y^2 + 14y + 3y + 7 &= 0 \end{aligned}$$

$$2y(3y + 7) + 1(3y + 7)$$

$$(2y + 1)(3y + 7)$$

$$y = -\frac{1}{2}, -\frac{7}{3}$$

No relationship can be established

S5. Ans. (d)

Sol.

$$\begin{aligned} \text{I. } (x - 16)(x - 16) &= 0 \\ \Rightarrow x &= 16 \end{aligned} \quad \Bigg| \quad \text{II. } y = \pm 16$$

$$\therefore x \geq y$$

S6. Ans. (d)

Sol. Let the present age of Kamal be x years. And that of Harish be y years.

ATQ,

$$x + 3 + y + 3 = 66$$

$$\Rightarrow x + y = 60 \text{ years} \quad \text{_____ (I)}$$

$$x - y = 4 \text{ years} \quad \text{_____ (II)}$$

from (I) & (II)

$$x = 32 \text{ years}$$

$$\text{Present age of Sonal} = 32 - 4 = 28 \text{ years}$$

S7. Ans. (a)

Sol. From scheme B,

$$\text{Interest} = \frac{4000 \times 15 \times 6}{100 \times 12} = \text{Rs. } 300$$

$$\begin{aligned} \text{Abhi received profit from scheme A} &= \text{Rs. } 300 + 150 \\ &= \text{Rs. } 450 \end{aligned}$$

For scheme A.

Abhi	Surbhi
8000 × 6 + 4000 × 6	12000 × 12

$$1 : 2 \rightarrow \text{ratio of profit share}$$

$$\begin{aligned} \therefore \text{Profit of Surbhi} &= 2 \times 450 \\ &= \text{Rs. } 900 \end{aligned}$$

S8. Ans. (a)

$x+y+z$	—————	12 days	\	15	} 180 (LCM)
	—————	20 days	—	9	
	—————	18 days	/	10	

Sol.

On adding efficiency of $(x+z)$ and $(y+z)$ and subtracting efficiency of $(x+y+z)$ from it.

$$\Rightarrow (x+z) + (y+z) - (x+y+z) = 9+10-15$$

$$\Rightarrow z = 4$$

$$\text{Required time} = \frac{180}{4} = 45 \text{ days}$$

S9. Ans. (c)

Sol. Let the breadth be $3x$ cm.

$$\text{Then, length} = \left(3x \times \frac{1}{3}\right) + 3x = 4x \text{ cm}$$

ATQ,

$$2(3x+4x) = 56$$

$$\Rightarrow x = 4 \text{ cm}$$

Length of rectangle = 16 cm

Breadth of rectangle = 12 cm

$$\therefore \text{diagonal of rectangle} = \sqrt{16^2 + 12^2}$$

$$= 20 \text{ cm}$$

$$\text{area of square} = (20)^2 = 400 \text{ cm}^2$$

S10. Ans.(b)

Sol.

Let the length of train P be x m.

Then, length of tunnel = $2x$ m

ATQ,

$$\frac{x + 2x}{18} = 81 \times \frac{5}{18}$$

$$\Rightarrow 3x = 405 \Rightarrow x = 135.$$

$$\text{Required time} = \frac{135}{81 \times \frac{5}{18}} = 6 \text{ sec}$$

S11. Ans.(a)

Sol.

Required difference = 40% of $(P + 18000)$ – 40% of $(P - 8000)$

$$= \frac{40}{100} (P + 18000 - P + 8000)$$

$$= \frac{40}{100} \times 26000 = 10,400$$

S12. Ans.(c)

Sol.

Let the CP be Rs. $100x$.

$$MP = 100x \times \frac{160}{100} = \text{Rs. } 160x$$

$$SP = 160x \times \frac{7}{8} = \text{Rs. } 140x$$

$$\text{Profit} = \text{Rs. } 40x$$

SP of article when discount is 35%

$$= 160x \times \frac{65}{100} = \text{Rs. } 104x.$$

$$\text{Profit} = \text{Rs. } 4x$$

$$\text{Required \%} = \frac{40x-4x}{40x} \times 100$$

$$= \frac{36}{40} \times 100$$

$$= 90\%$$

S13. Ans.(e)

Sol. Total Sugar = 800 kg

By using Allegation method

Profit	Loss
+10%	-15%

$$-5.625\%$$

$$9.375 \qquad \qquad \qquad 15.625$$

$$3 \qquad \qquad \qquad : \qquad \qquad \qquad 5$$

$$\text{Sugar sold at 10\% profit} = \frac{800}{8} \times 3 = 300 \text{ kg}$$

$$\text{Sugar sold at 15\% loss} = \frac{800}{8} \times 5 = 500 \text{ kg}$$

Let cost price = x Rs./ kg

when quantity interchanged \rightarrow

$$\text{Selling price of that quantity which is sold at loss} = 300x \times \frac{85}{100} = 255x$$

$$\text{Selling Price of that quantity which is sold at Profit} = \frac{500 \times x \times 110}{100} = 550x$$

$$\text{Total Cost Price} = 800x$$

$$\text{Total Selling Price} = 255x + 550x = 805x$$

$$\text{Profit \%} = \frac{805x - 800x}{800x} \times 100 = 0.625\%$$

S14. Ans.(a)

Sol.

Let, A's efficiency = 20

$$\Rightarrow \text{B's efficiency} = 20 \times \frac{75}{100} = 15$$

$$\text{and C's efficiency} = 20 \times \frac{3}{5} = 12$$

	A	:	B	:	C
EfficiencyRatio	= 20		: 15		: 12
Ratio of time taken alone to complete the work	$= \frac{1}{20}$		$: \frac{1}{15}$		$: \frac{1}{12}$
	3		: 4		: 5
	$\times 6 \downarrow$		$\times 6 \downarrow$		$\times 6 \downarrow$
	18		: 24		: 30

B and C complete the work alone in

$$\begin{aligned}
 &= \frac{24 \times 30}{24 + 30} \text{ days} \\
 &= \frac{40}{3} \text{ days} = 13 \frac{1}{3} \text{ days}
 \end{aligned}$$

S15. Ans.(e)

Sol.

Let amount invested in scheme A = x

ATQ,

$$\begin{aligned}
 x \times \frac{15}{100} + \frac{18}{100} (28000 - x) &= 4680 \\
 \Rightarrow \frac{3x}{100} &= 5040 - 4680
 \end{aligned}$$

$$\Rightarrow x = 12000$$

$$\text{Amount invested in scheme B} = 28000 - 12000 = 16000$$