Adda 247 Publications

Visit: publications.adda247.com & store.adda247.com
For any information, mail us at publications@adda247.com
Solutions

26. Ans. (c)
Sol. C.P. of 10 note books ⇒ 140 × 10 = 1400 Rs.
Profit on selling one pen ⇒ \( \frac{50 \times 200}{100} = \text{Rs} \ 100 \)
Number of pen required ⇒ \( \frac{1400}{100} = 14 \)

27. Ans. (d)
Sol. Let speed of slower train = 2x
⇒ speed of faster train = 5x
ATQ,
\[ \frac{150 + 200}{2x + 5x} = 15 \]
x = \( \frac{10}{3} \)
Time required
\[ = \frac{350}{\frac{50}{3} - \frac{20}{3}} = 35 \text{ second} \]

28. Ans. (b)
Sol. Ratio of profit share of B and E is
35% × 80,000 × 9 : 15% of 80,000 × 12 = 7 : 4
Required difference = \( \frac{(7-4)}{11} \) \( \times \) 15400
= \( \frac{3}{11} \) \( \times \) 15400 = Rs 4200

29. Ans. (d)
Sol. Ratio of profit share of A, C and D is
\[
\begin{align*}
\text{A} & : \text{C} : \text{D} \\
25\% \times 80,000 \times 6 & : 15\% \times 80,000 \times x & : 10\% \times 80,000 \times 8 \\
150 & : 15x & : 80 \\
30 & : 3x & : 16
\end{align*}
\]
ATQ,
\[ \frac{30}{30 + 16 + 3x} = \frac{6750}{13050} \]
⇒ \( \frac{46 + 3x}{30} = \frac{15}{29} \)
⇒ 46 + 3x = 58
x = 4 months
30. Ans.(a)
Sol. Amount invested by F = \( \frac{15}{100} \times 80,000 + 4000 \)
= 12000 + 4000 = Rs 16,000
Amount invested by A = \( \frac{25}{100} \times 80,000 \) = Rs 20,000
Ratio of profit share of F, C and A
\[
\begin{align*}
\text{F} & : \text{C} : \text{A} \\
16000 \times 6 & : 12000 \times 8 : 20,000 \times 12 \\
2 & : 2 & : 5
\end{align*}
\]
ATQ,
5 + 2 → 8750
Then total annual profit = 9 → \( \frac{8750}{7} \times 9 \) = Rs 11,250

31. Ans.(c)
Sol. I. \((x - 2)^2 = 9\)
\(\Rightarrow (x - 2) = \pm 3\)
\(\Rightarrow x = 5, -1\)
II. \((2y + 8)^2 = 16\)
\((2y + 8) = \pm 4\)
\(\Rightarrow y = -2, -6\)
x > y

32. Ans.(e)
Sol. I. \(x^2 - 16x + 64 = 0\)
\(x^2 - 8x - 8x + 64 = 0\)
x(x - 8) - 8(x - 8) = 0
\((x - 8)(x - 8) = 0\)
x = 8, 8
II. \(y^2 - 16y + 63 = 0\)
\(y^2 - 7y - 9y + 63 = 0\)
y(y - 7) - 9(y - 7) = 0
\((y - 9)(y - 7) = 0\)
y = 9, 7
No relation can be established between x & y

33. Ans.(d)
Sol. I. \(\frac{25}{x^2} - \frac{15}{x} + 2 = 0\)
\(\Rightarrow 2x^2 - 15x + 25 = 0\)
\(\Rightarrow 2x^2 - 10x - 5x + 25 = 0\)
\(2x(x - 5) - 5(x - 5) = 0\)
\((2x - 5)(x - 5) = 0\)
x = 5, 2
II. \( \frac{40}{y^2} + 1 = \frac{13}{y} \)
\[ \Rightarrow y^2 - 13y + 40 = 0 \]
\[ \Rightarrow y^2 - 8y - 5y + 40 = 0 \]
\[ \Rightarrow y(y - 8) - 5(y - 8) = 0 \]
\[ (y - 5)(y - 8) = 0 \]
\[ y = 5, 8 \]
\[ y \geq x \]

S34. Ans.(d)

Sol. I. \( \frac{48}{x^2} - \frac{14}{x} + 1 = 0 \)
\[ \Rightarrow x^2 - 14x + 48 = 0 \]
\[ \Rightarrow x^2 - 8x - 6x + 48 = 0 \]
\[ \Rightarrow x(x - 8) - 6(x - 8) = 0 \]
\[ \Rightarrow (x - 8)(x - 6) = 0 \]
\[ x = 8, 6 \]

II. \( \frac{45}{y^2} + \frac{1}{y} = 2 \)
\[ \Rightarrow 2y^2 - y - 45 = 0 \]
\[ \Rightarrow 2y^2 - 10y + 9y - 45 = 0 \]
\[ \Rightarrow 2y(y - 5) + 9(y - 5) = 0 \]
\[ \Rightarrow (2y + 9)(y - 5) = 0 \]
\[ y = 5, -\frac{9}{2} \]
\[ x > y \]

S35. Ans.(e)

Sol. I. \( x^2 + 3x - 4 = 0 \)
\[ x^2 + 4x - x - 4 = 0 \]
\[ x(x + 4) - 1(x + 4) = 0 \]
\[ (x - 1)(x + 4) = 0 \]
\[ x = 1, -4 \]

II. \( y^2 + 10y + 24 = 0 \)
\[ y^2 + 4y + 6y + 24 = 0 \]
\[ y(y + 4) + 6(y + 4) = 0 \]
\[ (y + 6)(y + 4) = 0 \]
\[ y = -4, -6 \]
\[ x \geq y \]
S36. Ans.(c)  
**Sol.** From I, II & III  
Let speed of Amit and Abhi be 4x and 5x km/hr respectively.  
\[5x - 4x = 20\]  
\[\therefore x = 20 \text{ km/hr}\]  
Let distance be d km  
\[\frac{d}{80} - \frac{d}{100} = 1\]  
\[\therefore d = \frac{80 \times 100}{20} = 400 \text{ km}\]

S37. Ans.(b)  
**Sol.** From I and II  
Let length and breadth be 3x m and 2x m respectively  
\[2\pi r = 440 \quad [r \rightarrow \text{radius of circle}]\]  
r = 70 m  
\[\therefore \text{breadth} = 10 \text{ m}\]  
& length = 15 m  
\[\therefore \text{Area} = 10 \times 15 = 150 \text{ m}^2\]  
Statement I and III are same.

S38. Ans.(a)  
**Sol.** From I  
Passed = 400  
From III  
Let number of appeared & Failed students be 5x and 3x respectively  
\[2x = 400 \Rightarrow x = 200\]  
\[\therefore \text{failed} = \text{appeared} - \text{passed}\]  
\[= 1000 - 400 = 600\]

S39. Ans.(a)  
**Sol.** From I  
\[\frac{PR \times 2}{100} = 44000\]  
\[PR = 2200000\]  
**From II**  
\[P + \frac{PRT}{100} = 154000\]  
**From III**  
\[\frac{\text{Difference} \times PR^2}{100^2} = 120\]  
From I and III R can be found.
S40. Ans.(e)
Sol. Let the smaller no. is $x$ & bigger no. is $y$.
From I
\[ Y = x + 6 \]
From II,
\[ \frac{40}{100} \times x = \frac{30}{100} \times y \]
From III,
\[ \frac{y}{x} = \frac{2}{1} \]
\[ \Rightarrow 3y = 4x \]
\[ \therefore \text{from I and II or I and III} \]

S41. Ans.(b)
Sol. Let amount of milk removed = $2x$ lit
So, amount of water added = $x$ lit
Now
\[ \frac{165 - 2x}{x} = \frac{5}{3} \]
x = 45 lit

S42. Ans.(c)
Sol. At least one black can be chosen in three ways:
1. first one is black, second is non-black
2. first one is non-black, second is black
3. both are black.
Probability of selecting a box is $\frac{1}{2}$
Now, probability of choosing at least one black ball from first box
\[ = \frac{1}{2} \times \left( \frac{2}{4} \times \frac{2}{3} + \frac{2}{4} \times \frac{2}{3} + \frac{2}{4} \times \frac{1}{3} \right) = \frac{5}{12} \]
Probability of choosing at least one black ball from 2nd box
\[ = \frac{1}{2} \times \left( \frac{4}{16} \times \frac{12}{15} + \frac{12}{15} \times \frac{4}{16} + \frac{4}{16} \times \frac{3}{15} \right) = \frac{27}{120} \]
Final probability
\[ = \frac{5}{12} + \frac{27}{120} = \frac{50 + 27}{120} = \frac{77}{120} \]

S43. Ans.(a)
Sol. Let speed of train B be $x$ m/s
And length of train B be $y$ m
Then length of train A is $2y$ m
Speed of train A = $84 \times \frac{5}{18} = \frac{210}{9} = \frac{70}{3}$ m/s
A.T.Q,
\[
\frac{2y+y}{10} = \frac{70}{3} - x \quad \text{...........(i)}
\]
and \[
\frac{2y+y}{22.5} = \frac{70}{3} - 2x
\]
solving (i) and (ii), \( y = 50 \) m

S44. Ans.(c) 
Sol. Let, inner radius of cylinder be \( 'x' \) cm. 
\[
\frac{4}{3} \pi (6)^3 = \pi \times 32 \ (5^2 - x^2)
\]
or, \[
\frac{4 \times 6 \times 6 \times 6}{3 \times 32} = 25 - x^2
\]
on, \( x^2 = 25 - 9 \)
or, \( x = 4 \) cm
Hence, thickness = 5 – 4 = 1 cm.

S45. Ans.(b) 
Sol. \( X \)'s investment 
\[
= (700 \times 3) + \left(700 \times \frac{5}{7} \times 3\right) + \left(500 + 200 \times \frac{3}{5}\right) \times 6
\]
= Rs. 7320
Y's investment = 600 \times 12 = Rs. 7200.
\( \therefore \) \( X \)'s share from profit 
\[
= \frac{7320}{(7320+7200)} \times 726 = Rs.366.
\]

S46. Ans.(a) 
Sol. Total man working on odd days in March = \( \frac{1000 \times 30}{100} = 300 \)
Total odd days in March = 16
Total man hour = 300\times16\times8
Similarly,
Total man hour of April on even days = 15 \times 8 \times 1200
Required \% = \( \frac{300 \times 16 \times 8}{15 \times 8 \times 1200} \times 100 = 26\frac{2}{3} \) \%

S47. Ans.(d) 
Sol. Total man hour of April 
\[
= \frac{1500}{100} \times [20 \times 15 + 80 \times 15] \times 8 = 1,80,000
\]
Total man hour of August 
\[
= 750 \times \frac{40}{100} \times 15 \times 8 + 16 \times 750 \times \frac{60}{100} \times 8
= 36000 + 57600 = 93,600
\]
Required difference = 1,80,000 – 93,600 = 86,400
S48. Ans.(b)
Sol. Required ratio
\[
\frac{10 \times 15 \times 70 \times 8}{15 \times 75 \times 4 \times 8} = 7 : 3
\]

S49. Ans.(c)
Sol. Man-hour on odd days on April = 15 \times 300 \times 8 = 36000
Man-hour on odd days on August = 16 \times 75 \times 6 \times 8 = 57600
Required % = \frac{57600 - 36000}{57600} \times 100 = 37.5\%

S50. Ans.(a)
Sol. Man-hour on even days →
March = 15 \times 8 \times 700 = 84,000
April = 15 \times 8 \times 1200 = 1,44,000
August = 15 \times 8 \times 300 = 36,000
Required Average = 88,000