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Solutions

S66. Ans.(c)
Sol.
\[\begin{array}{cccccc}
18 & 8 & 6 & 9 & 32 & \text{251} \\
\times 0.5-1 & \times 1-2 & \times 2-3 & \times 4-4 & \times 8-5 \\
\end{array}\]

S67. Ans.(a)
Sol.
\[\begin{array}{cccccc}
36 & 18 & 6 & 3 & 1 & \text{0.5} \\
\div 2 & \div 3 & \div 2 & \div 3 & \div 2 \\
\end{array}\]

S68. Ans.(d)
Sol.
\[\begin{array}{ccccccc}
18 & 29 & 42 & 53 & \text{66} & \text{77} \\
+11 & +13 & +11 & +13 & +11 \\
\end{array}\]

S69. Ans.(b)
Sol.
\[\begin{array}{ccccccc}
1 & 244 & 163 & 190 & 181 & \text{184} \\
+243 & -81 & +27 & -9 & +3 \\
\end{array}\]

S70. Ans.(e)
Sol.
\[\begin{array}{ccccccc}
250 & \text{219} & 190 & 167 & 148 & 131 \\
-31 & -29 & -23 & -19 & -17 \\
\end{array}\]

S71. Ans.(c)
Sol. Required difference
\[\frac{(24 + 16) - (18 + 12)}{100} \times 300 = \frac{(40 - 30)}{3} \times 3 = 30\]

S72. Ans.(e)
Sol. Total number of students who gave exam in August 2017
\[300 \times \frac{120}{100} = 360\]
S73. Ans.(a)  
Sol. Required central angle = 16 × 3.6 = 57.6°

S74. Ans.(b)  
Sol. Required average  
= \frac{1}{3} \left( \frac{13+18+24}{100} \right) \times 300 = 55

S75. Ans.(d)  
Sol. Required Ratio  
= \frac{17 + 16 + 18}{13 + 17 + 24} = \frac{51}{54} = \frac{17}{18}

S76. Ans.(a)  
Sol.  
?= \sqrt{16 \times 15 + 24 \times 12 + 97}  
?= \sqrt{240 + 288 + 97}  
?= \sqrt{625}  
?= 25

S77. Ans.(a)  
Sol.  
?= \frac{28}{100} \times 420 + \frac{36}{100} \times 540  
?= 117.6 + 194.4  
?= 312

S78. Ans.(c)  
Sol. 75% \times 450 + 25% \times 850 = ?  
?= \frac{25}{100} [3 \times 450 + 850] = \frac{1}{4} [2200] = 550

S79. Ans.(e)  
Sol.  \sqrt{7} = 104 - \sqrt{7396}  
\sqrt{7} = 104 - 86  
?= (18)^2 = 324

S80. Ans.(d)  
Sol. Sum of present ages of A, B and C = 66 years  
Sum of present age of B and C = 18 \times 2 + 6 = 42  
Present age of A = 66 - 42 = 24  
A’s age nine years hence = 24 + 9 = 33 years
S81. Ans.(d)
Sol. Let speed of boat in still water and speed of stream be 8x and x respectively.
ATQ,
\[ \frac{67.5}{2.5} = 8x + x \]
\[ x = \frac{27}{9} \]
x = 3
Required difference = \(8x - x = 7x = 7 \times 3 = 21\)

S82. Ans.(c)
Sol. Breadth of rectangle = x metre
Length = (x + 6) metre
∴ \[ 2(x + 6 + x) = 84 \]
⇒ \( 2x = 42 - 6 = 36 \)
⇒ x = 18
∴ Length = 18 + 6 = 24 metre
∴ Area of rectangle
= Length \times Breadth
= 18 \times 24
= 432 sq. metre

S83. Ans.(b)
Sol. Overall rate for 2 years at 20% p.a compounded yearly is equivalent to \(20 + 20 + \frac{20 \times 20}{100} = 44\%\)
ATQ,
44% of sum = 1716
100% of sum = 3900
Simple interest earned = \(\frac{3900 \times 15 \times 3}{100} = Rs. 1755\)

S84. Ans.(c)
Sol. Let cost price of article = 100x
ATQ,
\[ 42x - 18x = 110.4 \]
\[ 24x = 110.4 \]
x = 4.6
Cost price of article = \(4.6 \times 100 = 460\)
Selling price to earn 25% profit = \(460 \times \frac{125}{100} = Rs 575\)
S85. Ans.(c)  
Sol.
Efficiency | Total work
--- | ---
3 ← A → 20
+ 4 ← B → 15
\[ \frac{7}{\overline{A+B}} \]
Work done by A in last 6 days = 6 × 3 = 18 work.
Remaining work done by A + B = 60 – 18 = 42 work
B left the work after = \[ \frac{42}{7} \] = 6 days.

S86. Ans.(e)  
Sol.  
(i) \( x^2 = 196 \)  
\( x = \pm 14 \)  
(ii) \( y^2 + 2y - 48 = 0 \)  
\( y^2 + 8y - 6y - 48 = 0 \)  
\( y(y + 8) - 6(y + 8) = 0 \)  
\( (y - 6)(y + 8) = 0 \)  
\( y = 6, -8 \)  
No relation can be established between x and y

S87. Ans.(e)  
Sol.  
(i) \( x^2 - 11x + 24 = 0 \)  
\( x^2 - 8x - 3x + 24 = 0 \)  
\( x(x - 8) - 3(x - 8) = 0 \)  
\( (x - 3)(x - 8) = 0 \)  
\( x = 8, 3 \)  
(ii) \( y^2 - 14y + 45 = 0 \)  
\( y^2 - 9y - 5y + 45 = 0 \)  
\( y(y - 9) - 5(y - 9) = 0 \)  
\( (y - 5)(y - 9) = 0 \)  
\( y = 5, 9 \)  
No relation can be established between x and y

S88. Ans.(b)  
Sol.  
(i) \( 2x^2 - 4x + 2 = 0 \)  
\( 2x^2 - 2x - 2x + 2 = 0 \)  
\( 2x(x - 1) - 2(x - 1) = 0 \)  
\( (2x - 2)(x - 1) = 0 \)  
\( x = 1, 1 \)
(ii) \(2y^2 - y - 1 = 0\)
\(2y^2 - 2y + y - 1 = 0\)
\(2y(y - 1) + 1(y - 1) = 0\)
\((2y + 1)(y - 1) = 0\)
\(y = -\frac{1}{2}, 1\)
\(x \geq y\)

S89. Ans.(d)
Sol.
(i) \(x^2 - 15x + 56 = 0\)
\(x^2 - 7x - 8x + 56 = 0\)
\(x(x - 7) - 8(x - 7) = 0\)
\((x - 8)(x - 7) = 0\)
\(x = 8, 7\)

(i) \(y = \sqrt{64}\)
\(y = 8\)
\(y \geq x\)

S90. Ans.(e)
Sol.
(i) \(x^2 - x - 6 = 0\)
\(x^2 - 3x + 2x - 6 = 0\)
\(x(x - 3) + 2(x - 3) = 0\)
\((x - 3)(x + 2) = 0\)
\(x = 3, -2\)

(ii) \(y^2 - 6y + 8 = 0\)
\(y^2 - 2y - 4y + 8 = 0\)
\(y(y - 2) - 4(y - 2) = 0\)
\((y - 2)(y - 4) = 0\)
\(y = 2, 4\)

No relation can be established between \(x\) and \(y\)

S91. Ans.(a)
Sol.
\(\sqrt{441} - \sqrt{144} = \sqrt{?}\)
\(21 - 12 = \sqrt{?}\)
\(9 = \sqrt{?}\)
\(? = 81\)
S92. Ans.(c)
Sol.
18 \frac{2}{3} - 7 \frac{1}{4} = ? + 1 \frac{1}{2}
18 - 7 + \frac{2}{3} - \frac{1}{4} = ? + 1 \frac{1}{2}
10 + \frac{2}{3} - \frac{1}{4} = ?
10 + \frac{8 - 3 - 6}{12} = ?
10 - \frac{1}{12} = ?
9 \frac{11}{12} = ?

S93. Ans.(d)
Sol.
\sqrt{484} \times \sqrt{169} = ? + 50\% \text{ of } 312
22 \times 13 = ? + \frac{50}{100} \times 312
286 = ? + 156
?= 130

S94. Ans.(b)
Sol.
15^2 + 36^2 = ? \times \sqrt{2197}
225 + 1296 = ? \times 13
\frac{1521}{13} = ?
117 = ?

S95. Ans.(e)
Sol. Let cost price of article = 100x
Selling price of one article = 120x
ATQ,
3 \times 20x - 2 \times 20x = 80
20x = 80
x = 4
Cost price of article = Rs 400

S96. Ans.(a)
Sol.
Quantity I:
Length of train ‘A’ = x
Length of train ‘B’ = 0.5x
ATQ,
x + 0.5x = 12 \times (25 + 15)
1.5x = 480
x = 320 meters
Quantity II: 160 meters
Quantity I > Quantity II
S97. Ans.(b)
Sol. Let average of a, b and c be x
\[ a + b + c = 3x \]
And, \[ b + c + d = 3x + 3 \]
⇒ \[ d - a = 3 \]
And, \[ d + a = 39 \]
d = 21 and a = 18
Quantity I:
\[ a = 18 \]
Quantity II: 21
Quantity II > Quantity I

S98. Ans.(a)
Sol. Quantity I: Due to leakage only 80% of the cistern is filled this means 20% of tank is leaked out by leakage which is equal to 60 liters
20% = 60
100% = 300 liters
Capacity of tank = 300 liters
Quantity II: 250 liters
Quantity I > Quantity II

S99. Ans.(e)
Sol.
Quantity I:
Let speed of boat in still water and speed of stream be 2x and x respectively
ATQ,
\[ \Rightarrow 32 = \frac{72}{3x} + \frac{72}{x} \]
\[ \Rightarrow x = \frac{96}{32} = 3 \]
Downstream speed = \[ 2x + x = 3x = 9 \text{kmph} \]
Quantity II: 9 kmph
Quantity I = Quantity II

S100. Ans.(e)
Sol.
Quantity I:
Side of square = \[ \sqrt{324} = 18 \text{cm} \]
Let length of rectangle be x and breadth of rectangle be \( x-4 \) cm
ATQ,
\[ x + x - 4 = \frac{4 \times 18}{2} = 36 \]
x = 20
Area of rectangle = \[ 20 \times 16 = 320 \text{cm}^2 \]
Quantity II: 320 cm²
Quantity I = Quantity II
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