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BOOKS

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S1. Ans.(c)
Sol. Rahul runs for 15 minutes at a speed of 5 km/hr and 25 minutes at a speed of 9 km/hr
∴ Total distance covered by Rahul on treadmill = $\frac{15}{60} \times 5 + \frac{25}{60} \times 9 = 1.25 + 3.75 = 5km$
A = 5km

S2. Ans.(e)
Sol. P_2 can complete work in = $6 \times \frac{5}{4} = 7.5$ hours
P_1 and P_2 together can complete total work in = $\frac{6 \times 7.5}{6+7.5} = \frac{45}{13.5} = 3\frac{1}{3}$ hours
⇒ P1 and P2 together can complete 75% work in = $\frac{10}{3} \times \frac{75}{100} = 2.5$ hours
They finish work at 12:30 p.m.
⇒ They start their work at 12:30 – 2:30 = 10 a.m.
B = 10 a.m.

S3. Ans.(b)
Sol. P_2 can complete work in = $6 \times \frac{5}{4} = 7.5$ hours
Rahul and P_2 can complete same work in 3 hours
⇒ Rahul can complete same work in = $\frac{1}{\frac{1}{3}-\frac{1}{7.5}} = \frac{1}{0.2} = 5$ hours
Ratio of efficiency of Rahul and P_1 is 6 : 5
C = $\frac{6-5}{5} \times 100 = 20\%$

S4. Ans.(d)
Sol. Distance between his house and his office is 45 km
⇒ His speed = $\frac{45}{1.5}$ = 30km/hr
Speed of stream is 3 km/hr
⇒ Upstream speed of boat = 30 – 3 = 27
Time to reach home i.e, D = $\frac{45}{27} = 1\frac{2}{3}$ hours

S5. Ans.(a)
Sol. Each friend has 2 dices so there are total 36 outcomes by one friend.
If either Rahul or Aman throw their dices, then there are total 36 + 36 outcomes
So, E = 36 + 36 = 72

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S6. Ans.(e)
Sol. Sum of outcomes of dices should be 8 so it can be (4,4), (3,5) and (2,6)
In (4,4)
Addition of square of outcomes = $4^2 + 4^2 = 32$
In (3,5)
Addition of square of outcomes = $3^2 + 5^2 = 34$
In (2,6)
Addition of square of outcomes = $2^2 + 6^2 = 40$
Now Raman will win the game if he gets (2,6) and remaining two get (3,5) or (4,4)
So, option (e) is the correct answer

S7. Ans.(d)
Sol. Let length and breadth of rectangle be l cm and b cm respectively
So, ATQ
$\ell \times (b + 6) - b (\ell - 6) = 252$
$6 (\ell + b) = 252$
$2 (\ell + b) = 84$ cm

S8. Ans.(b)
Sol. Diagonal of square = $2.5\sqrt{2} \times \sqrt{2} = 5$ cm
Length of rectangle = $5 \times 3 = 15$ cm
Breadth = 5 cm
Area of rectangle = $15 \times 5 = 75$ cm²

S9. Ans.(e)
Sol. Speed of boat in still water = 20 km/hr
Speed of stream = $\frac{20}{7}$ km/hr
Ratio of speed of boat in upstream to that of downstream = 6 : 8 ⇒ 3 : 4
Time taken by boat in upstream to that of downstream = 4 : 3
Required distance = $\left(20 + \frac{20}{7}\right) \times \frac{5 \times 3}{7} \approx 50$ km

S10. Ans.(a)
Sol. Ratio of profit of

A	:	B
800 × 8+ 900+ 1000+ 1100+ 1200	:	1600 × 8+ 1700+ 1800+ 1900+ 2000
53	:	101

Profit of A ⇒ $\frac{7700}{154} \times 53 = 2650$ Rs.

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S11. Ans.(c)
Sol. Let initial investment of A = x
Ratio of profit
$$\begin{array}{ccccc} A & : & B & : & C \\ 12 \times x & : & 6 \times 4500 & : & 4 \times 4500 \\ x & : & 2250 & : & 1500 \end{array}$$
Now ATQ
$$\frac{x}{x + 2250 + 1500} = \frac{49}{100}$$
$x \approx Rs\ 3600$

S12. Ans.(c)
Sol. S.P. of article D sold by Ravi = Rs.120
Profit % earned on article D by Ravi = 60%
Cost price of article D for Ravi = $\frac{120}{160} \times 100 = Rs\ 75$
Profit earned by Shyam = $120 \times \frac{25}{100} = Rs\ 30$
Profit earned by Ravi = 120 – 75 = Rs 45
Required difference = 45 – 30 = Rs.15

S13. Ans.(b)
Sol. Cost price of article A = $\frac{105}{140} \times 100 = Rs\ 75$
Cost price of article C = $\frac{150}{125} \times 100 = Rs\ 120$
Required % = $\frac{120-75}{120} \times 100 = \frac{45}{120} \times 100 = 37.5\%$

S14. Ans.(d)
Sol. Cost price of article B = $\frac{60}{120} \times 100 = Rs\ 50$
Marked price of article B = $50 \times 1.5 = Rs\ 75$
Required discount % = $\frac{75-60}{75} \times 100$
$= \frac{15}{75} \times 100 = 20\%$

S15. Ans.(e)
Sol. Profit earned on selling article E = $\frac{90}{180} \times 80 = Rs\ 40$
Profit earned on selling article C = $\frac{150}{125} \times 25 = Rs\ 30$
Required difference = 40 – 30 = Rs 10

S16. Ans.(b)
Sol. Mark price of article A = $\frac{105}{84} \times 100 = Rs\ 125$
CP of article A = $\frac{105}{140} \times 100 = Rs\ 75$
Mark up % of article A = $\frac{125-75}{75} \times 100 = 66\frac{2}{3}\%$

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S17. Ans.(c)

Sol. $3^{x+5} \cdot 9^{2x-4} = 9^{5x-14}$

$\Rightarrow 3^{x+5} \cdot 3^{4x-8} = 3^{10x-28}$

$\Rightarrow 3^{x+5+4x-8} = 3^{10x-28}$

$\Rightarrow 3^{5x-3} = 3^{10x-28}$

$\Rightarrow 5x - 3 = 10x - 28$

$\Rightarrow 5x = 25$

$\Rightarrow x = 5$

And, $2y^2 - 15y - 28 = 3y^2 - 23y - 13$

$\Rightarrow y^2 - 8y + 15 = 0$

$\Rightarrow y^2 - 3y - 5y + 15 = 0$

$\Rightarrow y(y-3) - 5(y-3) = 0$

$\Rightarrow (y-5)(y-3) = 0$

$\Rightarrow y = 5, 3$

Quantity I: - Value of x = 5

Quantity II: - Value of y = 5, 3

$\Rightarrow$ Quantity I ≥ Quantity II

S18. Ans.(b)

Sol. Quantity I:

Let C.P. → Rs 100

So, S.P. → Rs 129.6

ATQ,

M.P. → $\frac{129.6}{72} \times 100 \Rightarrow$ Rs 180

'x' $\Rightarrow \frac{180 \times (100-30)}{100}$ -100 $\Rightarrow 26\%$

Quantity II > Quantity I

S19. Ans.(a)

Sol. Let efficiency of 1 man, 1 woman and 1 child is m, w and c respectively

ATQ,

10 × 12m = 18w × 20 = 27c × 20

2m = 6w = 9c

Let total work = 120 m

Quantity I:

(9w + 9c) × 16 = (3m + 2m) × 16 = 80 m

Remaining work = 120 m – 80 m = 40 m

Number of men required to complete remaining work in one day = 40

Quantity II = 36

Quantity I > Quantity II

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S20. Ans.(a)
Sol. Quantity I:-

```
3 ——— 20A
4 ——— 15B ——— 60
5 ——— 12C
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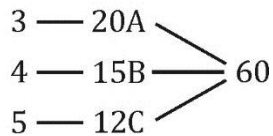
Let total capacity of tank be 60.

Units filled in first three minutes = 3 + 4 + 5 = 12

Hence, total time taken = 5 × 3 = 15 minutes

Quantity II:-

Let waste pipe can empty the cistern in x min

$$\frac{1}{10} + \frac{1}{15} - \frac{1}{x} = \frac{1}{18}$$
$$\Rightarrow \frac{1}{x} = \frac{9+6-5}{90} = \frac{10}{90}$$
$$\Rightarrow x = 9 \text{ minutes}$$

Quantity I > Quantity II

Solution (21-25):
House A →
Units consumed by Other appliances = 120 units

Let unit consumed by Lights = x

Then, Units consumed by Fans = $x - 30$

$x + x - 30 = 250 - 120$

$2x = 130 + 30$

$x = 80$

Units consumed by Lights = 80 units

Units consumed by Fans = 50 units

House B →
Units consumed by Lights = 80 $units$

Units consumed by Fans = $\frac{160}{100} \times 50 = 80$ $units$

House C →
Total units consumed by Lights in all three houses = 200 units

⇒ Units consumed by Lights in house 'C' = $200 - 80 - 80 = 40$ $units$

Units consumed by Fans = 40 $units$

Units consumed by Other appliances = $40 \times \frac{225}{100} = 90$ $units$

Total units consumed by Other appliances in House 'B' = $320 - 90 - 120 = 110$ $units$

Units Consumed	Fans	Lights	Other appliances
House A	50	80	120
House B	80	80	110
House C	40	40	90

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S21. Ans.(a)

Sol. Required % = $\frac{80-40}{40} \times 100 = 100\%$

S22. Ans.(c)

Sol. Total number of units consumed by Other appliances in House 'B', 'C' and 'D' together

= $110 \times 3 = 330$ units

Units consumed by Other appliances in House 'D'

= $330 - 110 - 90 = 130$ units

S23. Ans.(e)

Sol. Total units consumed in House 'A' and 'C' together

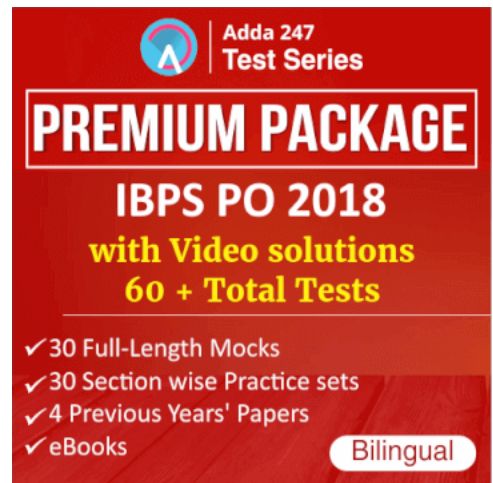= $50 + 80 + 120 + 40 + 40 + 90 = 420$ units

S24. Ans.(b)

Sol. Required difference = $110 - 90 = 20$ units

S25. Ans.(d)

Sol. Total units consumed by Fans and Lights in House 'C' = $40 + 40 = 80$ units

Total units consumed By Lights and Other appliances in House 'A' = $80 + 120 = 200$ units

Required % = $\frac{200-80}{200} \times 100 = \frac{120}{200} \times 100 = 60\%a$

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