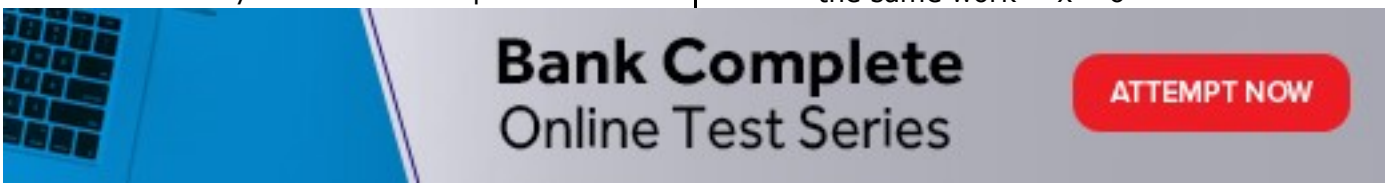
Solutions

1. Ans. C.
In bag A,
Number of red, green and white balls is 2, 3 and 5 respectively.
Total number of balls in bag A = 10
So, probability of drawing two green balls from bag A = $\frac{{}^{3}_{2}C}{{}^{10}_{2}C} = \frac{1}{15}$
In bag B,
Number of green balls is x
Total number of balls in bag B = x + 7
So, probability of drawing three green balls from bag B = $\frac{{}^{x}_{3}C}{{}^{x+7}_{3}C} = \frac{(x(x-1)(x-2))}{(x+7)(x+6)(x+5)}$
So, probability of drawing three green balls from bag B = $\frac{1}{15} - \frac{7}{330} = \frac{1}{22}$
So, $\frac{(x(x-1)(x-2))}{(x+7)(x+6)(x+5)} = \frac{1}{22}$
Now, we can substitute the value of 'x' from the options
Putting x = 5,
$$\frac{(5(5-1)(5-2))}{(5+7)(5+6)(5+5)} = \frac{1}{22}$$
So, x = 5 satisfies the equation
So option (c) is the correct answer.

2. Ans. B.
Let, the length of train B = x
So, the length of train A = x – 170
Given, speed of train A = 72 km/hr = 20 m/s
Speed of train B = 54 km/hr = 15 m/s
Train A and Train B crosses each other completely in 18 sec while travelling in opposite directions
So, $(20 + 15) = \frac{x+x-170}{18}$
So, $35 = \frac{2x-170}{18}$
So, 35 × 18 = 2x – 170
630+170=2x
800=2x; x = 400
So, the length of train B = x = 400 m
Ans, the length of train A = x – 170 = 400 – 170 = 230 m
A. Length of train A = 230 m
B. Time taken by train B to cross a pole
$= 15 = \frac{400}{t}; t = \frac{400}{15} = \frac{80}{3} sec$
C. Time taken by train A to cross platform of length 233 m = $20 = \frac{230+233}{t}; t = \frac{463}{20} sec$
D. Initial distance between both the trains = cannot be determined
So option (b) is the correct answer.

3. Ans. A.
Let the distance between X and Y be d
Time taken to travel the distance = t
Given, speed = S
So, S = d/t
If he travels the same distance with a speed (S+12) kmph, he reaches his destination 1 hours before.
So,
$$\frac{d}{S} - \frac{d}{S+12} = 1$$
But if he travels with a speed of (S – 4) kmph, he reaches 30 min late
So,
$$\frac{d}{S-4} - \frac{d}{S} = \frac{1}{2}$$
So, on dividing both the equation,
$$\frac{\left\{\frac{d}{S} - \frac{d}{S+12} = 1\right\}}{\left\{\frac{d}{S-4} - \frac{d}{S} = \frac{1}{2}\right\}}$$
So,
$$\frac{1}{S} - \frac{1}{S+12} = 2 \times \left(\frac{1}{S-4} - \frac{1}{S}\right)$$
$$\frac{S+12-S}{S(S+12)} = 2 \times \frac{S-S+4}{S(S-4)}$$
So, we can calculate the value of S, d, t
A. Speed of Ram, who can travel the same distance in 3 hours: if distance can be calculated and as the time is given then the speed can be calculated.
B. Speed of Vikram, when he reaches 30 minutes late: as we can find the value of t and d, speed can easily be calculated.
C. Distance between X and Z, if Z lies in between X and Y: cannot be calculated as the ratio or any other information is not given.
D. Value of S: it can be calculated
So option (a) is the correct answer.

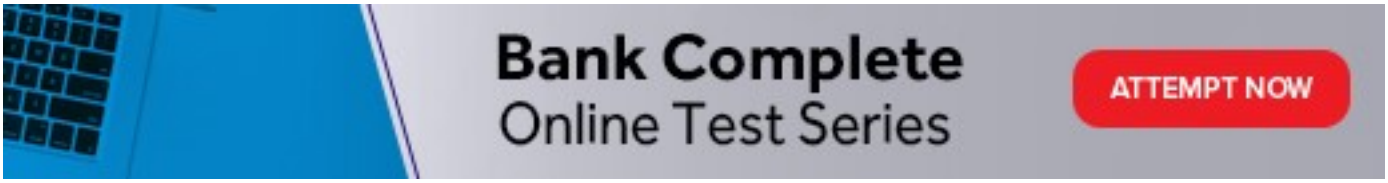
4. Ans. D.
Let the time taken by women to complete the work = x hours
So, the time taken by the men to complete the same work = x – 6



Total work done by both is same
So,
$3 \times M \times (X-6) = 2 \times W \times X$
A. 6: 5
$3 \times M \times (X-6) = 2 \times W \times X$
$18 \times (X-6) = 10 \times X$
$8X = 108; X = \frac{108}{8} = \frac{27}{2}$
= a positive number
B. 2: 3
$3 \times M \times (X-6) = 2 \times W \times X$
$6 \times (X-6) = 6 \times X$
Not a positive number
C. 5: 2
$3 \times M \times (X-6) = 2 \times W \times X$
$15 \times (X-6) = 4 \times X$
$11X = 90; X = \frac{90}{11}$
= a positive number
D. 8: 5
$3 \times M \times (X-6) = 2 \times W \times X$
$24 \times (X-6) = 10 \times X$
$14X = 144; X = \frac{72}{7}$
= a positive number
So option (d) is the correct answer.

5. Ans. D.
Let CP = 100
So, MP = 160
In 1st case discount = X%
In 2nd case discount = 2X%
A. 30, 20
$Profit\% = \frac{SP-CP}{CP} \times 100.$
$30 = SP - 100; SP = 130$
X = $\frac{160-130}{160} \times 100 = \frac{30}{160} \times 100$
$Profit\% = \frac{SP-CP}{CP} \times 100.$
$20 = SP - 100; SP = 120$
2X = $\frac{160-120}{160} \times 100 = \frac{40}{160} \times 100$
Thus, is incorrect
B. 20, 40
$Profit\% = \frac{SP-CP}{CP} \times 100.$
$20 = SP - 100; SP = 120$
X = $\frac{160-120}{160} \times 100 = \frac{40}{160} \times 100$
$Profit\% = \frac{SP-CP}{CP} \times 100.$
$40 = SP - 100; SP = 140$
2X = $\frac{160-140}{160} \times 100 = \frac{20}{160} \times 100$
Thus, is incorrect
C. 60, 30
$Profit\% = \frac{SP-CP}{CP} \times 100.$
$60 = SP - 100; SP = 160$
X = $\frac{160-160}{160} \times 100 = \frac{0}{160} \times 100$
$Profit\% = \frac{SP-CP}{CP} \times 100.$
$30 = SP - 100; SP = 130$
2X = $\frac{160-130}{160} \times 100 = \frac{30}{160} \times 100$
Thus, is incorrect
D. 40, 20
$Profit\% = \frac{SP-CP}{CP} \times 100.$
$40 = SP - 100; SP = 140$
X = $\frac{160-140}{160} \times 100 = \frac{20}{160} \times 100$
$Profit\% = \frac{SP-CP}{CP} \times 100.$
$20 = SP - 100; SP = 120$
2X = $\frac{160-120}{160} \times 100 = \frac{40}{160} \times 100$
Thus, is correct
So option (d) is the correct answer.

6. Ans. C.
Quantity 1 –
$4.5m^9n^7 \div m^6n^3 * m^5n^2, where\ m < 0\ and\ n < 0$
$4.5m^3n^4 * m^5n^2 = 4.5m^8n^6$
= positive value
Quantity 2 –



$5 * X^6Y^5 \div X^2Y^1 \div 5.6X^1Y^2, where\ X > 0\ ad\ Y < 0$

$5 * X^4Y^4 \div 5.6X^1Y^2 = \frac{5}{5.6}X^3Y^2$

= positive value

Quantity 3 –

$6.3 * P^9Q^7 \div P^5Q^2, where\ P < 0\ and\ Q < 0$

6.3 * P^4Q^5 = negative value

Q1 Q2 > Q3

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So option (c) is the correct answer.

7. Ans. B.

A investment is half of the initial investment of B.

B's initial investment was 2400

So, A's investment = 1200

Total investment of A = 1200 x 12

B withdraws his money after 4 months.

Total investment of B = 2400 x 4

C joins the business after B left but not in the same month. C joins with amount X

So, Time period for C can be 7 months, 6 months, 5 months, 4 months, 3 months, 2 months, 1 months

Ratio of investment can be

1200 x 12: 2400 x 4: X x 7

1200 x 12: 2400 x 4: X x 6

1200 x 12: 2400 x 4: X x 5

1200 x 12: 2400 x 4: X x 4

1200 x 12: 2400 x 4: X x 3

1200 x 12: 2400 x 4: X x 2

1200 x 12: 2400 x 4: X x 1

If profit of A and C is same and then which is the positive value of X

1200 x 12 = X x 7; X = 2057

1200 x 12 = X x 6; X = 2400

1200 x 12 = X x 5; X = 2880

1200 x 12 = X x 4; X = 3600

1200 x 12 = X x 3; X = 4800

1200 x 12 = X x 2; X = 7200

1200 x 12 = X x 1; X = 14400

So option (b) is the correct answer.

8. Ans. B.

Milk = 200

Water = 40

Ratio = 5: 1

Let 'x' litres be removed

So milk removed = 5/6x

Water removed = 1/6 x

Milk remaining = 200 – 5/6 x

Water remaining = 40 – 1/6 x

Let 'y' litres of water is added

So, total water = 40 – 1/6x + y

Given,

$200 - \frac{5}{6}x = 124 + 40 - \frac{1}{6}x + y$

$36 - \frac{2}{3}x = y$

A. 30, 20

$36 - \frac{2}{3}x = y$

x = 30

$36 - 20 = 16$

B. 18, 24

$36 - \frac{2}{3}x = y$

x = 18

$36 - 12 = 24$

C. 24, 20

$36 - \frac{2}{3}x = y$

x = 24

$36 - 16 = 20$

D. 36, 16

$36 - \frac{2}{3}x = y$

x = 36

$36 - 24 = 12$

So option (b) is the correct answer.

9. Ans. B.

The pattern is

1

1 × 1 + 2 = 3

3 × 2 + 3 = 9

9 × 3 + 4 = 31

31 × 4 + 5 = 129

Similarly,

5

5 × 1 + 2 = 7

7 × 2 + 3 = 17

17 × 3 + 4 = 55

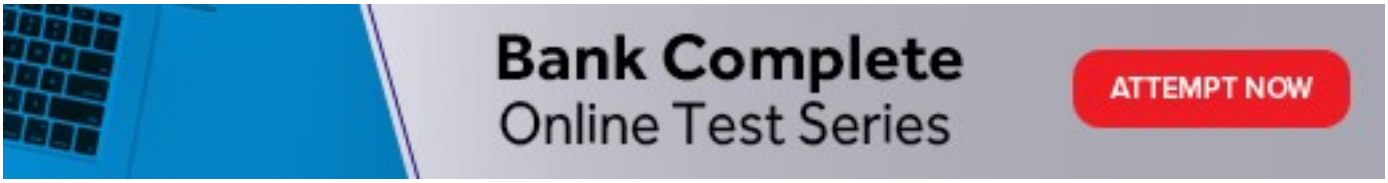
55 × 4 + 5 = 255

So, the missing number is 225

So option (b) is the correct answer.

10. Ans. B.

The pattern is



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

$$2 \times 1 = 2$$

$$2 \times \frac{3}{2} = 3$$

$$3 \times 2 = 6$$

$$6 \times \frac{5}{2} = 15$$

$$15 \times 3 = 45$$

$$45 \times \frac{7}{2} = \frac{315}{2}$$

$$\frac{315}{2} \times 4 = 630$$

$$630 \times \frac{9}{2} = 2835$$

So, the 10th term is 2835
So option (b) is the correct answer.

11. Ans. C.
Total employees in deptt. B in the year 2016, 2017 and 2018 is 2x, 3x and 5x.
According to the question,
[2x * 50/100 + 3x * 70/100 + 5x * 40/100]/3 = 1700
(x + 21x/10 + 2x) = 5100
(10x + 21x + 20x) = 51000
51x = 51000
X=1000
Total employees in deptt. B in the year 2017 = 3*1000 = 3000

12. Ans. D.
Let us take total executives in the year 2016 be x
According to the question,
(x+x+600+x+200) = 9800
⇒ x=3000
Total executives of deptt. C in the year 2017 = x+600 = 3000 + 600 = 3600
Total employees in deptt. C in the year 2017 = 3600/40 * 100 = 9000

13. Ans. B.
ATQ,
0.6C=0.4A
C=A/1.5
& 0.4B = 2 × 0.5A
⇒ B=2.5A
So,
$$\frac{B-C}{C} \times 100 = \frac{2.5A - A/1.5}{A/1.5} \times 100 = 275\%$$

14. Ans. C.
ATQ,
Number of times the reservoir needs to be filled=
$$\frac{30(\text{no of flats}) \times 25(\text{consumption per hour per flat}) \times 24(\text{hours}) \times 30(\text{days})}{60000(\text{Reservoir capacity})} = 9$$

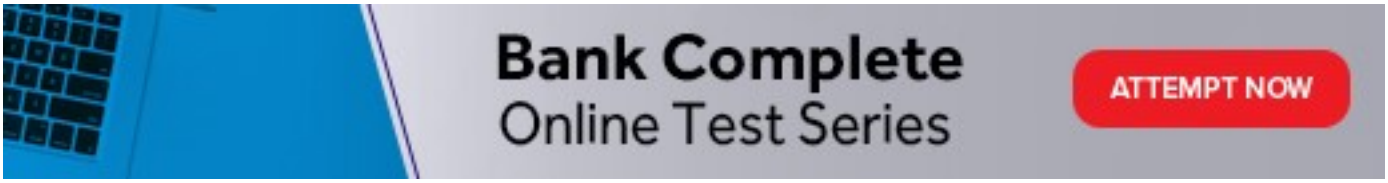
15. Ans. B.
ATQ, 45(flats) × 100(hrs) ××x(consumption per flat per hour) = 60000 (Reservoir capacity)
$$\Rightarrow x = 40/3(\text{ltr/hr})$$
So,
$$\frac{25 - \frac{40}{3}}{\frac{40}{3}} \times 100 = 87\frac{1}{2}\%$$

16. Ans. A.
ATQ,
$$\frac{40}{3}(\text{consumption per hour per flat}) \times 125(\text{hours}) \times x(\text{flats}) = 60000$$
$$\Rightarrow x = 36$$

17. Ans. A.
Increased reservoir capacity=1.2 × 60000 = 72000
Filled reservoir= 72000 × 0.8 = 57600
So, ATQ
7 (times) × 57600 (capacity) = 24 (hours per day) × 28(days) × 24(consumption per hour per flat) × x(no. of flats)
$$\Rightarrow x = 25$$
$$\Rightarrow \%\text{ flats occupied} = \frac{25}{60} \times 100 = 41\frac{2}{3}\%$$

18. Ans. B.
Q I: $\frac{A \times 2 \times R}{100} + 20 = \frac{A \times 2 \times (R+5)}{100}$
$$\Rightarrow A = 200$$
Q II: $B(1+\frac{10}{100})^2 - B + 68 = 250(1+\frac{20}{100})^2 - 250$
$$\Rightarrow B = 200$$
Q I: $\frac{C \times 2 \times 10}{100} + 2.5 = C(1+\frac{10}{100})^2 - C$
$$\Rightarrow C = 250$$
Clearly, QI=QII<QIII ⇒ C), B)

19. Ans. D.
Clearly, Amit can do the work in $= \frac{24 \times 60}{36}$



=40 days

& Bhuvan can do the work in = $\frac{20\times60}{40}$=60 days

Now, Work completed by Amit = 1/4

& Work completed by Bhuvan

= $\frac{1}{3} \Rightarrow Work\ done\ by$ Chetan = 5/12

$\Rightarrow Chetan\ completes\ work\ in\ \boldsymbol{X\ days} = \frac{5}{12} \times 60 = 25\ days$

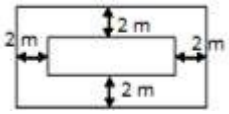
Q I: $\frac{20\times25}{45}$**=100/9 days**

Q II: $\frac{30\times30}{60}$**=15 days**

Q III: 25 days

Clearly, QI<QII<QIII ⇒ B), B)

20. Ans. E.



If external breadth of park is 'p' mts,

Then, External length of park = (p+4) mts

So, sides of internal rectangle are p and p-4 mts.

Now ATQ,

p(p+4)=4/3(p(p+4)-p(p-4))

$\Rightarrow p = \frac{20}{3} mts$

Length of park = $\frac{20}{3} + 4 = \frac{32}{3}$

Breadth of park

= $\frac{20}{3} \Rightarrow Area\ of\ Park\ can\ be\ calculated.$

Side of square

= $\frac{20}{3} \Rightarrow$

$Area\ of\ Path, inscribed\ circle\ \&\ Square\ formed\ by\ decreasing\ length\ of\ rect$

can be calculated.

Clearly, all given options can be calculated.

21. Ans. D.

Statement I:

The difference between monthly savings of A in November and April is 20% of A's monthly income in April

Monthly income of A in April be Rs. a &

Monthly income of A in November be Rs. b

Monthly savings of A in April = a × 70/100 = 7a/10

Monthly savings of A in November = b×40/100 = 4b/10 (7a/10 – 4b/10) = 20/100×a

Statement II:

Monthly savings of B in November is 40% of monthly savings of A in April

Monthly income of A in April be Rs. a

Monthly income of B in November be Rs. c

Monthly savings of A in April = a×70/100 = 7a/10

Monthly savings of B in November = 40/100 × 7a/100

So, From the statement I and II, we cannot find the answer of the given question.

22. Ans. E.

Monthly income of C in April be Rs. x

Monthly income of C in November be Rs. y

Monthly expenditure of C in April = x*60/100

Monthly savings of C in April = x*40/100

Monthly expenditure of C in November = y*75/100

Monthly expenditure of C in November = y*25/100

Statement I: The difference between the monthly savings of C in April and November is 12000.

X*40/100 – y*25/100 = 12000

40x – 25y = 1200000 --- (1)

Statement II: The difference between the monthly expenditure of C in April and November is 10000.

X*60/100 – y * 75/100 = 10000

60x – 75y = 1000000 ---- (2)

From the statement I and II, we can find the monthly income of C in April and November.

23. Ans. E.

Statement I: D's income in November is 30% more than the C's income in April.

D's income in November = 130/100 * C's income in April

Statement II: C's monthly savings in April is Rs.4800 which is 40% of his monthly income.

C's monthly savings in April = 4800

C's monthly income in April = 4800/40 * 100 = 12000

From Statement I and II, we can find the savings of D in November

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