Statement Test-3

1. Asim deposited Rs. 40000 in a fixed deposit which gives a compound interest of 10% p.a. compounded annually, but Asim has to pay 10% of the interest to the government as taxes each year. Find out the total gain in capital after 3 years.
A.Rs. 11801.16 B.Rs. 10801.16 C.Rs. 11101.16 D.Rs. 9801.16 E.Rs. 10001.16

2. A shopkeeper marks all his good such that he can get a profit of 20% even after giving a discount of 20%. If on a certain day, the shopkeeper had to sell his goods to a customer at a 40% discount instead of the usual discount, then find his profit/loss percentage.
A.10% loss B.15% profit C.5% profit D.5% loss E.None of these.

3. Two boats A and B are sailing in a river and the speed of boats A and B in still water are 16 m/s and 11 m/s respectively. The upstream distance covered by boat A in '5t' seconds is equal to the downstream distance covered by boat B in '4t' seconds. Find which of the following can't be determined? P: The downstream distance covered by boat A in (t + 10) seconds. **Q:** The upstream distance covered by boat B in '6t' seconds. **R:** The ratio of the downstream distance covered by boat A in 7 seconds to the upstream distance covered by boat B in 10 seconds.
1.Only P and Q 2.None can be determined 3.Only Q 4.Only P and R 5.Only Q and R

4. Ratio of the speed of boat 'M' in still water to speed of the stream is 5:2 and it can travel 350 km in downstream in 10 hours. If the speed of the stream is decreased by 60%, then boat 'M' can travel ____ km upstream and ____ km downstream in 18 hours. The values given in which of the following options will fill the blanks in the same order in which it is given to make the statement true: I. 168, 290 II. 189, 261 III. 231, 232
A.Only I B.Only I and II C.Only I and III D.Only II and III E.All I, II and III

5. Present age of Ram is 10 years less than (2/5)th of his father's present age and 4 years more than twice of his brother's present age. If his mother is 16 years younger to his father and average of present ages of his father and mother is (x + 30) years, then find the value of 'x' given that present age of his brother is 11 years. Which of the following is true about x? I. Half of 'x' is equal to 26. II. Total number of factors of 'x' is 6. III. 'x' is an odd number.
A.Only I B.Only I and II C.Only I and III D.Only II and III E.Only II

6. 350 litres of a mixture contains alcohol and water in the ratio 5:2 respectively. If 20% of the mixture was taken out and replaced with the same quantity of juice and the same process was repeated one more time, then find the difference between the quantities of juice and water in the final mixture. A.70 liters B.62 liters C.60 liters D.75 liters E.Can't be determined

7. The average age of each employee of company A is 32 years and that of each employee of company B is 28 years. The number of employees in company A is 10 less than those in company B. When 5 employees of company A, whose average age is 30 years, joined company B, the average age of each employee of company B becomes 28.2 years. Find the new average age of each employee of company A after 5 employees left company A?
1.36.11 years 2.39.33 years 3.30.01 years 4.34.23 years 5.32.33 years

8. Sambhu participates in a game in which he has to choose a card containing numbers from 1 to 40. In the game, if he picks a prime number or a perfect square, he'll get double of his investment. Otherwise, he'll get nothing. Find the probability of Sambhu doubling his investment. A.11/20 B.7/20 C.9/40 D.9/20 E.19/40

9. Anil, Bikas and Chandra started a business with initial capitals of Rs. 24000, Rs. 36000 and Rs. 18000 respectively. After (x + 2) months, Bikas left the business and after (x + 2) more months, Chandra also left. If the profit at the end of the year was Rs. 80000 and Anil got Rs. 8000 more than Chandra, then find the value of (x + 5).
A.9 B.8 C.4 D.7 E.5

10. Rohit travelled from point 'A' to 'B' at a speed 6 kmph greater than his usual speed and returned to the same point at a speed 6 kmph less than his usual speed. If the total journey took 8 hours to complete, then find the time taken by him for the return journey if he would have travelled at a speed 8 kmph less than his usual speed while returning. Distance between points 'A' and 'B' is 36 km.
A.6 hours B.8 hours C.9 hours D.5 hours E.4 hours

11. Upstream speed of boat 'A' is 2/5th of its downstream speed. It starts towards downstream direction and after travelling 200 km returns back to the initial point such that the speed of the stream became 2/3rd of its actual speed of the stream in the return journey. If the journey was completed in a total of 10 hours, then find the original downstream speed of the boat. A.36 km/hr B.60 km/hr C.72 km/hr D.48 km/hr E.Can't be determined

12. A hemispherical piece of wood of radius 21 cm is attached to one end of a wooden cylinder of diameter 42 cm. If height of the cylinder is 8/7th of the diameter of the cylinder, then find the total volume of the combined structure.
A.27324π cm^3 B.27224π cm^3 C.27364π cm^3 D.27342π cm^3 E.27468π cm^3

13. A man fixed 40%, 35% and 25% of his savings for his 15 years old son, 14 years old elder daughter and 12 years old younger daughter respectively such that they will get same interest when they individually turn 18 years old. Find the ratio of the rate of interest of those 3 schemes. (Note: All the investments are made at simple interest).
A.35:30:28 B.30:28:25 C.32:32:27 D.30:35:28 E.35:25:27

14. Average of present ages of a family consisting both the parents along with their 2 sons is (2x + 10) years. If age of the younger son is 12 years and the average age of the family just before the younger son was born was 34 years, then find the value of (4x + 5).
A.58 B.60 C.68 D.72 E.50

15. Price of an article depreciates by 25% every 6 month. An article was purchased 6 months ago. At present it is marked 200% over its current price and sold at a discount of 50%. If the profit earned at current price is Rs. 750 then find the price of the article 6 months ago from now.
A.Rs. 2000 B.Rs. 2500 C.Rs. 1600 D.Rs. 1200 E.Rs. 2400

16. A solid cube and a solid cuboid are melted down to form a solid sphere, whose surface area is 1386 cm^2. The side of the cube is smallest prime number of two digits and is also equal to the height of the cuboid. If the ratio of the length of the cuboid to its breadth is 5: 4, then find the surface area of the cuboid?
1.1342 cm^2 2.1432 cm^2 3.1324 cm^2 4.1423 cm^2 5.None of these

17. When P and Q work together with their original efficiencies, they can complete a job in '10d' hours. However, if P works with 150% of his original efficiency and Q works with 75% of his original efficiency, they can complete the same job together in '8d' hours. If P alone can complete the job in 20 hours, and R alone can complete the job in 10 hours less than Q, then in what time will P and R together complete the job?
1. 15 hours 2. 9.6 hours 3. 10 hours 4. 13.2 hours 5. 12 hours

18. Ratio of the present ages of 'A' and 'B' is 5:4 respectively. 15 years from now, the ratio of ages of 'A' to 'C' will be 3:2. Square roots of present ages of 'B' and 'C' are in the ratio 6:5 respectively. Find the present age of 'C'.
A.15 years B.20 years C.35 years D.30 years E.25 years

19. Three numbers are in GP such that if 6 and 8 are added to the first and second numbers respectively and 6 is subtracted from the last number, the resultant numbers form an AP. If first term of the GP is 4, then which of the following can be the common ratio of the GP.
A.-1 B.2 C.3 D.Both (a) and (c) E.Both (b) and (c)

20. Mixture 'P' contains juice and water in the ratio 3:4, respectively while mixture 'Q' contains juice and water in the ratio 2:1, respectively. If 'm' liters of mixture 'P' is mixed with 66 liters of mixture 'Q', then the ratio of juice and water in this new mixture will be 8:7, respectively. Find the value of 'm'. A.70 B.84 C.77 D.98 . E.42

21. 'A' is 25% more efficient than 'B' and both of them while working together can complete a work in 20 days. 'A' and 'B' together start the work and if 'C', who is 50% as efficient as 'B' joins 'A' and 'B' on the start of the 4th day and 'A' leaves on the start of the 6th day and 'B' and 'C' together completes the remaining work, then find the total time (approximate value) taken to complete the whole work.
A.32.83 days B.16.83 days C.26.83 days D.22.83 days E.19.83 days

22. There are 20 students in a class having an average weight of 18 kg. Average weight of boys is 5 kg less than that of girls. If the weight of the teacher (male) is also included, then the average of all boys is the same as that of girls. If the average of girls and boys is a natural number and the weight of the teacher is minimum possible (a natural number), then find the number of boys in class. 1.15 2.8 3.16 4.14 5.None of these

23. 37.5% of a number 'A' is equal to the 60% of another number 'B' and 63(7/11)% of another number 'C'. If sum of the three numbers is 1860, then find the ratio of 'C' to 'D' which is (33/70) times of 'A'. A.10:9 B.15:14 C.25:24 D.5:4 E.None of these.

24. Downstream speed of a boat is ____% of its speed in still water and total time taken by it to travel 180 km in upstream and 140 km in downstream is 8 hours. Speed of the stream is _____ km/h. The values given in which of the following options will fill the blanks in the same order in which it is given to make the statement true: I. 140, 20 II. 120, 15 III. 180, 25
A.All I, II and III B.Only I and II C.Only I and III D.Only II and III E.Only I

1.Solution

Annual compound interest gained = 10%

Taxes on interest = 10%

Net interest gained = 10 – 10 × 0.10 = 9%

So, interest gained = $40000 \times (1 + 9/100)^3 – 40000 = 51801.16 – 40000$ = Rs. 11801.16

Total capital gain = Rs. 11801.16

Hence, option a.

2.Solution

Let cost price (CP) of the goods be Rs. 100x

Selling price (SP) = 1.20 × 100x = Rs. 120x

So marked price (MP) = 120x × 100/80 = Rs. 150x

Now, Desired selling price on a certain day = 150x × 0.6 = Rs. 90x

Desired loss =100x – 90x = Rs. 10x

Percentage loss = (10x/100x) × 100 = 10%

Hence, option a.

3. Answer: A

Let the speed of the stream be 'x' m/s.

So, the upstream speed of boat A = (16 – x) m/s

And the downstream speed of boat B = (11 + x) m/s

From the question:

(16 – x) * 5t = (11 + x) * 4t

80 – 5x = 44 + 4x

x = 4

So, the speed of stream = 4 m/s

From P:

Since, the value of 't' can't be determined.

So, the downstream distance covered by boat A in (t + 10) seconds can't be determined.

From Q:

Since, the value of 't' can't be determined.

So, the upstream distance covered by boat B in '6t' seconds can't be determined.

From R:

The downstream speed of boat A = (16 + 4) = 20 m/s

The upstream speed of boat B = (11 – 4) = 7 m/s

So, the ratio of downstream distance covered by boat A in 7 seconds to the upstream distance covered by boat B in 10 seconds:

(20 * 7): (7 * 10) = 2: 1

Hence, only P and Q can't be determined.

4.Solution

Let speed of boat 'M' in still water = '5x' km/h

Speed of the stream = '2x' km/h

According to the statement,

350/(5x + 2x) = 10

Or, 7x = 35

Or, x = 5

Speed of stream = 2 × 5 = 10 km/h

If speed of stream is reduced by 60%, then the speed of stream = 10 × 0.40 = 4 km/h

Downstream speed of the boat = (25 + 4) = 29 km/h

Upstream speed of the boat = (25 – 4) = 21 km/h

For I: Time taken by the boat to travel 168 km in upstream and 290 in km downstream = (168/21) + (290/29) = 18 hours.

So, 'I' can be true.

For II: Time taken by the boat to travel 189 km in upstream and 261 km in downstream = (189/21) + (261/29) = 18 hours.

So, 'II' can be true.

From III: Time taken by the boat to travel 231 km in upstream and 232 km in downstream = (231/21) + (232/29) = 19 hours.

So, 'III' cannot be true.

Hence, option b.

5.Solution

Present age of Ram's brother = 11 years.

Present age of Ram = 2 × 11 + 4 = 26 years

Let present age of Ram's father = 'm' years.

So, 2/5 × m – 10 = 26

Or, 2m/5 = 36

Or, m = 90

So, present age of Ram's mother = 90 – 16 = 74 years

Now, 90 + 74 = 2 × (x + 30)

Or, x + 30 = 82

Or, x = 52

For I:

Half of 'x' = 52/2 = 26

So, 'I' can be true.

For II:

$52 = 13 \times 2^2$

Total number of factors of 52 = (1 + 1) (2 + 1) = 6

So, 'II' can be true.

For III:

x =00 52, is not an odd number.

So, 'III' cannot be true.

Hence, option b.

6.Solution

Initial volume of water = 350 × (2/7) = 100 litres

Initial volume of alcohol = 350 – 100 = 250 litres

After the first replacement,

Quantity of juice = 350 × 0.2 = 70 litres

Quantity of water = 0.8 × 100 = 80 litres

Quantity of alcohol = 0.8 × 250 = 200 litres

After second replacement,

Quantity of water = 0.8 × 80 = 64 litres

Quantity of juice = 70 + 0.8 × 70 = 70 + 56 = 126 litres

Required difference = 126 – 64 = 62 litres

Hence, option b.

7. Answer: E

Let the number of employees in company A be 'x'.

So, the number of employees in company B = (x + 10)

When, 5 employees of company A, whose average age is 30 years, joined company B, the average age of each employee of company B becomes 28.2 years.

So,

((x+10)×28+150)/((x+10)+5)=28.2

28x + 280 + 150 = 28.2x + 423

x = 35

The new number of employees in company A = 35 – 5 = 30

So, the new average age of each employees of company A:

((35 × 32)-(5 ×30))/30=32.33 years

8.Solution

Sambhu will win if,

Case I: He chooses prime number.

Number of elements in the sample space = 12 [2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37]

Case II: He chooses perfect squares.

Perfect squares = 6 [1, 4, 9, 16, 25, 36]

Total cases of Ram winning = 6 + 12 = 18

Required probability = 18/40 = 9/20

Hence, option d.

9.Solution

Ratio of profit share of Anil, Bikas and Chandra
= (24000 × 12):{36000 × (x + 2)}:{(18000 × (x + 2 + x + 2))}
= 288:36(x + 2):18(2x + 4)
= 8:(x + 2):(x + 2)
According to the question,
{8 – (x + 2)/(2x + 12)} = 8000/80000
Or, {(6 – x)/(2x + 12)} = 1/10
Or, 60 – 10x = 2x + 12
Or, 12x = 48
Or, x = 4
Or, x + 5 = 9
Hence, option a.

10.Solution

Let, Rohit's usual speed = x kmph
Time taken for onward journey = {36/(x + 6)} hours
Time taken for return journey = {36/(x – 6)} hours
According to the question,
{36/(x + 6)} + {36/(x – 6)} = 8
Or, 9{(x – 6 + x + 6)/(x^2 - 36)} = 2
Or, 9x/(x^2 – 36) = 1
Or, x^2 – 9x – 36 = 0
Or, x^2 – 12x + 3x – 36 = 0
Or, x(x – 12) + 3(x – 12) = 0
Or, (x – 12)(x + 3) = 0
Or, x = 12 [As, x = -3 is impossible]
Required time = {36/(12 – 8)} = 9 hours
Hence, option c.

11.Solution

Let, downstream speed of the boat = 5x kmph
Upstream speed = 2x kmph
Speed of the boat in still water = {(5x + 2x)/2} = 3.5x kmph
Speed of the stream = {(5x – 2x)/2} = 1.5x kmph
Speed of the stream in the return journey = 1.5x × (2/3) = x kmph
Now,
200/5x + {200/(3.5x – x)} = 10
Or, (4/x) + (8/x) = 1
Or, x = 12
Required speed = 5x = 60 km/hr
Hence, option b.

12.Solution

Total volume of the structure = volume of the cylindrical part + volume of the hemispherical part
Now, Volume of the cylinder = π × $(42/2)^2$ × 8/7 × 42 = 21168π cm^3
Volume of the hemisphere = (2/3) × π × 21^3 = 6174π cm^3
Total volume = 21168π + 6174π = 27342π cm^3
Hence, option d.

13.Solution

Let, the rate of interest for son's scheme is a%, elder daughter's scheme is b% and younger daughter's scheme is c%.
And, His total savings = Rs. 100x
Clearly, His son, elder daughter and younger daughter will get interest for 3 years, 4 years and 6 years respectively.
Ratio of their interest
= (100x × 0.4 × 3 × a):(100x × 0.35x × 4 × b):(100x × 0.25 × 6 × c)
=12a:14b:15c
So, a:b:c = (1/12):(1/14):(1/15) = 35:30:28
Hence, option a.

14.Solution

Total age of the family = (2x + 10) × 4 = (8x + 40) years
Total number of members in the family just before the younger son was born = 3
Total age of the family just before the second son was born = (8x + 40 – 48) = (8x – 8) years
According to the question,
8x – 8 = 3 × 34
Or, 8x = 102 + 8 = 110
Or, 8x = 110
Or, 4x = 110/2 = 55
Or, 4x + 5 = 55 + 5 = 60
Hence, option b.

15.Solution

Let the present price of the article be Rs. 'x'
Therefore, present selling price of the article = 3 × 0.5x = Rs. 1.5x
According to the question,
1.5x – x = 750
Or, x = 750/0.5 = 1500
Therefore, price of the article 6 months ago from now = 1500/0.75 = Rs. 2000
Hence, option a.

16. Answer: B

Let the radius of the sphere be 'r' cm.
Since, the surface area of the sphere = 1386 cm^2
So,
4 × 22/7 × r^2=1386
r^2 = 110.25
r = 10.5 cm
So, the volume of the sphere = 4/3 × 22/7 × 10.5^3 = 4851 cm^3
Since, the side of the cube is smallest prime number of two digits, which is 11.
So, the volume of the cube = 11^3 = 1331 cm^3
And the height of the cuboid = 11 cm
Let the length and the breadth of the cuboid be '5x' cm and '4x' cm respectively.
So, the volume of the cuboid:
5x * 4x * 11 = 4851 – 1331
x^2 = 16
x = 4
The length of the cuboid = 5 * 4 = 20 cm
The breadth of the cuboid = 4 * 4 = 16 cm
The height of the cuboid = 11 cm
So, the surface area of the cuboid:
2(20 * 16 + 16 * 11 + 20 * 11) = 2(320 + 176 + 220) = 1432 cm^2

17. e

18.Solution

Let, present age of 'A', 'B' and 'C' be 5x years, 4x years and m years respectively.
So, √4x:√m = 6:5
Or, 4x/m = 36/25
Or, 100x = 36m ----(i)
Again,
(5x + 15):(m + 15) = 3:2
Or, 10x + 30 = 3m + 45
Or, 10x – 3m = 15
Or, 100x – 30m = 150
Or, 36m – 30m = 150 [from (i)]
Or, 6m = 150
Or, m = 25
Present age of 'C' = 25 years.
Hence, option e.

19.Solution

Let, the numbers that are in GP is 4, 4r and $4r^2$. [Common ratio = r]

According to the question,

(4 + 6), (4r + 8) and ($4r^2$ - 6) are in AP

So, 2(4r + 8) = ($4r^2$ - 6) + 10

Or, 8r + 16 = $4r^2$ + 4

Or, $4r^2$ – 8r – 12 = 0

Or, r^2 – 2r – 3 = 0

Or, (r – 3) (r + 1) = 0

Or, r = 3, -1

Hence, option d.

20.Solution

Let quantity of juice and water in 'm' ml of mixture 'P' be '3x' ml and '4x' ml, respectively

Quantity of juice in 66 ml of mixture 'Q' = (2/3) × 66 = 44 ml

Quantity of milk in 66 ml of mixture 'Q' = 66 – 44 = 22 ml

ATQ;

(44 + 3x)/(22 + 4x) = 8/7

Or, 21x + 308 = 32x + 176

Or, 11x = 132

Or, x = 12

Or, m = 3x + 4x = 7x = 7 × 12 = 84

Hence, option b.

21.Solution

Let efficiency of 'B' = 4x units/day

Efficiency of 'A' = 1.25 × 4x = 5x units/day

And, efficiency of 'C' = 0.50 × 4x = 2x units/day

Total work amount of work = (5x + 4x) × 20 = 180x units

Work done by 'A' and 'B' together in the first 3 days = 3 × 9x = 27x units

Work done by 'A', 'B' and 'C' together in the next 2 days = 2 × 11x = 22x units

Remaining work = 180x – 27x – 22x = 131x units

Time taken by 'B' and 'C' together to complete 131x units of work = 131x/6x ~ 21.83 days

Total time taken = 21.83 + 5 ~ 26.83 days

Hence, option c.

22. Answer: E

Average weight of the class = 18 kg

Average of boys is 5 kg less than that of girls.

So, this is sure Average of boys < 18

Average of Boys = 17, 16, 15, 14 [can't be less than 14, because if the average of boys is 13, then average of girls is 18, which is not possible]

If Average of Boys = 17

Average of girls = 17 + 5 = 22

Now,

17 22

18

4 1

So, number of boys in class = 4/5 x 20 = 16

Number of girls in class = 20 – 16 = 4

If a male teacher is entered, then total males become 17, and their average becomes 22.

So, weight of teacher = 22 x 17 – 17 x 16 = 102 kg

If Average of Boys = 16

Average of girls = 16 + 5 = 21

Now,

16 21

18

3 2

So, number of boys in class = 3/5 x 20 = 12

Number of girls in class = 20 – 12 = 8

If a male teacher is entered, then total males become 13, and their average becomes 21

So, weight of teacher = 13 x 21 – 12 x 16 = 81 kg

When we are decreasing the average of weight boys, number of boys also decreasing and weight of teacher also decreasing.

So, minimum possible average weight of boys = 14

14_____18_____19

1 4

Required number of boys = 1/5 x 20 = 4

Hence answer is option E

23.Solution

37.5% of 'A' = 60% of 'B' = 63(7/11)% of 'C'

Or, (3A/8) = (3B/5) = (7C/11)

Or, A:B:C = 56:35:33

Let A = '56k', B = '35k' and C = '33k'

So, 56k + 35k + 33k = 1860

Or, 124k = 1860

Or, k = 15

So, C = 33 × 15 = 495

And, A = 56 × 15 = 840

And, D = (33/70) × 840 = 396

A:D = 495:396 = 5:4

Hence, option d.

24.Solution

For 'I': Let speed of the boat in still water = '10x' km/h

Downstream speed of the boat = 10x × 1.40 = '14x' km/h

Speed of the stream = 14x – 10x = '4x' km/h

Upstream speed of the boat = 10x – 4x = '6x' km/h

So, 180/6x + 140/14x = 8

Or, 30/x + 10/x = 8

Or, x = 5

Speed of the stream = 4 × 5 = 20 km/h.

So, 'I' is true.

For II: Let speed of the boat in still water = '10x' km/h

Downstream speed of the boat = 10x × 1.20 = 12x km/h

Speed of the stream = 12x – 10x = 2x km/h

Upstream speed of the boat = 10x – 2x = 8x km/h

So, 180/8x + 140/12x = 8

Or, 45/2x + 35/3x = 8

Or, x = 205/48

Speed of the stream = 2 × 205/48 = 205/24 km/h.

So, 'I' is not true.

For III: Let speed of the boat in still water = 10x km/h

Downstream speed of the boat = 10x × 1.8 = 18x km/h

Speed of the stream = 18x – 10x = 8x km/h

Upstream speed of the boat = 10x – 8x = 2x km/h

So, 180/2x + 140/18x = 8

Or, 90/x + 70/9x = 8

Or, 880/9x = 8

Or, x = 110/9

Speed of the stream = 8 × 110/9 = 880/9 km/h.

So, 'III' is not true.

Hence, option e.