Statement Test-3

1. Time taken by a boat to go 'D' m downstream is 35 seconds. If speed of boat in still water is increased by 3 m/s and speed of stream is decreased by 1 m/s, the boat will cover 700 m downstream in 35 seconds. If original speed of stream is 3 m/s, then find the time taken by boat to cover 'D' m in upstream direction?
1.48.5 seconds 2.44.5 seconds 3.52.5 seconds 4.50.5 seconds 5.46.5 seconds

2. Two inlet pipes A and B and one outlet pipe C are connected to a tank. Pipes A and B together can fill 60% tank in 4 minutes, pipe C alone can empty 75% tank in 30 minutes and ratio of efficiency of pipe B to that of pipe C is 4: 1. Find the time taken by pipes A, B and C together to fill the empty tank?
1.20 minutes 2.8 minutes 3.12 minutes 4.16 minutes 5.10 minutes

3. P takes personal loan of Rs. K from bank. Bank charged 18% compound interest p.a. for two years. He spends K/4 amount for his personal use and rest invested in a scheme at 20% compound interest p.a. for three years. Net profit earned by Arun is Rs. 6144, then find the value of K.
1.Rs. 60000 2.Rs. 24000 3.Rs. 40000 4.Rs. 48000 5.None of these

4.Srikant invested Rs. 'x + 500' in scheme 'A' offering a simple interest of 15% p.a. and Rs. '2x + 400' in scheme 'B' offering a compound interest of 20% p.a. compounded annually. If total interest received by him at the end of 2 years is Rs. 1506, then find the value of 'x'.
A.500 B.1500 C.1000 D.2000 E.None of these

5.After 12 years, the ratio of age of Rakesh and Rajeev will be 13:18 respectively while 10 years ago, the ratio of their age was 3:5. If the present average age of Rakesh and Radha is 46 years, then find present average age of Radha and Rajeev.
A.56 years B.52 years C.60 years D.48 years E.None of these

6. 150 litres of mixture 'A' contains 90 litres water and rest buttermilk. How much percent of 440 litres of mixture 'B' (buttermilk and water) having buttermilk to water ratio 8:3, should be mixed with 'A' to make the ratio of buttermilk to water in the resultant mixture 7:6?
A.25 B.50 C.45 D.40 E.15

7. 420 ml of mixture contains milk and water in the ratio of 15:13 respectively. If 'x + 9' ml of milk and 'x – 5' ml of water is added into the mixture then ratio of milk to water in the final mixture will be 6:5. Find the value of 'x'.
A.20 B.40 C.50 D.30 E.None of these

8.'A' and 'B' together can complete a piece of work in 21 days while 'B' and 'C' together can complete the same work in 25.5 days. 'B' and 'C' started the work but 'B' left the work after 21 days and 'C' completed rest of the work in 7 days. Time taken by 'A' and 'C' together to complete the whole work is:
A.17 days B.20 days C.13 days D.15 days E.None of these

9.A train can cross a pole in 27 seconds. While if the train increased its speed by 45% then time taken by it to cross 226 metres long platform is 42 seconds. Find the time taken by the train to cross a 120 metre long tunnel.
A.60 seconds B.45 seconds C.75 seconds D.90 seconds E.None of these

10.A man invested $(5/12)^{th}$ part of a certain sum in scheme 'A' offering a simple interest of 15% p.a. and rest in scheme 'B' offering compound interest of 20% p.a. compounded annually. If total interest received by him at the end of 2 years is Rs. 1374, then find the total sum invested by him.
A.Rs. 7200 B.Rs. 2400 C.Rs. 4200 D.Rs. 3600 E.None of these

11.A shopkeeper marked an article 80% above its cost price and sold it after giving a discount of 25%. Had he bought the article for Rs. 100 more and sold it for Rs. 60 more he would have earned a profit of 20%. Find cost price of the article.
A.Rs. 480 B.Rs. 400 C.Rs. 300 D.Rs. 500 E.None of these

12.The ratio of number of passed students to number of failed students in a class is 5:6, respectively. If 30 more students would have passed the exam then the ratio of number of passed students to number of failed students would be 17:16, respectively. Find total number of students in the class.
A.485 B.465 C.495 D.550 E.None of these

13.The ratio of number of passed students to number of failed students in a class is 5:6, respectively. If 30 more students would have passed the exam then the ratio of number of passed students to number of failed students would be 17:16, respectively. Find total number of students in the class.
A.485 B.465 C.495 D.550 E.None of these

14. Anjum purchased 1-litre milk for Rs. 50 per litre, 500 grams sugar for Rs. 30 per kg and 200 g coffee for Rs. 125 per kg. 3 cups of coffee can be made from this material. If he wants to earn 20% on it, then find the selling price of one cup of coffee.
A.Rs. 48 B.Rs. 40 C.Rs. 32 D.Rs. 36 E.None of these

15.A man covered one sixth of its journey at a speed of 20 km/h, two fifth of the remaining journey at a speed of 40 km/h, half of the remaining journey at a speed of 60 km/h and rest at a speed of 60 km/h. If the total distance covered by the man is 480 km then find his average speed over the whole journey.
A.40 km/h B.44 km/h C.36 km/h D.42 km/h E.None of these

16.Rahul, Rakesh and Rajat entered into a business investing their capitals in such a manner such that investment made by Rakesh is 50% more than investment made by Rahul and investment made by Rajat is 20% less than investment made by Rakesh. After one year, Rahul, Rakesh and Rajat invested Rs. 300 more, Rs. 200 more and Rs. 60 more, respectively. After 2 years, profit share of Rahul is Rs. 3750 out of total profit of Rs. 12500, then find the investment made by Rajat.
A.Rs. 960 B.Rs. 840 C.Rs. 720 D.Rs. 800 E.None of these

17.Ganesh spent 18% of his monthly income on travelling, 12% of his monthly income on rent, 20% of his monthly income on clubbing, 24% of his monthly income on lodging and rest on buying gochi. If the difference between the amounts spent on buying gochi and on rent is Rs. 1785 then find the amount spent on lodging.
A.Rs. 2550 B.Rs. 3060 C.Rs. 3315 D.Rs. 3570 E.None of these

18.A mixture contains milk and water in the ratio of 5:9 respectively. If 252 ml of mixture is taken out and 90 ml of milk and 72 ml of water in added into the remaining mixture, then quantity of water in the final mixture will be 35% more than that of milk. Find the original quantity of the mixture.
A.420 ml B.490 ml C.560 ml D.630 ml E.None of these

19.A, B and C can complete a piece of work in 30 days, 42 days and 70 days respectively. All of them started the work together but A left the work after 8 days while B left the work 14 days before the completion of the remaining work. Find total time taken to complete the whole work.
A.14 days B.28 days C.20 days D.24 days E.None of these

20.A box contains certain number of balls of three different colours. It contains 7 black balls and the ratio of number of red to green balls in the box is 4:3 respectively. If probability of drawing a green and a black ball together is 1/5, then find total number of balls in the box.
A.35 B.21 C.14 D.28 E.None of these

21.A and B entered into a business with total initial investment of Rs. 5760. After one year, they made additional investments of Rs. 720 and Rs. 360 respectively such that profit share of A out of total profit of Rs. 7350 is Rs. 4200. Find the ratio of the initial investments made by A and B respectively.
A.8:7 B.7:5 C.5:4 D.9:7 E.None of these

22.A shopkeeper bought two articles 1 and 2 for Rs. 750 and Rs. 800 respectively. Percentage discount given on article 2 is same as the percentage by which article 1 is marked above its cost price. He sold the articles such that selling price of article 2 is Rs. 214 more than that of article 1. Discount given on article 1 is 10% while article 2 is marked 60% above its cost price. Find selling price of article 2.
A.Rs. 1024 B.Rs. 810 C.Rs. 1280 D.Rs. 900 E.None of these

23.'A', 'B' and 'C', all of them are going from point 'P' to point 'Q' started at the same time. The speeds of 'A', 'B' and 'C' are 40 km/hr, 48 km/hr and 60 km/hr respectively. If 'A' reached the destination at 4:00 P.M. and 'C' reached the destination at 'C' at 12:00 noon, then at what time 'B' reached his destination.
A.2:30 P.M. B.1:20 P.M. C.2:00 P.M. D.12:40 P.M. E.1:00 P.M.

24.The cost of cultivating a square field at the rate of Rs. 8.5/m^2 is Rs. 3400. If each side of the field is increased by 25%, then the cost of cultivation of per m^2 of the field should be decreased by how much amount so that total cost of cultivation remains the same?
A.Rs. 3.06 B.Rs. 1.75 C.Rs. 2.39 D.Rs. 2.96 E.None of these

25.Ratio of ages of A and B, 8 years ago was 5:4 respectively. If present average age of B and C is 38 years and age of C after 24 years will be 20% more than age of A after 2 years. Find the ratio of present age of B to present age of C.
A.9:10 B.10:9 C.9:8 D.8:9 E.None of these

1. Answer: C
Let speed of boat in still water = 'x' m/s
And speed of stream = 'y' m/s
So, (x + y) = D/35 → (1)
If speed of boat in still water is increased by 3 m/s and speed of stream is decreased by 1 m/s.
So, (x + 3) + (y – 1) = 700/35
x + y + 2 = 20
x + y = 18
From equation (1):
18 = D/35
D = 630 m
Since the original speed of stream = 3 m/s
And downstream speed of boat = 18 m/s
So, upstream speed of boat = 18 – 3 – 3 = 12 m/s
And time taken by the boat to go 'D' m in upstream direction = 630/12 = 52.5 seconds

2. Answer: B
Time taken by pipes A and B together to fill 60% tank = 4 minutes
So, time taken by pipes A and B together to fill 100% tank = 4 * (100/60) = (20/3) minutes
And (1/A) + (1/B) = 3/20 → (1)
Time taken by pipe C alone to empty 75% tank = 30 minutes
So, time taken by pipe C alone to empty 100% tank = 30 * (100/75) = 40 minutes
Since ratio of efficiency of pipe B to that of pipe C is 4: 1.
So, time taken by pipe B alone to fill 100% tank = 40 * (1/4) = 10 minutes
From equation (1):
(1/A) + (1/10) = 3/20
1/A = 1/20
So, time taken by pipe A alone to fill 100% tank = 20 minutes
Now, part of tank is filled by pipes A, B and C together in 1 minute:
(1/20) + (1/10) – (1/40) = (2 + 4 – 1)/40 = 1/8
So, time taken by pipes A, B and C together to fill 100% tank = 8 minutes

3. Answer: C
Let the personal loan taken by P = Rs. K
Interest to be paid by P = K x [1.18 x 1.18 – 1] = 0.3924K
Interest earned by P from scheme = 3K/4 x [1.2^3 – 1] = 0.5460K
Now,
0.5460K – 0.3924K = 6144
So, value of K = 6144/0.1536 = 40000
Hence answer is option C

4.Solution
According to question;
(x + 500) × 0.15 × 2 + (2x + 400) × [$(1.2)^2$ – 1] = 1506
Or, 0.3x + 150 + 0.88x + 176 = 1506
Or, 1.18x = 1180
Or, x = 1000
Hence, option c.

5.Solution
Let age of Rakesh and Rajeev after 12 years be '13x' years and '18x' years respectively.
According to question;
(13x – 22)/(18x – 22) = 3/5
Or, 65x – 110 = 54x – 66
Or, 11x = 44
Or, x = 4
So, present age of Rakesh = 13 × 4 – 12 = 40 years
Present age of Rajeev = 18 × 4 – 12 = 60 years
And, present age of Radha = 46 × 2 – 40 = 52 years
Present average age of Rajeev and Radha = (52 + 60)/2 = 56 years
Hence, option a.

6.Solution
Quantity of water in mixture 'A' = 90 litres
Quantity of buttermilk in mixture 'A' = 150 – 90 = 60 litres
Quantity of buttermilk in mixture 'B' = 440 × (8/11) = 320 litres
Quantity of water in mixture 'B' = 440 – 320 = 120 litres
Let x% of mixture 'B' is added to mixture 'A'
Therefore,
(60 + x% of 320)/(90 + x% of 120) = 7/6
Or, 360 + x% of 1920 = 630 + x% of 840
Or, x% of (1920 – 840) = 630 – 360
Or, x% of 1080 = 270
Or, x = (270/1080) × 100 = 25
Hence, option a.

7.Solution
Quantity of milk in 420 ml of mixture = 15/28 × 420 = 225 ml
Quantity of water in 420 ml of mixture = 420 – 225 = 195 ml
According to question;
(225 + x + 9)/(195 + x – 5) = 6/5
Or, 1170 + 5x = 1140 + 6x
Or, x = 30
Hence, option d.

8.Solution
Let total amount of work = 357 units (LCM of 51 and 21)
Amount of work done by 'A' and 'B' together in one day = 357/21 = 17 units
Amount of work done by 'B' and 'C' together in one day = 357/(51/2) = 14 units
Amount of work done by 'B' and 'C' in 21 days = 21 × 14 = 294 units
Remaining work = 357 – 294 = 63 units
Efficiency of 'C' = 63/7 = 9 units per day
So, efficiency of 'B' = 14 – 9 = 5 units per day
And, efficiency of 'A' = 17 – 5 = 12 units per day
Desired time = 357/(12 + 9) = 17 days
Hence, option a.

9.Solution
Let speed of train is 'x' m/s
So, length of train = 27 × x = 27x metres
And, 27x + 226 = 1.45 × x × 42
Or, 33.9x = 226
Or, x = 20/3 m/s
So, length of train = 27 × 20/3 = 180 metres
Desired time = (120 + 180)/(20/3) = 45 seconds
Hence, option b.

10.Solution
Let total sum the man has be Rs. 12x
Amount invested in scheme 'A' = 5/12 × 12x = Rs. 5x
Amount invested in scheme 'B' = 12x – 5x = Rs. 7x
According to question;
0.15 × 2 × 5x + 0.44 × 7x = 1374
Or, 4.58x = 1374
Or, x = 300
So, desired sum = 12 × 300 = Rs. 3600
Hence, option d.

11.Solution
Let cost price of the article is Rs. 'x'
Selling price of the article = 0.75 × 1.80 × x = Rs. 1.35x
So, 1.35x + 60 = 1.2(x + 100)
Or, 1.35x + 60 = 1.2x + 120
Or, 0.15x = 60
Or, x = 400
Hence, option b.

12.Solution
Let number of passed and failed students be 5x and 6x respectively.
According to question,
(5x + 30)/(6x – 30) = 17/16
80x + 480 = 102x – 510
22x = 990
x = 45
Total number of students in the class = 11x = 11 × 45 = 495
Hence, option c.

13.Solution
Let number of passed and failed students be 5x and 6x respectively.
According to question,
(5x + 30)/(6x – 30) = 17/16
80x + 480 = 102x – 510
22x = 990
x = 45
Total number of students in the class = 11x = 11 × 45 = 495
Hence, option c.

14.Solution
Cost price of 1 litre milk = Rs. 50
Cost price of 500 grams sugar = Rs. 15
Cost price of coffee of 200 g = Rs. 25
Cost price of 3 cups of coffee = 50 + 15 + 25 = Rs. 90
Selling price of 3 cups of coffee = 90 × 120% = Rs. 108
Selling price of 1 cup of coffee = 108/3 = Rs. 36
Hence, option d.

15.Solution
Distance travelled with 20 km/h speed = 1/6 × 480 = 80 km
Distance travelled with 40 km/h speed = 2/5 × (480 – 80) = 160 km
Distance travelled with 60 km/h speed = 1/2 × (400 – 160) = 120 km
Distance travelled with another 60 km/h speed = 120 km
Average Speed = 480/(80/20 + 160/40 + 120/60 + 120/60) = 480/(4 + 4 + 2 + 2) = 40 km/h
Hence, option a.

16.Solution
Let initial investment made by Rahul = Rs. 2x
Initial investment made by Rakesh = 1.5 ×2x = Rs. 3x
Initial investment made by Rajat = 0.8 ×3x = Rs. 2.4x
Ratio of their profits after 2 years = [4x + 300] : [6x + 200] : [4.8x+ 60]
According to question,
[4x + 300]/[14.8x + 560] = 3750/12500
(4x + 300)/(14.8x + 560) = 3/10
40x + 3000 = 44.4x + 1680
4.4x = 1320
x = 300
Initial investment made by Rajat = 2.4×300 = Rs. 720
Hence, option c.

17.Solution
Let monthly income of Ganesh be Rs. 'x'.
Amount spent on rent = Rs. 0.12x
Amount spent on buying gochi = Rs. 0.26x
Difference between the amount spent on rent and on buying gochi = 0.26x – 0.12x = Rs. 0.14x
According to question,
0.14x = 1785
x = 12750
Monthly income of Ganesh = Rs. 12750
Amount spent on lodging = 0.24 × 12750 = Rs. 3060
Hence, option b.

18.Solution
Let quantity of milk and water in the original mixture is 5x ml and 9x ml respectively.
Quantity of milk in 252 ml of mixture = 5/14 × 252 = 90 ml
Quantity of water in 252 ml of mixture = 252 – 90 = 162 ml
According to question;
1.35 × (5x – 90 + 90) = (9x – 162 + 72)
Or, 6.75x = 9x – 90
Or, 2.25x = 90
Or, x = 40
Original quantity of mixture = 14x = 14 × 40 = 560 ml
Hence, option c.

19.Solution
Let total amount of work = 210 units (LCM of 30, 42 and 70)
Amount of work done by A in one day = 210/30 = 7 units
Amount of work done by B in one day = 210/42 = 5 units
Amount of work done by C in one day = 210/70 = 3 units
Amount of work done by A, B and C in 8 days = 15 × 8 = 120 units
Let remaining work is completed in 'x' days
So, 8 × (x – 14) + 14 × 3 = 210 – 120 = 90
Or, 8x = 160
Or, x = 20
Total time = 20 + 8 = 28 days
Hence, option b.

20.Solution
Let number of red and green balls in the box is 4x and 3x respectively.

Total number of balls in the box = '7x + 7'
According to question;
$\{^{3x}C_1 \times {}^{7}C_1\}/{}^{(7x+7)}C_2 = 1/5$
Or, $\{2 \times 3x \times 7\}/\{(7x + 7)(7x + 6)\} = 1/5$
Or, $210x = 49x^2 + 91x + 42$
Or, $49x^2 – 119x + 42 = 0$
Or, $49x^2 – 98x – 21x + 42 = 0$
Or, $49x(x – 2) – 21(x – 2) = 0$
Or, $(49x – 21)(x – 2) = 0$
Or, x = 2 or x = 21/49 (not possible)
Total number of balls in the box = 7 × 2 + 7 = 21
Hence, option b.

21.Solution

Let initial investment made by A is Rs. x
Initial investment made by B = Rs. (5760 – x)
Ratio of profit share of A to B = [x + x + 720]:[5760 – x + 5760 – x + 360]
According to question;
(2x + 720)(11880 – 2x) = 4200/3150 = 4/3
Or, (x + 360)/(5940 – x) = 4/3
Or, 3x + 1080 = 23760 – 4x
Or, 7x = 22680
Or, x = 3240
Initial investment made by A = Rs. 3240
Initial investment made by B = 5760 – 3240 = Rs. 2520
Desired Ratio = 3240:2520 = 9:7
Hence, option d.

22.Solution

Let discount percent given on article 2 = percentage by which article 1 is marked above its cost price = x%
Marked price of article 2 = 1.60 × 800 = Rs. 1280
Selling price of article 2 = (1 – x/100) × 1280
Marked price of article 1 = (1 + x/100) × 750
Selling price of article 1 = 0.9 × 750 × (1 + x/100) = 675 × (1 + x/100)
According to question;
1280 × (1 – x/100) – 675 × (1 + x/100) = 214
Or, 1280 – 12.8x – 675 – 6.75x = 214
Or, 19.55x = 391
Or, x = 20
Selling price of article 2 = 1280 × 0.80 = Rs. 1024
Hence, option a.

23.Solution

Let, distance be 'x' km
Difference between time taken by A and C is 4 hours
So, x/40 – x/60 = 4
(3x – 2x)/120 = 4
x = 480
Therefore, time taken by A to reach destination = 480/40 = 12 hours
So, all of them started at 4 A.M.
Time taken by B to reach destination = 480/48 = 10 hours
So, B will reach destination at 2 P.M.
Hence, option c.

24.Solution

Area of the squared field = 3400/8.5 = 400 m^2
Therefore, each side of the squared field = $\sqrt{400}$ = 20 metres
New side of the squared field = 1.25 × 20 = 25 metres
Therefore, cost of cultivation of per m^2 of the field = $3400/25^2$ = Rs. 5.44/m^2
Required difference = 8.5 – 5.44 = Rs. 3.06
Hence, option a.

25.Solution

Let age of A and B, 8 years ago was 5x years and 4x years respectively.
Present age of C = 'y' years
So, 4x + 8 + y = 38 × 2 = 76
Or, 4x + y = 68
And, y + 24 = 1.20 × (5x + 8 + 2)
Or, y + 24 = 6x + 12
Or, 68 – 4x + 24 = 6x + 12
Or, 10x = 80
Or, x = 8
So, present age of B = 8 × 4 + 8 = 40 years
Present age of C = 68 – 4 × 8 = 36 years
Desired ratio = 40:36 = 10:9
Hence, option b.