Math Paper Test 3 & 5

Directions : Study the following information carefully and answer the related questions.
Following information gives the data regarding number of silk and cotton sarees sold by three shops A, B and C on Monday and Tuesday.
Monday: Total 300 sarees sold from shop B which are 180 less than the number of silk sarees sold from all three shops. Ratio of silk and cotton sarees sold from shop A is 3: 5 respectively. 180 cotton sarees sold from store B and silk sarees sold from shop C are 72 more than silk sarees sold from shop B. Number of cotton sarees sold are 10% more than number of silk sarees sold.
Tuesday: Number of silk sarees sold are 114 less than the number of cotton sarees sold. Number of cotton sarees sold from shop A and C are in the ratio 5: 7 respectively. 104 silk sarees sold from shop C and silk sarees sold from shop A are 8 more than silk sarees sold from shop B. 90 cotton sarees sold from shop B and total 214 sarees sold from shop B.

1. What is the respective ratio of number of cotton sarees sold from shop A on Monday to Tuesday?
A.7: 6 **B.**4: 3 **C.**5: 3 **D.**5: 2 **E.**7: 4

2. Number of sarees sold from shop C on Tuesday is approximately what percent of total number of sarees sold from all given shops on Monday?
A.28% **B.**34% **C.**33% **D.**30% **E.**36%

3. On Wednesday, if number of cotton sarees sold from shop A and B are increased by 20% and 30% respectively than previous day, then what will be the difference between number of cotton sarees sold from shop A and B together on Monday and Wednesday?
A.151 **B.**127 **C.**139 **D.**145 **E.**163

4. If cost of each silk saree sold from shop A and C on Monday are Rs.3500 and Rs.3000 respectively, then what will be the difference between earnings of shop A and C on silk saree on Monday?
A.Rs.8000 **B.**Rs.14000 **C.**Rs.10000 **D.**Rs.16000 **E.**Rs.12000

5. A boat is running in river and ratio between upstream speed and downstream speed is 7:9. The speed of boat is (p) 14 km/hr and time taken by boat to cover 135 kms downstream is (q) 4 hours.
Bold data seems to be incorrect then which of the following satisfy the above incorrect values of (p) and (q)?
(I) 24, 5 (II) 15, 6 (II) 20, 6
A.(I) and (II) are correct **B.**(I) and (III) are correct **C.**(II) and (III) are correct **D.**All are correct **E.**Only (III) is correct

Directions : Read the data carefully and answer the following questions.
Six different shopkeepers sell three different types of articles (A, B and C)
The table given below shows the total number of articles (A, B and C) the percentage of Article A sold with respect to the total articles sold by a shopkeeper, and the ratio of the number of articles B to the number of articles C sold by six different shopkeepers.

Shopkeeper	Total	% of article A sold	Sold article B : Sold article C
Sam	----	40%	----
Jeevika	----	25%	3 : 2
Kashish	800	----	7 : 8
Jay	1500	----	3 : 5
Jackie	1600	50%	----
Ashish	----	40%	----

6. The number of Article A sold by Ashish and Jay is 560 and 500 respectively. The number of Article B sold by Ashish and Jackie are 240 and 160 more than the number of Article C sold by them respectively. What is the average number of Article C sold by Ashish, Jackie, and Jay?
A.415 **B.**435 **C.**460 **D.**345 **E.**None of these

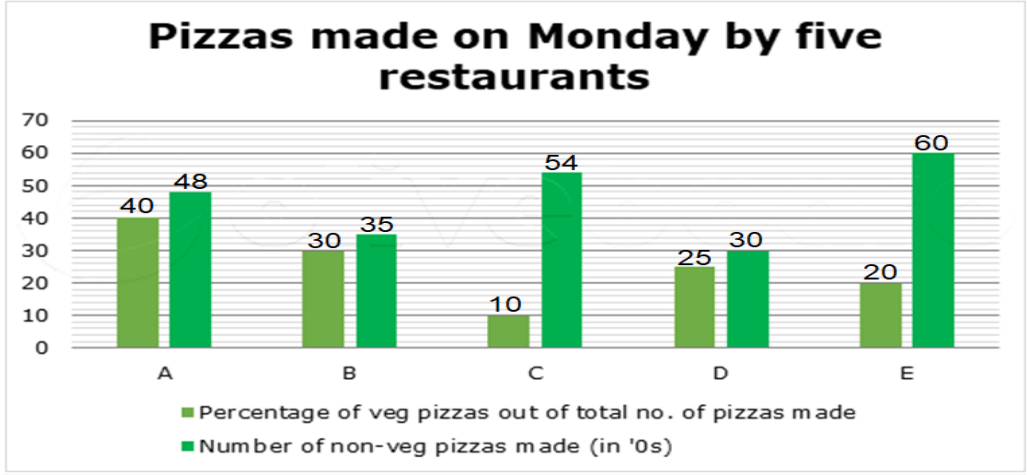
7. The number of Article C sold by Jackie and Jeevika are 200 and 300 respectively. The total number of Article B and Article C together sold by Ashish and that by Sam are 600 and 900 respectively. What is the ratio of the number of Article A sold by Ashish and Sam together to the number of Article B sold by Jeevika and Jackie together?
A.24 : 25 **B.**18 : 23 **C.**20 : 21 **D.**21 : 23 **E.**None of these

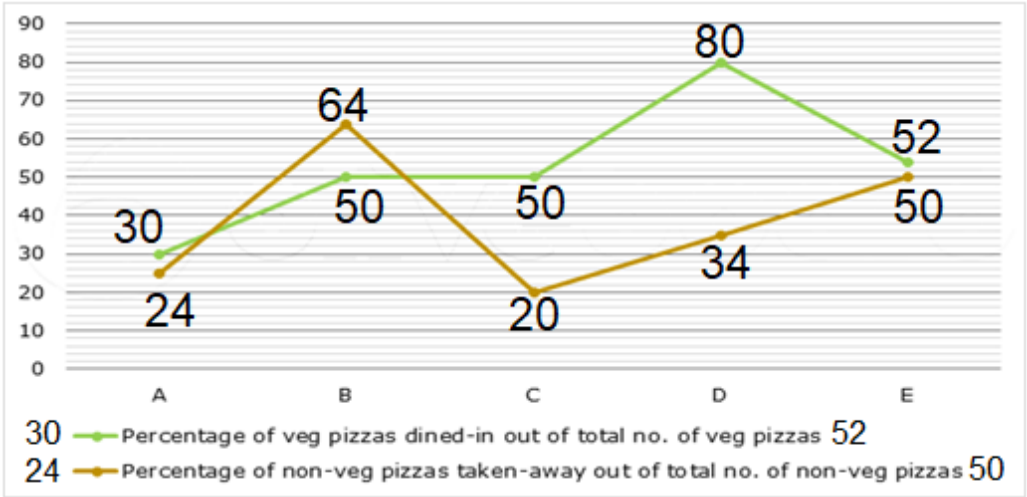
8. If the total number of articles sold by Jeevika is 5 times the average of the total articles sold by Jackie and Kashish, how many articles B did Jeevika sell?
A.2520 **B.**2780 **C.**2540 **D.**2700 **E.**None of these

9. If Ashish, Sam, Jackie, and Jeevika sold an equal number of articles A, who among the six sold the second-highest total articles?
A.Sam and Kashish **B.**Kashish and Jackie **C.**Ashish and Jackie **D.**Ashish and Sam **E.**Jackie and Jeevika

10. The number of articles A sold by Jeevika is the same as the number of articles A sold by Ashish. If the number of Type C articles sold by both of them is the same, what is ratio of the Type B articles sold by Jeevika to that by Ashish?
A.3 : 1 **B.**2 : 5 **C.**1 : 6 **D.**5 : 3 **E.**None of these

Directions : The bar graph below shows the percentage of veg pizzas made and the number of non-veg pizzas made by five restaurants last Monday. The consumers either dine-in at the restaurants or order delivery services (take-away).
The line graph shows the percentage of veg pizzas that were dined-in out of the total number of veg pizzas and the percentage of non-veg pizzas that were taken away out of the total number of non-veg pizzas at each restaurant.





11. What is the difference between the number of veg pizzas taken-away from restaurant E and the number of non-veg pizzas taken-away from restaurant B?
A.150 **B.**145 **C.**164 **D.**172 **E.**155

12. What is the ratio of the total number of veg pizzas made by restaurant A to the total number of pizzas taken away from restaurant C respectively?
A.85:26 **B.**20:7 **C.**32:9 **D.**160:69 **E.**40:13

13. What percentage of the total number of pizzas made by restaurant D were dined-in?
A.68.75% **B.**56.5% **C.**62.5% **D.**70% **E.**58.3%

14. What is the average number of pizzas (by veg and non-veg) dined-in at restaurant C?
A.240 **B.**231 **C.**256 **D.**224 **E.**249

15. By what percentage was the total number of veg pizzas made by restaurant E more or less than the total number of pizzas taken-away from restaurant A?
A.56% less **B.**45% more **C.**48% less **D.**52% more **E.**43% more

16. The average age of Gagan, his mother and father is 36 years. Gagan's mother is thrice as old as Gagan. Gagan's father's current age is four times the age of Gagan three years ago. Gagan's sister was born when Gagan was 9 years old, calculate the sum of their parents ages when his sister was born?
A.69 years **B.**93 years **C.**75 years **D.**81 years **E.**None of these

17. Kartik and Bhumi together can complete a piece of work in 24 days. The time taken by Kartik to complete 50% of the work is equal to the time taken by Bhumi to complete 75% of the work. If Kartik and Bhumi start working alternately, beginning with Bhumi, and after 20 days Bhumi leaves the work, with the remaining work completed by Kartik alone, then find the total time taken to complete the entire work.
A.30 days **B.**45 days **C.**35 days **D.**55 days **E.**40 days

18. In a dance competition, there are three groups A, B and C performing against each other. Group A has 6 girls and 4 boys, group B has one more boy and one more girl respectively than group A and group C has one less boy and one less girl respectively than group A. If one of the participant got injured, then find the probability that it is not a boy from group B?
A.3/4 **B.**8/9 **C.**5/6 **D.**14/15 **E.**17/18

19. What approximate value should come in place of (?) in the expression given below?
99.736% of 839.7 - 771% of (249.91 - 200.33) - ? = 30.131
A.435 **B.**440 **C.**438 **D.**425 **E.**429

20. What approximate value will come in place of question mark (?) in the following question?
5/7 of (43.99 ÷ 4.01 + 8 x 3) + 60% of (8.99^2 + 12.01^2) = 16 x ?
A.12 **B.**10 **C.**15 **D.**5 **E.**20

21. What approximate value should come in place of question mark (?) in the following questions? (You are not expected to calculate the exact value.)?
√1300 + √2700 + √1025 + √2025 + √440 + √840 = ?
A.198 **B.**215 **C.**234 **D.**245 **E.**263

22. What approximate value should come in place of question mark?
127.88 * 12.22 ÷ 47.66 ÷ 15.88 + $?^2$ = 83.22
A.9 **B.**8 **C.**7 **D.**6 **E.**5

23. Find the wrong term in the series given below.
2196, 1726, 1328, 996, 716, 506
A.1328 **B.**1726 **C.**716 **D.**2196 **E.**996

24. Find the wrong term in the series given below.
6, 8.5, 22.5, 66.0, 269.5, 1354.0
A.269.5 **B.**1354.0 **C.**8.5 **D.**22.5 **E.**66.0

25. Find the wrong term in the series given below.
64, 80, 427, 523, 2720, 2976
A.2720 **B.**64 **C.**427 **D.**80 **E.**523

26. The average marks of four students A, B, C, and D is (X - 2.5) and the ratio of marks scored by D to B is 15: 8. The marks scored by A is (X + 2)/5 less than that by D and the marks scored by B is (X/2 + 2). If the average marks scored by C and D is (X + 3), then find the value of (2X/4 + 5).
A.23 **B.**28 **C.**17 **D.**24 **E.**19

27. Quantity I: A and B together can do a piece of work in 10 hours, while B alone can do it in 15 hours. If C alone can do the same work in 25 hours, then in how many hours A and C can finish the work together?
Quantity II: A train covers a distance of 405 km in 9 hours. How long(hours) will it take to cover 585 km?
A.Quantity I > Quantity II **B.**Quantity I < Quantity II **C.**Quantity I ≥ Quantity II **D.**Quantity I ≤ Quantity II **E.**Quantity I = Quantity II or relation can't be determined

28. In the following questions, two statements numbered I and II are given. On solving them we get two quantities, quantity I and quantity II respectively. Solve for both the quantities and choose the correct option.
Quantity I: A sum of money becomes 4 times itself in 12 years when invested in a Scheme that provides Simple interest. What is the rate of interest per annum?
Quantity II: A sum of money increases by 44% in amount when invested in a Scheme that provides Compound interest for 2 years. What is the rate of Interest?
A.Quantity I > Quantity II **B.**Quantity I < Quantity II **C.**Quantity I ≥ Quantity II **D.**Quantity I ≤ Quantity II **E.**Quantity I = Quantity II or a relation can't be established

Directions : Read the data carefully and answer the following questions.
Below given are two equations numbered I and II.
I: x^2 - ax + b = 0
II: $2y^2$ - py - q = 0
· Ratio of 'a' to 'p' is 4: 3 while ratio of 'a' to 'q' is 2: 5.
· Difference between roots of equation I is 4 while one root of equation II is 10.

29. Compare the roots of equations I and II.
A.x > y **B.**x ≥ y **C.**x ≤ y **D.**x = y or relation cannot be determine. **E.**x < y

30. If an equation x^2 - mx + 6n = 0 is formed whose roots are the largest root of equations I and II. Which of the following will fill the blank in the same order?
m ___ n m ___ p n ___ a
A.>, =, > **B.**=, >, = **C.**>, >, > **D.**<, <, > **E.**>, >, =

31. The distance between city A and city B is 420 km. Two cyclists leave for city B such that one of the cyclists leaves at 2:00 am on Tuesday and the other one at 6:00 pm on the same day. If both the cyclists reach city B at the same time and the difference in the speeds of the two cyclists is 20 km/hr, find the time taken (in hours) by the faster cyclist to reach city B from city A.
A.28 **B.**16 **C.**12 **D.**8 **E.**10

32. Asha spent 1/5th of her monthly salary on shopping, 20% of the remaining on house rent, 3/8th of the remaining on groceries, from remaining she kept Rs. 9600 with her and invested the remaining amount in simple interest scheme at 25% rate of interest. If after two years she received Rs. 8000 as interest, then find the amount spent on house rent.
A.Rs. 9600 **B.**Rs. 10240 **C.**Rs. 12800 **D.**Rs. 15360 **E.**Rs. 16000

33. The total surface area of a cube is 166 cm^2 less than the lateral surface area of a cone and the slant height of the cone is (X + 1) cm. If the radius of the cone is (X/3 - 1) cm and the side of the cube is 1 cm more than the radius of the cone, then find the area of a circle with radius is (X - 3) cm.
A.616 cm^2 **B.**1386 cm^2 **C.**2464 cm^2 **D.**1078 cm^2 **E.**245.5 cm^2

Directions : A bucket contains a mixture of milk and water in the ratio of 3: 4. Now, (T - 4) liters of milk and (T + 12) liters of water is added to the mixture and ratio of mixture milk and water becomes 5: 8 and again (T - 4) liters of water is added to the mixture and ratio becomes 1: 2.

34. What is the value of T?
A.22 **B.**20 **C.**16 **D.**24 **E.**None of these

35. How much mixture of milk and water are there in the bucket initially?
A.56 liters **B.**46 liters **C.**42 liters **D.**35 liters **E.**None of these

{1 – 4}
Solution
Monday:
Number of sarees sold from shop B = 300
Number of cotton sarees sold from shop B = 180
Number of silk sarees sold from shop B = 300 - 180 = 120
Number of silk sarees sold = 300 + 180 = 480
Number of silk sarees sold from shop C = 72 + 120 = 192
Then, number of silk sarees sold from shop A = 480 - 120 - 192 = 168
Number of cotton sarees sold = 110% of 480 = 528
Number of cotton sarees sold from shop A = 168 * 5/3 = 280
Then, number of cotton sarees sold from shop C = 528 - 280 - 180 = 68
Tuesday: Number of cotton sarees sold from shop A and C are in the ratio 5: 7 respectively.
Number of sarees sold from shop B = 214
Number of cotton sarees sold from shop B = 90
Then, number of silk sarees sold from shop B = 214 - 90 = 124
Number of silk sarees sold from shop A = 124 + 8 = 132
Number of silk sarees sold from shop C = 104
Number of silk sarees sold = 124 + 132 + 104 = 360
Then, number of cotton sarees sold = 114 + 360 = 474
Number of cotton sarees sold from shop A = (474 - 90) * 5/12 = 160
Number of cotton sarees sold from shop C = 474 - 160 - 90 = 224
1. e
Number of cotton sarees sold from shop A on Monday = 280
Number of cotton sarees sold from shop A on Tuesday = 160
Therefore, ratio = 280: 160 = **7: 4**
2. c
Number of sarees sold from shop C on Tuesday = 104 + 224 = 328
Total number of sarees sold from all given shops on Monday = 480 + 528 = 1008
Therefore, percentage = (328/1008) * 100 = **33% (approx.)**
3. a
On Wednesday:
Number of cotton sarees sold from shop A = 120% of 160 = 192
Number of cotton sarees sold from shop B = 130% of 90 = 117
Total number of cotton sarees sold from shop A and B = 192 + 117 = 309
On Monday:
Total number of cotton sarees sold from shop A and B = 280 + 180 = 460
Therefore, difference = 460 - 309 = **151**
4. e
On Monday:
Earnings of shop A on silk saree = 168 * 3500 = Rs.588000
Earnings of shop C on silk saree = 192 * 3000 = Rs.576000
Therefore, difference = 588000 - 576000 = **Rs.12000**
5. b
Solution
By considering (I)
Let the speed of river be 'y' km/hr
Speed of boat = 24 km/hr
Upstream speed: downstream speed = 7: 9
(24-y)/(24+y) = 7/9
(24-y)*9 = (24+y)*7
216 - 9y = 168 + 7y
16y = 48
y = 3 km/hr
Time taken to cover 135 kms downstream = [(135/(24+3)] = 5 hours
So, values in (I) are correct.
By considering (II)
Speed of boat = 15 km/hr
(15 - y)/ (15+y) = 7/9
(15 - y)*9 = (15+y)*7
135 - 9y = 105 + 7y
16y = 30
Y = 1.875
Time taken to cover 135 kms downstream = [(135/(15+1.875)] = 135/16.875 = 8 hours
So, values in (II) are incorrect.
By considering (III)
Speed of boat = 20 km/hr
(20 - y)/(20+y) = 7/9
180 - 9y = 140 + 7y
16y = 40
y = 2.5 km/hr
Time taken to complete 135 kms downstream = [(135/(20+2.5)] = 6 hours
Therefore, (I) are (III) are correct.
{6 – 10}
Solution
6. a
(Article B) + (Article C sold by Ashish) = 560 * (100 - 40)/40 = 840
Article C sold by Ashish = (840 - 240)/2 = 300
Article B + Article C sold by Jay = 1500 - 500 = 1000
Article C sold by Jay = 1000 * 5/(3 + 5) = 625
Article B + Article C sold by Jackie = 1600 * 50/100 = 800
Article C sold by Jackie = (800 - 160)/2 = 320
Required average = (300 + 625 + 320)/3 = 415
7. c
Solution
Article A sold by Ashish = 600 * 40/(100 - 40) = 400
Article A sold by Sam = 900 * 40/(100 - 40) = 600
Article B + Article C sold by Jackie = 1600 * 50/100 = 800
Article B sold by Jackie = 800 - 200 = 600
Article B sold by Jeevika = 300 * 3/2 = 450
Required ratio = (400 + 600) : (600 + 450) = 20 : 21
8. d
Solution
Total number of total articles sold by Jeevika = 5 * (1600 + 800)/2 = 6000
Total article B sold by Jeevika = 6000 * (100 - 25)/100 * 3/(3 + 2) = 2700
9. d
Solution
Article A sold by Jackie = 1600 * 50/100 = 800
Total articles sold by →
Ashish = 800 * 100/40 = 2000
Sam = 800 * 100/40 = 2000
Jackie = 1600
Jeevika = 800 * 100/25 = 3200
Jack = 1500
Kashish = 800
Both Ashish and Sam sold the second highest number of articles.
10. e
Solution
Total articles sold by Jeevika : Ashish = 1/25 : 1/40 = 8 : 5
Let, number of articles sold by Jeevika and Ashish be 8x and 5x respectively.

Article B + C sold by Jeevika = 8x * 75/100 = 6x
Articles (B + C) sold by Ashish = 5x * 60/100 = 3x
Articles C sold by Jeevika = 6x * 2/5 = 2.40x
Articles B sold by Jeevika = 6x - 2.40x = 3.60x
Articles C sold by Ashish = 2.40x
Articles B sold by Ashish = 3 - 2.40 = 0.6x
Required ratio = 3.6x : 0.6x = 6 : 1

{11 – 15}

Solution

The data given is as follows:

Restaurant	Veg	Non-veg	Dine-in Veg	Taken-away Non-veg
A	40%	480	30%	25%
B	30%	350	50%	64%
C	10%	540	50%	20%
D	25%	300	80%	35%
E	20%	600	54%	50%

For restaurant A:
Number of veg-pizzas = 40% of total pizzas, so 60% of the pizzas are non-veg.
Number of non-veg pizzas = 480
No. of veg pizzas = 480/0.6 * 0.4 = 800 * 0.4 = 320
Again, no. of dined-in veg pizzas = 30% of 320 = 96
No. of taken-away veg pizzas = 320 - 96 = 224
No. of taken-away non-veg pizzas = 25% of 480 = 120
No. of dined-in non-veg pizzas = 480 - 120 = 360
Similarly, we tabulate the rest of the data:

Restaurant	Veg	Non-veg	Veg		Non-veg	
			Dine-in	Taken-away	Dine-in	Taken-away
A	320	480	96	224	360	120
B	150	350	75	75	126	224
C	60	540	30	30	432	108
D	100	300	80	20	195	105
E	150	600	81	69	300	300

11. e
Difference = 224 - 69 = 155
12. d
Total number of veg pizzas made by restaurant A = 320
Total number of pizzas taken away from restaurant C = 108 + 30 = 138
Ratio = 320:138 = 160:69
13. a
Percentage of pizzas made by restaurant D that were dined-in = (80 + 195)/(300 + 100) * 100% = 68.75%
14. b
Average number of pizzas dined-in at restaurant C = (432 + 30)/2 = 231
15. a
Total number of veg pizzas made by restaurant E = 150
Total number of pizzas taken-away from restaurant A = 224 + 120 = 344
Percentage = 150/344 * 100% = 43.6%, i.e., it is 56.39% less.
16. d
Solution
Let the present ages of Gagan, his mother and his father are G, M and F years respectively
Acc. to the question, G + M + F = 36 X 3 = 108
M = 3 X G and F = 4(G - 3)
On solving the above equations, we get
G = 15, M = 45 years and F = 48 years
When Gagan's sister was born, he was 9 years old i.e. six years ago
Sum of the ages of Gagan's mother and father six years ago = (45 - 6) + (48 - 6)
= 81 years.
17. d
Solution
Let, the time taken by Kartik and Bhumi be X days and Y days respectively.
X * 50/100 = Y * 75/100
X/Y = 3/2
L.C.M of 3a and 2a = 6a
Efficiency of Kartik = 6a/3a = 2
Efficiency of Bhumi = 6a/2a = 3
Time taken by both = 24 days
6a/(2 + 3) = 24 => a = 20
Work done = 10 * 3 + 10 * 2 = 50 [Since they worked alternately, it means each of them worked for 10 days]
Required time = 20 + (120 - 50)/2 = 55 days
18. c
Solution
In group A:
Boys = 4
Girls = 6
In group B:
Boys = 4 + 1 = 5
Girls = 6 + 1 = 7
In group C:
Boys = 4 - 1 = 3
Girls = 6 - 1 = 5
Total participants = 4 + 6 + 5 + 7 + 3 + 5 = 30
Probability that the participant is injured is a boy from group B = (5/30) = 1/6
Probability that the participant is injured is not a boy from group B = 1 - 1/6 = 5/6
19. d
Solution
99.736% of 839.7 - 771% of (249.91 - 200.33) - ? = 30.131
By taking approximate value, we get
100% of 840 - 770% of (250 - 200) - ? = 30
840 - (770/100) x 50 - ? = 30
840 - 385 - ? = 30
? = 425
20. b
Solution

$$\frac{5}{7}\ \text{of}(43.99 \div 4.01 + 8 * 3) + 60\%\ \text{of}(8.99^2 + 12.01^2) = 16 * ?$$

$$\frac{5}{7}\ \text{of}(44 \div 4 + 8 * 3) + 60\%\ \text{of}(9^2 + 12^2) = 16 * ?$$

$$\frac{5}{7}\ \text{of}(11 + 24) + 60\%\ \text{of}(81 + 144) = 16 * ?$$

$$\frac{5}{7}\ \text{of}\ 35 + 60\%\ \text{of}\ 225 = 16 * ?$$

$$5 * 5 + \frac{3}{5} * 225 = 16 * ?$$

25 + 3 * 45 = 16 * ?
25 + 135 = 16 * ?
160 = 16 * ?

$? = \frac{160}{16}$

? = 10

21. b

Solution

? ≈ √1296 + √2704 + √1024 + √2025 + √441 + √841

= 36+52+32+45+21+29 = 215

22. a

Solution

$127.88 * 12.22 \div 47.66 \div 15.88 + ?^2 = 83.22$

$=> 128 * 12 \div 48 \div 16 + ?^2 = 83$

$=> 2 + ?^2 = 83$

$=> ?^2 = 81$

=> ? = 9

23. c

Solution

The pattern is as follows:

$13^3 - 1 = 2196$

$12^3 - 2 = 1726$

$11^3 - 3 = 1328$

$10^3 - 4 = 996$

$9^3 - 5 = 724$

$8^3 - 6 = 506$

24. d

Solution

The pattern is as follows:

6 x 1 + 2.5 = 8.5

8.5 x 2 + 3.5 = 20.5

20.5 x 3 + 4.5 = 66.0

66.0 x 4 + 5.5 = 269.5

269.5 x 5 + 6.5 = 1354.0

25. c

Solution

The pattern is as follows:

$64 + 4^2 = 80$

$80 + 7^3 = 423$

$423 + 10^2 = 523$

$523 + 13^3 = 2720$

$2720 + 16^2 = 2976$

26. e

Solution

Let, the marks scored by D and B be 15a and 8a respectively.

B's marks = (X/2 + 2)

8a = (X + 4)/2

15a = 15(X + 4)/16 = D's marks

A's marks = 15(X + 4)/16 - (X + 2)/5

C's marks = 2(X + 3) - 15(X + 4)/16

A + B + C + D = 4 (X - 2.5)

15(X + 4)/16 - (X + 2)/5 + (X + 4)/2 + 2(X + 3) - 15(X + 4)/16 + 15(X + 4)/16 = 4X - 10

(15X + 60)/16 - (X + 2)/5 + (X + 4)/2 + 2X + 6 = 4X - 10

75X + 300 - 16X - 32 + 40X + 160 + 160X + 480 = 80 (4X - 10)

259X + 908 = 320X - 800

61X = 1708

X = 28

Hence, (2X/4 + 5) = 2 * 28/4 + 5 = 19

27. a

Solution

Quantity I:

(1/A) + (1/B) = 1/10

Given, B alone can do the work in 15 hours.

So, (1/A) + (1/15) = 1/10

1/A = (1/10) - (1/15) = 1/30

A = 30 hours

Now, (1/A) + (1/C) = (1/30) + (1/25)

(1/A) + (1/C) = 11/150

So, A and C can finish the work together in 13(7/11) hours.

Quantity II;

Distance covered by train = 405 km

Time taken by train = 9 hours

Speed of train = 405/9 = 45 km/h

Now,

The time taken by train to cover 585 km = 585/45 = 13 hours

Hence, Quantity I > Quantity II

28. a

Solution

Quantity I:

Let the sum of money be Rs 'P' and rate of interest be R%

Given, P + (P*12*R)/100 = 4P

=> 3PR/25 = 3P

=> R = 25

Quantity II:

Let the sum of money be Rs 'P' and the rate of interest be R%

Given, $P(1 + R/100)^2 = 1.44P$

=> 1 + R/100 =1.2

=> R/100 = 0.2

=> R = 20

{29 – 30}

Solution

Since, ratio of 'a' to 'p' is 4: 3. Let a = 4m and p = 3m.

Since, ratio of 'a' and 'q' is 2: 5. Let a = 4m and q = 10m.

Sum of roots of equation I = a

Product of roots of equation I = b

Difference between roots of equation I = $\sqrt{(a^2 - 4b)} = 4$ ..... (1)

One root of equation II is 10.

$2 * 10^2 - p * 10 - q = 0$

10p + q = 200

10 * 3m + 10m = 200

m = 5

a = 4m = 20

p = 3m = 15

q = 10m = 50

From equation (1):

$\sqrt{(20^2 - 4b)} = 4$

400 - 4b = 16

4b = 384

b = 96

I: $x^2 - ax + b = 0$

$x^2 - 20x + 96 = 0$

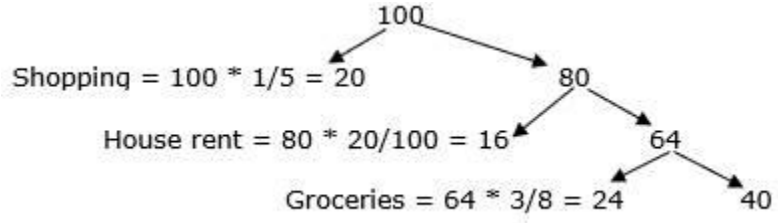
$x^2 - 8x - 12x + 96 = 0$

x (x - 8) - 12 (x - 8) = 0

(x - 8) (x - 12) = 0
x = 8 and 12
II: $2y^2$ - py - q = 0
$2y^2$ - 15y - 50 = 0
$2y^2$ - 20y + 5y - 50 = 0
2y (y - 10) + 5 (y - 10) = 0
(y - 10) (2y + 5) = 0
y = 10 and -5/2
29. d
Roots of equation I are 8 and 12.
Roots of equation II are 10 and -5/2.

Roots of equation I		Roots of equation II
8	<	10
8	>	-5/2
12	>	10
12	>	-5/2

Hence, relation cannot be determined.
30. e
One root of the formed equation = 12
Second root of the formed equation = 10
Equation => (x - 12) (x - 10) = 0
x^2 - 22x + 120 = 0
After comparing:
m = 22
6n = 120 => n = 20
p = 15
a = 20
Now,
m > n
m > p
n = a
31. c
Solution
Distance between city A and B = 420 km
Time gap between both cyclists = 16 hours (from 2 am to 6 pm)
Let the speed of 1st cyclist (slower one) be s1 km/hr
Speed of the 2nd cyclist (faster one) = s1 + 20 (Given difference in speed = 20)
According to question,
(420/s1) - {420/ (s1 + 20)} = 16
=> s1(s1+ 20) = 525
=> $s1^2$ + 20s1 -525 = 0
=> s1 = 15 and -35
Ignoring negative value of speed, we get s1 = 15 km/hr
Speed of the faster cyclist = 15 + 20 = 35 km/hr
Required time for faster cyclist = 420/35 = 12 hours
32. b
Solution
Let, total monthly salary be '100'.



Let the amount invested in simple interest scheme be Rs. 'X'.
According to question,
S.I = P * R * T/100
=> 8000 = X * 25 * 2/100
=> X = 16000
Now, 40 = Rs. 25600
=> 1 = Rs. 640
Hence, the required value = 16 * 640 = Rs. 10240
33. b
Solution
The total surface area of cube = $6a^2$
The lateral surface area of cone = πrl
The lateral surface area of cone - The total surface area of cube = 166
[22/7 * (X/3 - 1) * (X + 1)] - 6 $(X/3 - 1 + 1)^2$ = 166
22/7 (X - 3)/3 * (X + 1) - [6 * X^2/9] = 166
(22X/21 - 66/21) (X + 1) - $2X^2$/3 = 166
$22X^2$/21 + 22X/21 - 66X/21 - 66/21 - $2X^2$/3 = 166
$22X^2$/21 - 44X/21 - 66/21 - $2X^2$/3 = 166
$22X^2$ - 44X - 66 - $14X^2$ = 166 * 21
$8X^2$ - 44X - 3552 = 0
$2X^2$ - 11X - 888 = 0
$2X^2$ - 48X + 37X - 888 = 0
2X (X - 24) + 37 (X - 24) = 0
(2X + 37) (X - 24) = 0
X = 24 [X ≠ - 18.5, since X cannot be negative]
Radius of circle = 24 - 3 = 21 cm
Hence, the area of circle = $πr^2$ = 22/7 * 21 * 21 = 1386 cm^2
{34 – 35}
Solution
Let initially, quantity of milk = 3k liters and water = 4k liters
(3k + T - 4)/(4k + T + 12) = 5/8
=> 24k + 8T - 32 = 20k + 5T + 60
=> 4k + 3T = 92 ---(1)
Again, (3k + T - 4)/(4k + T + 12 + T - 4) = ½
=> 6k + 2T - 8 = 4k + 2T + 8
=> 2k = 16
=> k = 8
From equation (1), we have
4 * 8 + 3T = 92
=> 3T = 60
=> T = 20
34. b
Hence, value of T = 20
35. a
Initially, Quantity of mixture = 3k + 4k = 7k = 7 * 8 = 56 liters