



Important Questions On Ratio and Proportions for RRB NTPC Exam.

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Instructions

For the following questions answer them individually

Question 1

35 is the average marks obtained by 120 students. The average marks of successful candidates was 39 and that of unsuccessful candidates was 15. What is the number of successful candidates in that examination ?

- A 100
- B 110
- C 120
- D 80

Answer: A

Explanation:

Let there be x successful candidates in the exam.

Unsuccessful candidates = $120 - x$

Total score = 35×120

Total score is also equal to $x \times 39 + (120 - x) \times 15$

So, $x = (35 \times 120 - 120 \times 15) / 24 = 120 \times 20 / 24 = 100$

Question 2

A number of two digits is equal to 'k' times to the sum of these digits. If the places of the digits are mutually exchanged, the new formed number is equal to the sum of these digits multiplied by which one of the following options ?

- A $9 + k$
- B $10 + k$
- C $11 - k$
- D $k - 1$

Answer: C

Explanation:

Let the number be xy . So $10x + y = k(x + y)$

$$11 - k = 11 - \frac{10x+y}{x+y} = \frac{11x+11y-10x-y}{x+y}$$

$= \frac{10y+x}{x+y}$ which is inverse of the number divided by the sum of the digits.

Hence the required factor is $11 - k$

Question 3

45 is the average marks obtained by 30 students of a class. On checking, two errors were identified. On correction, one student obtained 45 more marks while other obtained 15 less marks. What is the average of corrected marks ?

- A 45
- B 44
- C 47
- D 46

Answer: D

Explanation:

On correction, total increase in marks = $45 - 15 = 30$ marks.

Number of students = 30

So, increase in the average = $30/30 = 1$ mark.

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Question 4

5 years ago, average age of P and Q was 15 years. At present, average age of P, Q and R is 20 years. What will be the average age after 10 years ?

A 35 years

B 40 years

C 30 years

D 50 years

Answer: C

Explanation:

The average age increases with age. So, after 10 years, the average age is $20 + 10 = 30$ years.

Question 5

The ratio of the present age of a man and his wife is 4:3 and 4 years hence the ratio of their ages will be 9:7. If the ratio of their ages at the time of their marriage was 13:9, how many years ago were they married ?

A 4

B 8

C 6

D 9

Answer: C

Explanation:

Let the ages today be $4x$ and $3x$. Ages four years from now are $4x + 4$ and $3x + 4$

But $4x+4:3x+4 = 9:7$

So, $x = 8$

So, their current ages = 32 and 24

Let them be married for x years

Age at marriage = $32 - x$ and $24 - x$

But $32 - x : 24 - x = 13 : 9$

So $x = 6$ years.

Question 6

The average height of 35 students in a class is 4'2". Three students of average height moved to new section while 6 students of total height 33'4" joined the class. The average height of the student in the class is now

A 4'6"

B 5'

C 4'4"

D 4'8"

Answer: C

Explanation:

After the students left, there will be 32 students with the same average height. 4 ft and 2 inches

$$\text{Total height} = 32 \times 4.17 = 133.44$$

$$\text{Total height of 6 students is } 33 \text{ ft and 4 inches.} = 33.33$$

$$\text{New total height} = 133.44 + 33.33 = 166.77$$

$$\text{New average height} = 166.77 / 38 = 4 \text{ feet 4 inches}$$

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Question 7

The ratio of the ages of X and Y three years ago was 4:5 and that after three years will be 5:6. Then the sum of the ages of X and Y is

A 60 years

B 64 years

C 72 years

D 58 years

Answer: A

Explanation:

Let the ages of X and Y 3 years ago be $4x$ and $5x$. Ages 6 years from then are $4x+6$ and $5x+6$

$$\text{But } 4x+6:5x+6 = 5:6$$

Solving we get the answer as $x = 6$

$$\text{Sum of today's ages} = 4x + 5x + 6 = 9x + 6 = 60 \text{ years}$$

Question 8

The volumes of three kinds of materials are in the ratio 3:4:7 and the weights of equal volumes of the three materials are in the ratio 5:2:6 If they are mixed to form a material of 65 kg then the weight of the 2nd material in the mixture is

A 8 kg

B 23 kg

C 15 kg

D 42 kg

Answer: A

Explanation:

Let the volumes of the 3 be: $3v$, $4v$ and $7v$

Densities of the three are $5d$, $2d$ and $6d$

$$\text{So, the weights are } 15dv + 8dv + 42dv = 65dv$$

But that is 65 kilograms.

$$\text{The second one's weight is } 8dv = 8 \text{ kgs}$$

Question 9

A man worked 14 hours a day for the first 2 days, 12 hours a day for the next 3 days but did not work on the sixth day. Then on the average how much did he work in the first six days ?

- A 10 hours 4 minutes
- B 9 hours 40 minutes
- C 10 hours 40 minutes
- D 15 hours 40 minutes

Answer: C

Explanation:

Total number of hours worked by the man = $14 \times 2 + 12 \times 3 = 64$ hours

So, the average in 6 days = $64/6 = 10$ hours and 40 mins

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Question 10

A sum of Rs. 625 is made up of 80 currency notes which are either Rs. 10 or Rs. 5 denomination. The number of Rs. 10 notes are-----

- A 35
- B 45
- C 40
- D 30

Answer: B

Explanation:

Let there be x 10 rupee notes. So the number of 5 rupee notes = $80 - x$

So, total value of the money = $10x + (80 - x) \times 5$

$$= 10x + 400 - 5x = 400 + 5x$$

$$\text{But } 400 + 5x = 625$$

$$\text{so } x = 225/5 = 45$$

Question 11

The average expenditure of a man for the first five months is Rs. 1200 and for the next seven months is Rs. 1300. Find his monthly average income if he saves Rs. 2900 during the year ?

- A Rs. 1500
- B Rs. 1475
- C Rs. 1450
- D Rs. 1425

Answer: A

Explanation:

Let his monthly salary be x rupees.

So, $5(x - 1200) + 7(x - 1300) = 2900$

$12x - 6000 - 9100 = 2900$

So, $x = 18000/12 = 1500$

Question 12

The average temperature for Monday, Tuesday and Wednesday was 40C. The average for Tuesday, Wednesday and Thursday was 41 C. If on Thursday temperature is 45C, what was it on Monday ?

- A 40C
- B 41C
- C 42C
- D 43.5C

Answer: C

Explanation:

Total temperature for Monday, Tuesday, Wednesday and Thursday = $40 \times 3 + 45 = 165$ C

Total for Tuesday, Wednesday and Thursday = $41 \times 3 = 123$ C

So,

Temperature for Monday = $165 - 123 = 42$ C

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Question 13

Of the three numbers, second is twice the first and is also thrice the third. If the average of the three numbers is 44, the largest number is-

- A 24
- B 72
- C 36
- D 108

Answer: B

Explanation:

Let the first number be $3x$. Second number is $6x$. Third number is $2x$.

So average = $(2x + 3x + 6x)/3 = 11x/3$

But $11x/3 = 44$

So, $x = 12$

$6x = 72$

Question 14

Of the three numbers whose average is 60, the first is one fourth of the sum of the others. The first number is--

- A 30
- B 36
- C 42

D 45

Answer: B

Explanation:

The average of the three numbers is 60

The first number is one fourths of the sum of the others.

or $4p = q + r$

$$\frac{p+q+r}{3} = 60$$

So, $5p/3 = 60$

$$p = 180/5 = 36$$

Question 15

The average age of a family of 5 members is 24 years. If the age of the youngest member be 6 years, find the average age of the family at the birth of the youngest member-

A $23\frac{1}{2}$

B 20 years

C $22\frac{1}{2}$

D 18 years

Answer: C

Explanation:

The total age of the 5 members = 120 years.

Age of the youngest member is 6 years.

Total age of the rest of the group = 114 years.

Average age = $114/4$

Average age 6 years ago = $114/4 - 6 = 28.5 - 6 = 22.5$ years.

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Question 16

9 men went to a hotel 8 of them spent Rs. 30 each over their meals and the 9th person spent Rs. 20 more than the average expenditure of all the nine. The total money spent by them is--

A Rs. 292.50

B Rs. 272.50

C Rs. 312.50

D Rs. 325.50

Answer: A

Explanation:

Let the ninth person's expenses be x rupees.

Total expense by the group = $x + 240$

Average = $(x+240)/9$

But the average is 20 less than x

$$(x+240)/9 + 20 = x$$

$$x + 240 + 180 = 9x$$

$$8x = 420$$

$$x = 52.5$$

Question 17

In a circle team of eleven players, one player weighing 42 kg, is injured and his place is taken by another player. If the average weight of the team is increased by 100 grams as a result of this, then the weight of the new player is--

- A 43.1 kg
- B 43.01 kg
- C 43.50 kg
- D 42.9 kg

Answer: A

Explanation:

Let the weight of the new player be x kgs.

Total weight as a result of his inclusion = TW - 42 + x

Average weight = (TW - 42 + x)/11

But average weight before = TW/11

$$(TW - 42 + x)/11 - TW/11 = .1$$

$$x - 42 = 1.1$$

So, x = 43.1 kgs

Question 18

The average age of 8 persons in a committee is increased by two years when two men whose ages are 35 years and 45 years are replaced by two women. The average age of two women is (in yrs)--

- A 40
- B 42
- C 48
- D 45

Answer: C

Explanation:

Let the average age of the women be A years.

Total of their ages = 2A

Total of the eight persons = ET

When replaced $(ET - 80 + 2A)/8 = ET/8 + 2$

$$2A - 80 = 16$$

$$A = 96/2 = 48$$

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Question 19

One-fourth of a certain journey was covered at an average speed of 45 km/hour, one-third at the speed of 48 km/hour and the remaining journey at the speed of 50 km/hour. The average speed of the whole journey in km/hour is---

- A 54
- B 51
- C 48
- D 46

Answer: C

Explanation:

Let the total distance be 1200 kms

Time taken for first one fourth = $300 / 45 = 20/3 = 6.67$

Next one third time = $400 / 48 = 25/3 = 8.33$

Remaining = $500 / 50 = 10$

Average speed = total distance / total time = $1200 / 25 = 48$ kmph

Question 20

Visitors to a show were charged Rs. 150.00 each on the first day, Rs. 75.00 on the second day and Rs. 25.00 on the third day and the total attendance on the three days were in the ratio 2 : 5 : 13. The average charge per person for the whole show is--

- A Rs. 75.00
- B Rs. 60.00
- C Rs. 50.00
- D Rs. 55.00

Answer: C

Explanation:

Let the total visitors be 20. Total revenue = $2 \times 150 + 5 \times 75 + 13 \times 25 = 300 + 375 + 325$

= 1000

Average ticket price = Total revenue / total visitors = $1000 / 20 = 50$

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