



Ratio & Proportion Questions for RRB NTPC PDF

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Instructions

For the following questions answer them individually

Question 1

The sum of the ages of Ravi and his younger brother Chinna is 30. The difference in their ages is 14. What is the ratio of the age of Ravi to the age of Chinna?

- A 11:4
- B 4:11
- C 15:7
- D 7:15

Answer: A

Explanation:

Let x, y are the ages of Ravi and chinna

$$x+y = 30 \text{ ---(1)}$$

$$x-y = 14 \text{ ----(2)}$$

add (1) & (2)

$$x+y+x-y = 30+14$$

$$2x = 44$$

$$x = 22 \text{ then } y = 8$$

$$\text{Ratio} = x/y = 22/8 = 11/4 = 11:4$$

So the answer is option A.

Question 2

The ratio of the ages of Karthik and his son is 5:1. The present age of his son is 6 years. After how many years will the ratio of their ages be 7:3?

- A 11
- B 12
- C 13
- D 14

Answer: B

Explanation:

Let present age of karthik = $5k$ and his son = $1k$

Given $1k = 6 \implies 5k = 30$

Let x be the years after which their ages ratio becomes 7:3,

$$\frac{30+x}{6+x} = \frac{7}{3}$$

$$90 + 3x = 42 + 7x$$

$$48 = 4x$$

$$x = 12$$

So the answer is option B.

Question 3

Ravi and Rahul invested 12000 and 20000 in a business. Find the ratio of their profits after 19 years ?

A 3:4

B 3:5

C 4:5

D 1:2

Answer: B

Explanation:

Ratio of profits = $(12000 \times 19) : (20000 \times 19) = 3:5$

So the answer is option B.

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Question 4

A, B, C started a business with capital ratio 4:2:3. Their period of investments is in the ratio 3:5:4. Find their profit ratio ?

A 1:5:1

B 6:5:6

C 2:3:2

D 8:5:6

Answer: B

Explanation:

Ratio of their shares = $(4 \times 3) : (2 \times 5) : (3 \times 4) = 12:10:12 = 6:5:6$

So the answer is option B.

Question 5

The ratio of the present ages of Ravi's brother and his mother is 1:2. The sum of the ages of all three is 83. It is known known that Ravi is 3 years elder than his brother. How old will Ravi be 5 years from now?

A 23

B 25

C 28

D 30

Answer: C

Explanation:

Let the age of Ravi's brother = x

His mother age = $2x$

Ravi's age = $x+3$

Sum of all 3 ages = 83

$$x+2x+x+3 = 83$$

$$4x = 80$$

$$x = 20$$

Age of Ravi = $x+3 = 23$

Age of Ravi after 5 years = $23+5 = 28$

So the answer is option C.

Question 6

Sumeeth and Pranav started a business with initial investments of 3000/- and 5000/- respectively. After 8 months, Sumeeth left the business. The business made a profit of 490/- at the end of the year. What is the share of Pranav?

A 70

B 350

C 140

D 210

Answer: B

Explanation:

Sumeeth : pranav = $(3000 \times 8) : (5000 \times 120) = 24 : 60 = 2 : 5$

Share of pranav = $\frac{5}{2+5} \times 490 = \frac{5}{7} \times 490 = 350/-$

So the answer is option B.

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Question 7

6 years earlier, the ages of Suresh & Ramesh are in the ratio 5:6. Suresh will be 45 years old nine years from now. What is the age of Ramesh 15 years from now?

- A 48
- B 51
- C 54
- D 57

Answer: D

Explanation:

Age of Suresh after 9 years from now is 45 ==> present age of suresh = $45 - 9 = 36$

Let x be the present age of Ramesh

Before 6 years, Age of suresh = $36 - 6 = 30$ & age of ramesh = $x - 6$

Their ratio = 5::6

$$30 / (x - 6) = 5 / 6$$

$$x = 42$$

Age of Ramesh after 15 years = $42 + 15 = 57$

So the answer is option D.

Question 8

Age of Ravi is $\frac{4}{5}$ th of the age of his brother. If the sum of their ages is 72, find the age of Ravi's brother 9 years earlier?

- A 33
- B 32
- C 31
- D 30

Answer: C

Explanation:

Age of Ravi = $4x$, And age of his brother = $5x$

Sum of their ages = 72

$$4x + 5x = 72$$

$$9x = 72$$

$$x = 8$$

Age of ravi's brother before 9 years = $5x - 9 = 5(8) - 9 = 40 - 9 = 31$

So the answer is option C.

Question 9

Sampath and Vishal started a business with initial investments of 20000/- and 45000/- respectively. After 6 months, Sampath invested another 30000/-. If the year end profit is Rs. 32000, what is the share of Vishal?

A 14000

B 18000

C 20000

D 22000

Answer: B

Explanation:

Sampath : Vishal = $(20000 \times 12 + 30000 \times 6) : (45000 \times 12) = (24+18) : (54) = (42) : (54) = 7 : 9$

$$\text{Share of Vishal} = \frac{9}{7+9} \times 32000 = \frac{9}{16} \times 32000 = 18000$$

So the answer is option B.

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Question 10

The ages of 5 persons are in AP. The youngest person was 31 years old while the oldest person was 39 years old. What is the average age of the 5 persons?

A 33

B 34

C 35

D 36

Answer: C

Explanation:

Given that their ages are in AP and least age is 31 and highest age is 39

1st term = $a = 31$

5th term = $l = 39$

Sum of their ages is $S_n = \frac{n}{2}[a + l] = \frac{5}{2}[31 + 39] = \frac{5}{2}[70] = 175$

Hence average = $\frac{175}{5} = 35$

So the answer is option C.

Question 11

Three persons, A, B and C, started a business and earned a profit of 42000/-. If the investments of A, B and C are in the ratio 3:5:6, find the profit share of B ?

A 12000

B 15000

C 18000

D 21000

Answer: B

Explanation:

B's share = $\frac{5}{3+5+6} \times 42000 = \frac{5}{14} \times 42000 = 15000/-$

So the answer is option B.

Question 12

Suresh appeared for final exams of his class X. He scored an average of 50 marks in English, Hindi, Maths and Computers. His average score in Maths, Social Science, Science and Physical education was 70. If his average score in all 7 subjects was 58 then find his score in Maths.

A 68

B 74

C 72

D Cannot be determined

Answer: B

Explanation:

Let us assume that his scores in English be a, Hindi be b, Maths be c, computers be d, Social Science be e, Science be f and Physical Education be g. So we have

$$a + b + c + d = 50 \times 4 = 200$$

Similarly,

$$c + e + f + g = 70 \times 4 = 280$$

Adding both equations, we get

$$a + b + 2c + d + e + f + g = 480$$

We have been given that

$$a + b + c + d + e + f + g = 58 \times 7 = 406$$

Subtracting both, we get $c = 74$

Hence, his marks in Maths must be 74.

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Question 13

An alloy contains gold and silver in the ratio 3:4. Another alloy contains silver and tin in the ratio 5:4. In what ratio should the two alloys be mixed so that the ratio of gold and tin in the new mixture is 4:7?

- A 3:4
- B 17:31
- C 16:27
- D 1:2

Answer: C

Explanation:

Let us assume that we have $63x$ units of first alloy be mixed with $63y$ units of second alloy.

$63x$ units of alloy 1 will contain $27x$ units of gold and $36x$ units of silver.

$63y$ units of alloy 2 will contain $35y$ units of silver and $28y$ units of tin.

So we have

$$\frac{27x}{28y} = \frac{4}{7}$$

$$\Rightarrow \frac{x}{y} = \frac{4 \times 28}{7 \times 27} = \frac{16}{27}$$

Hence, option C is the correct answer.

Question 14

Two numbers are in the ratio 7 : 9. If 12 is subtracted from each, the new numbers we get are in the ratio 25 : 33. What is the difference of the 2 numbers?

- A 56
- B 32
- C 44

D 38

Answer: B

Explanation:

Let the two numbers be $7x$ and $9x$ respectively

Also we have, $\frac{7x-12}{9x-12} = \frac{25}{33}$

$$231x - 396 = 225x - 300$$

$$6x = 96$$

$$x = 16$$

So the two numbers are 112 and 144.

Required difference = $144 - 112 = 32$

Hence, option B is the right choice.

Question 15

A milk mixture of 120 litres contain milk and water 5 : 3. If we want the ratio of milk to water to be 3 : 5, what additional quantity of water must be added?

A 95 litres

B 80 litres

C 65 litres

D 70 litres

Answer: B

Explanation:

Total quantity of mixture = 120 litres

Quantity of milk = $5 \times 120 / 8 = 75$ litres and quantity of water = $120 - 75 = 45$ litres

Let the quantity of water to be added be 'x' litres to get the ratio of 3 : 5.

We get, $75 : (45 + x) = 3 : 5$

$$375 = 135 + 3x$$

$$240 = 3x$$

$$x = 80 \text{ litres}$$

Hence, option B is the right choice.

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Question 16

Eight years ago the age of the father was three times the age of the son. 4 years hence, their ages will be in the ratio 15:7. Find the present age of the father.

A 62

B 44

C 56

D 60

Answer: C

Explanation:

Let F,S are the present ages of father and son.

$$F-8 = 3(S-8)$$

$$3S-F = 16 \text{ -----(1)}$$

$$\frac{F+4}{S+4} = \frac{15}{7}$$

$$7F+28 = 15S+60$$

$$15S-7F = -32 \text{ -----(2)}$$

On solving (1) & (2)

$$15S-5F = 80$$

$$15S-7F = -32$$

we will get $2F = 112$, $F = 56$

So the answer is option C.

Question 17

A and B start a business by investing amounts in the ratio 2:3. After 6 months, A invests some more amount. By the end of the year, A and B split the profit equally. What is the ratio of the amount invested by A at the beginning of the year to the amount invested after 6 months?

A 2:1

B 1:2

C 1:1

D 2:3

Answer: C

Explanation:

Let the amounts invested by A and B be $2x$ and $3x$.

After 1 year, A's share and B's share will be $2x \times 12 : 3x \times 12 = 24x : 36x$

A invests some amount after 6 months due to which its share also becomes $36x$.

Therefore, amount invested by A after 6 months would have contributed $12x$.

Let y be the amount invested by A after 6 months.

$$6 \times y = 12x$$

$$\Rightarrow y = 2x.$$

Ratio of amounts invested by A at the beginning and after 6 months = $2x:2x = 1:1$.

Therefore, option C is the right answer.

Question 18

A shopkeeper has two varieties of rice. The cost price of the two varieties is Rs 40 per kg and Rs 54 per kg. The shopkeeper mixes the two varieties in a certain ratio and then sells the mixture at Rs 63 per kg. If the profit made by the shopkeeper is 40 % then find the ratio in which he mixed the two varieties of rice?

A 4:7

B 9:5

C 3:7

D 3:5

Answer: B

Explanation:

We know that by selling rice for Rupees 63 per kg, the shopkeeper makes a profit of 40 %. Hence, the cost price of the mixture for him will be $63/1.4 = 45$ per kg. Let us say that he mixes 'a' kg of 40 rupees rice with 'b' kg of 54 rupees rice. Hence, we have

$$40*a + 54*b = 45(a + b)$$

$$\Rightarrow 40a + 54b = 45a + 45b$$

$$\Rightarrow 5a = 9b$$

$$\Rightarrow a/b = 9/5$$

Hence, the required ratio is 9:5

So the answer is option B.

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Question 19

A mixture contains milk and water in the ratio 3:4. How much pure milk (as compared to pure milk currently in the mixture) should be added to the mixture so that the ratio of milk and water becomes 15:8?

A 100 %

B 150 %

C 125 %

D 80 %

Answer: B

Explanation:

Let the quantity of initial mixture be 35 litres. So it will have 15 litres milk and 20 litres of water. Now in the new mixture the total water is $\frac{8}{23}$ times the total quantity. We know that no new water has been added. Hence, the total quantity of final mixture will be $20 \times \frac{23}{8} = 57.5$ litres. Hence, 22.5 litres of milk must be added. It would be 150 %

Question 20

A shopkeeper has 2 varieties of rice. Rice A costs Rs.12/kg and Rice B costs Rs.15/Kg. The shopkeeper mixes the 2 varieties of rice in some ratio and sells the mixture at the cost price of rice B. He realizes a profit percentage of 12.5% by doing so. In what ratio did he mix the 2 rice varieties?

- A 2:3
- B 3:2
- C 5:4
- D 1:1

Answer: C

Explanation:

Let the quantity of rice A be 'a' and rice B be 'b'.

$(12a + 15b)/(a+b)$ is the cost price of a Kg of the mixed rice.

We know that the shopkeeper realizes a profit of 12.5% by selling it at Rs.15.

$$\Rightarrow 1.125 \times (12a + 15b)/(a+b) = 15$$

$$13.5a + 16.875b = 15a + 15b$$

$$1.5a = 1.875b$$

$$a/b = 1.875/1.5 = 5/4.$$

Hence, option C is the right answer.

Question 21

In a map of scale 1:20,000, what will be the length of the border between Telangana and Andhra Pradesh, if the actual border is 2,250 kms?

- A 11.25 cms
- B 112.50 cms
- C 1125 cms
- D 11250 cms

Answer: D

Explanation:

The length on the map = $2,250 \times \frac{1,00,000 \text{ cms}}{20,000} = 11,250 \text{ cms}$

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Question 22

A student mixes 3 litres of pure river water with 4 litres of seawater. Seawater contains salt. If he able to retrieve 0.5 gms of salt per gram of the mixture, what is the amount of salt in sea water in grams per litre? The density of the final mixutre is .75 grams/ litre.

- A 0.33 grams/ litre
- B 0.44 grams/ litre
- C 0.55 grams/ litre
- D 0.66 grams/ litre

Answer: D

Explanation:

Total weight of water is 7 litres * 0.75 grams/litre = 5.25 grams

The amount of salt in the mixture = 5.25 * 0.5 = 2.63 grams.

So, the amount of salt in seawater = 2.63/4 = 0.66 grams/ litre

Question 23

The tax on income in India is 30%. A corrupt Income Tax officer reported 24 crores to be the unaccounted income of an accused when the actual value was 30 crores. He gets the accused to pay the relevant tax and siphons off the 6 crores. Compared to the tax that was supposed to be paid, what is the percentage loss to the Indian Revenue Department?

- A 20%
- B 30%
- C 40%
- D 50%

Answer: A

Explanation:

The tax on 30 crores = 30 * 30% = 9 crores.

The tax on 25 crores = 24 * 30% = 7.2 crores

Loss = 9 - 7.2 = 1.8 crores.

So, percentage loss = $100 * \frac{1.8}{9} = 20\%$

Question 24

Abdul and Waqar, together drink 2 litres of coconut water a day. If the quantity of coconut water consumed by Abdul is 30% more than Waqar, what is the difference between their water consumption quantity?

- A 0.13 litres
- B 0.26 litres
- C 0.39 litres
- D 0.52 litres

Answer: B

Explanation:

Let the amount consumed by Waqar be x litres

Amount consumed by Abdul = $1.3x$

So, $x + 1.3x = 2$ litres

$2.3x = 2$

So, $x = 2/2.3 = 0.87$

The required value = $1.3x - x = 0.3x = 0.3 * 0.87 = 0.26$ litres

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Question 25

Rahul deposits Rs. 1000 in a bank account and gets compound interest of 10% per annum exactly at the end of the year. He lets the deposit stay for exactly 3 years. For accounting purposes, the bank manager takes note of the daily balance on his account, every day for the three years. If Rahul doesn't withdraw or deposit any amount in the meanwhile, what is his average daily balance? Assume none of the three years are leap years.

- A Rs. 1100
- B Rs. 1103
- C Rs. 1106
- D Rs. 1109

Answer: B

Explanation:

The deposit is Rs. 1000 for 365 days, $1000 * 1.1 = 1100$ for 365 days and $1000 * 1.1 * 1.1 = 1210$ for 365 days.

So, the average daily balance = $\frac{1000*365+1100*365+1210*365}{3*365}$

= Rs. 1103.33

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