Date : 18th Jan 2024 **Quantitative Aptitude - Ratios and Proportion** **English**

Q:1 If ratio a : b and b : c are both equal to 2 : 3, find the ratio of 3a + 7b – 2c and 5a – 11b + 10c.
1. 3 : 7
2. 4 : 5
3. 9 : 11
4. 13 : 17

Q:2 The ratio of men and women in a village is 7 : 6. If 10 men join the village and 15 women leave the village, the ratio becomes 4 : 3. Find the previous population of the village.
1. 390
2. 325
3. 455
4. 364

Q:3 The ratio of students in sections A and B of class 10 in a school is 4 : 5. Boys to girls ratio is 11 : 9 and 3 : 2 in sections A and B respectively. If the classes are merged, find the ratio of boys to girls in the merged class.
1. 17 : 13
2. 26 : 19
3. 31 : 23
4. 11 : 7

Q:4 Two numbers are in the ratio 3 : 2. If 3 is added to the larger number and 2 to the smaller number, the ratio is still 3 : 2. The numbers are?
1. 42 : 28
2. 633 : 422
3. Both 1 and 2
4. Cannot be determined

Q:5 Ratio of present ages of Tushar, Garima and Saurav is 5 : 7 : 4. If the sum of their ages after 9 years will be 139 years then what was the age of Garima 5 years ago?
1. 30 years
2. 37 years
3. 44 years
4. 36 years

Q:6 The present ages of a mother and daughter are in the ratio of 8 : 3. After 12 years, the ratio of their ages will be 2 : 1. What is the sum of the present ages of the mother and the daughter?
1. 71 years
2. 66 years
3. 69 years
4. 74 years

Q:7 If A : B = 17 : 7 & B : C = 7 : 17, find A : C.
1. 119 : 17
2. 119 : 49
3. 49 : 119
4. 1 : 1

Q:8 Which of the following ratio is the greatest?
1. 7 : 15
2. 15 : 23
3. 17 : 25
4. 21 : 29

Q:9 The ratio of ages of Rahul and Vimal 4 years ago was 4 : 3. The ratio of sum and difference of their present ages is 9 : 1. What will be the age of Vimal after 4 years?
1. 16 years
2. 20 years
3. 18 years
4. 22 years

Q:10 If a carton containing a dozen mirrors is dropped, which of the following cannot be the ratio of broken mirrors to unbroken mirrors?
1. 2:1
2. 3:1
3. 3:2
4. 7:5
5. 5:7

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Answer Key

1. (3)	**2.** (1)	**3.** (2)	**4.** (4)	**5.** (3)
6. (2)	**7.** (4)	**8.** (4)	**9.** (2)	**10.** (3)

Answers and Solutions

Q:1 The correct answer is **option 3** i.e. **9 : 11.**
Given
a : b = 2 : 3
b : c = 2 : 3
a : b : c = 2 × 2 : 3 × 2 : 3 × 3
Let a, b, c be equal to 4m, 6m, 9m respectively.
Now,
3a + 7b − 2c = (3 × 4 + 7 × 6 − 2 × 9)m = 36m
5a − 11b + 10c = (5 × 4 − 11 × 6 + 10 × 9)m = 44m
Required ratio = 36m : 44m = 9 : 11

Q:2 The correct answer is **option 1** i.e. **390.**
Let the number of men and women be 7x and 6x respectively.
Ratio when 10 men join and 15 women leave = (7x + 10)/(6x − 15)
According of condition,
(7x + 10)/(6x − 15) = 4/3
3(7x + 10) = 4(6x − 15)
21x + 30 = 24x − 60
3x = 90
x = 30
Total population = 6x + 7x = 13x = 13 × 30 = 390

Q:3 The correct answer is **option 2** i.e. **26 : 19.**
As the ratio of students is given, we can assume students in both sections accordingly
Let the students be 40 and 50 respectively.
Boys in section A = (11/20) × 40 = 22
Girls in section A = (9/20) × 40 = 40 - 22 = 18
Boys in section B = (3/5) × 50 = 30
Girls in section B = 50 - 30 = 20
Sections are merged, number of boys in merged class = 22 + 30 = 52
Number of girls = 18 + 20 = 38
Hence,
Ratio = 52 : 38 = 26 : 19

Q:4 The correct answer is **option 4** i.e. **Cannot be determined.**
Given information is insufficient to get an answer that is finite because any two numbers given in a particular ratio will continue to be in same ratio if numbers are added/subtracted/multiplied/divided in their ratio.

Q:5 The correct answer is **option 3** i.e. **44 years**
Suppose the present ages of Tushar, Garima and Saurav are 5x, 7x and 4x respectively.
Given: sum of their ages after 9 years will be 139 years
So,
(5x + 7x + 4x) + 9 × 3 = 139
⇒ 16x = 139 − 27
⇒ 16x = 112
⇒ x = 7
Hence, age of Garima 5 years ago = 7 × 7 − 5 = 44 years

Q:6 The correct answer is **option 2** i.e. **66 years**

Understanding	Application
The present age of a mother and daughter is in the ratio of 8 : 3.	Suppose Present age of Mother = 8x Present age of daughter = 3x
After 12 years, the ratio of their ages will be 2 : 1.	So, (8x + 12) : (3x + 12) = 2 : 1 ⇒ 8x + 12 = 6x + 24 ⇒ 2x = 12 ⇒ x = 6
Sum of the present age of the mother and the daughter = 8x + 3x = 11x	Hence, Required sum = 11 × 6 = 66 years

Q:7 The correct answer is **option 4** i.e. **1 : 1**.

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A : B = 17 : 7 & B : C = 7 : 17
⇒ A : C = AB : BC
⇒ 17 × 7 : 7 × 17
⇒ 1 : 1

Q:8 The Correct Answer is **Option 4** i.e **21 : 29.**
The given ratios are: 7 : 15, 15 : 23, 17 : 25 and 21 : 29.
⇒ 7 : 15 = 7/15 = 0.47
⇒ 15 : 23 = 15/23 = 0.65
⇒ 17 : 25 = 17/25 = 0.68
⇒ 1 : 29 = 21/29 = 0.72
Hence, the greatest ratio among the given options is 21 : 29 = 0.72

Q:9 The correct answer is **option 2** i.e. **20 years**
Let present age of Rahul be x
And present age of Vimal be y.
4 years ago, ratio of age = 4 : 3
i.e. (x - 4)/(y - 4) = 4/3
3x - 12 = 4y -16
4y - 3x = 4 ------ (1)
Also, ratio of sum and difference of their present age = 9 : 1
i.e. (x + y)/(x - y) = 9/1
x + y = 9x - 9y
10y = 8x
or, 5y = 4x ------ (2)
Solving equation (1) & (2):
y = 16 years
x = 20 years.
Hence, present age of Vimal is 16 years
So, after 4 years, age of Vimal will be 16 + 4 = 20 years

Q:10 The correct answer is **Option 3** i.e. **3:2**

Concept	Application
Ratio	For dividing 12 into two whole numbers, the sum of the ratio terms must be a factor of 12. So, they cannot be in the ratio 3:2

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