Ratio and Proportion

1. Manish and Satish invested 2/5 and 7/10 of their respective monthly salaries and ratio between monthly saving of Manish and Satish is 5 : 6. If monthly salary of Satish is Rs.60,000 then find Manish's monthly salary (in Rs.)?
(A) 25,000 **(B)** 30,000
(C) 40,000 **(D)** 45,000
(E) 50,000

2. In college X, number of boys is twice the number of girls. Ratio of the boys in college X & college Y is 1 : 3. If the number of girls in college Y is 103 and total students in both colleges is 1048 then what is the number of girls in college X?
(A) 105 **(B)** 150
(C) 110 **(D)** 95
(E) 120

3. The breath and length of rectangle is in the ratio 4:7. If perimeter is 88 cm then find the area of rectangle.
(A) 448 cm^2 **(B)** 396 cm^2
(C) 414 cm^2 **(D)** 554 cm^2
(E) 534 cm^2

4 A sum of money is divided among P, R,T and Z in the ratio 4 : 7 : 9 : 14. If the share of P and R is Rs 4604 more That T, then what is the total amount of T and Z together.
(A) 52946 **(B)** 31223
(C) 40232 **(D)** 32321
(E) 35212

5. The ratio of the prices of two houses A and B was 4 : 5 last year. This year, the price of A is increased by 25% and that of B by Rs. 50,000. If their prices are now in the ratio 9 : 10, the price of A last year was :
(A) Rs. 3,60,000 **(B)** Rs. 4,50,000
(C) Rs. 4,80,000 **(D)** Rs. 5,00,000
(E) Rs. 3,30,000

Direction (6 – 10): There are 450 coupons which can be used in Pedicure and Hair cutting. Ratio between Males to Females who use their coupons in Hair cutting is 13 : 7.

Number of males who use their coupons in Pedicure is 72 more than number of females who use their coupon in Hair cutting. Total number of males who use their coupon in Pedicure and Haircutting together is 174 more than total number of females who use their coupon in Pedicure and Haircutting together.

6. Males who use their coupon in Pedicure is what percent of the Males who use their coupons in Haircutting?
(A) 200%
(B) 100%
(C) None of the given options
(D) 0%
(E) 150%

7. Find the ratio between Total number persons who use their coupons in Pedicure to total number of persons who use their coupons in Haircutting?
(A) 52 : 23
(B) None of the given options
(C) 8 : 9
(D) 8 : 7
(E) 7 : 8

8. Females who use their coupon in Haircutting is how much more than Females who use their coupon in Pedicure?
(A) 15 **(B)** 45
(C) 30
(D) None of the given options
(E) 60

9. Out of males who use their coupons in Haircutting, 25% belongs to city A, then

find number of males who use their coupons in Haircutting which doesn't belongs to city A?
(A) None of the give options
(B) 108 **(C)** 126
(D) 117 **(E)** 135

10. Ratio between Males who use their coupon in Pedicure to that of in Spa is 4 : 5, while ratio between Females who use their coupon in Haircutting to that of in Spa is 6 : 11. Find total number of people who use their coupons in Spa?
(A) 349 **(B)** 481
(C) 300 **(D)** 440
(E) None of the given options

11. A certain amount was distributed among A, B and C in the ratio 1 : 3 : 5 but it was actually distributed in ratio 2 : 3 : 6 due to which B got Rs 42 less. Find the amount actually to be received by A.
(A) Rs 66 **(B)** Rs 77
(C) Rs 84 **(D)** Rs 126
(E) Rs 154

12. A sum of money is divided between two persons in the ratio of 19:16. If the share of one person is Rs. 90 less than that of the other, what is the sum?
(A) Rs.1000 **(B)** Rs.1050
(C) Rs.1500 **(D)** Rs.1820
(E) Rs. 2000

13. The ratio of age of father and son is x:y. If father's age is increased by 1 years and son's age is increased by 5 year then the new ratio of their ages becomes 17:13. Given that the sum of their actual ages is 54. Find the actual ratio of their ages:
(A) 21:22 **(B)** 17:37
(C) 11:7 **(D)** 13:19
(E) None of these

14. 900 toffees is to be divided among three friends say A, B and C. C gets half of what A and B together gets and B gets 5/3 times as much as A. How many toffees does A have?
(A) 225 **(B)** 250
(C) 275 **(D)** 350
(E) Insufficient data

15. The ratio between Sumi's and Pari's age at present is 2:3. Sumi is 6 years younger than Pari. The ratio of Sumi's age to Pari's age after 6 years will be:
(A) 1:2 **(B)** 2:3
(C) 3:4 **(D)** 3:8
(E) None of these

16. The ratio of students in a coaching institute preparing for admission in IIT and IIM is 5:6. The ratio of fees collected from each of the student preparing for admission in in IIT and IIM is 20:15. If the total amount collected from all the students is Rs. 3.8 lakhs, what is the total amount collected from students aiming to admission in IIM only?
(A) Rs. 120000 **(B)** Rs. 180000
(C) Rs. 100000 **(D)** Rs. 175000
(E) None of these

17. The ratio of money with Rehan and Gopi is 7 :17 and that with Gopi and Krishen is 7:17. If Rehan has Rs.490, Krishen has -
(A) Rs.2980 **(B)** Rs.2890
(C) Rs.3020 **(D)** Rs.1500
(E) None of these

18. The monthly incomes of 2 persons are in ratio 4:5 and monthly expenses in ratio 7:9. If each one of them saves Rs.50 a month, then what are their monthly incomes?
(A) Rs. 700 and Rs. 800
(B) Rs. 600 and Rs. 700
(C) Rs. 500 and Rs. 600
(D) Rs. 400 and Rs. 500

(E) None of these

19. The respective ratio between the ages of A, B and C is 2: 3: 5. If the average of their present ages is 70 years then what would be the difference in ages of B and C 10 years ago?
(A) 52 years **(B)** 63 years
(C) 42 years **(D)** 21 years
(E) None of these

20. The age of two persons A and B are in the ratio of 7 : 5 . After 6 years the ratio will become 4: 3. What is the sum of age of A and B?
(A) 72 years **(B)** 60 years
(C) 64 years **(D)** 42 years
(E) 30 years

Solution

1. **Answer: (A)**
Satish's monthly saving = $60{,}000 \times \frac{3}{10}$
$= 18{,}000\ Rs.$
Manish's monthly saving = $18{,}000 \times \frac{5}{6}$
= 15,000 Rs.
Manish's monthly salary = $15{,}000 \times \frac{5}{3}$
= 25,000 Rs.

2. **Answer: (A):**
The correct answer is Option 1 i.e. 105
Suppose the number of girls in college X = n
Number of boys in college X = 2n
Since Ratio of the boys in college X & college Y is 1 : 3;
So, number of boys in college Y = 3 × 2n
= 6n
It is given that total students in both colleges is 1048.
Hence,
n + 2n + 6n + 103 = 1048
9n = 945
n = 105
Hence, number of girls in college X = 105

3. **Answer: (A)**
Given:
Ratio of Breadth and length of rectangle = 4 : 7
Perimeter = 88 cm
Formulae used:
Perimeter = 2(L + B)
Area = Length × Breadth
Calculation:
Let the breadth and length be 4x and 7x respectively
So, perimeter of rectangle = 2(L + B)
⇒ 2(7x + 4x) = 88cm
⇒ 2 × 11x = 88 cm
⇒ 22x = 88 cm
⇒ x = 4 cm
So, Breadth = (4 × 4) cm = 16 cm
Length = (7 × 4) cm = 28 cm
Now, Area = Length × Breadth
⇒ (28 × 16) cm^2
⇒ 448 cm^2
∴ The area of rectangle is 448 cm^2

4. **Answer: (A)**
Let share of P, R, T and Z to be 4x, 7x, 9x and 14x
So,
4x + 7x – 9x = 4604
2x = 4604
x = 2302
Required amount = 9x + 14x
= 23x
= 23 × 2302
= 52946

5. **Answer: (A)**
Let the prices of two houses A and B be Rs. 4x and 5x, respectively for the last year.
Then, the prices of A this year = Rs. (1.25 × 4x) and that of B = Rs. (5x + 50,000
$\therefore \frac{1.25 \times 4x}{5x + 50{,}000} = \frac{9}{10}$
⇒ 50x – 45x 45000 ⇒ 5x = 4,50,000

⇒ X = 90,000
Hence, the price of A last year was
4x = Rs. 3,60,000

Answer: (6 – 10)

Let Males and females who use their coupons in
Haircutting be 13x and 7x respectively.
⇒ Males who use their coupons in pedicure = 7x + 72
Then Females who use their coupons in pedicure
= $450 - 13x - 7x - 7x - 72 = 378 - 27x$

Pedicure		Haircutting	
Males	Females	Males	Females
7x + 72	378 – 27x	13x	7x

ATQ,
$7x + 72 + 13x - (7x + 378 - 27x) = 174$
40*x* – 306 = 174
40*x* = 480
x = 12

Pedicure		Haircutting	
Males	Females	Males	Females
156	54	156	84

6 Answer: (B)

Required % = $\frac{156}{156} \times 100 = 100\%$

7. Answer: (E)

Required ratio = $\frac{156 + 54}{154 + 84} = \frac{210}{24} = \frac{7}{8}$

8. Answer: (C)

Required difference = $84 - 54 = 30$

9. Answer: (D)

Number of males who use their coupons in Haircutting which doesn't belongs to city A
= $156 \times \frac{75}{100} = 117$

10. Answer: (A)

Males who use their coupons in Spa
= $156 \times \frac{5}{4} = 195$
Females who use their coupons in Spa = $84 \times \frac{11}{6} = 154$
Total number of people who their coupon in Spa
= 195 + 154 = 349

11. Answer: (B)

Let total amount be Rs. 99x
ATQ, $\frac{3}{9} \times 99x - \frac{3}{11} \times 99x = 42$
$x = 7$
Required amount = $\frac{1}{9} \times 99x = 11x = Rs.77$

12. Answer: (B)

Let the ratio of money with two persons = 19x:16x
16x = 19x – 90
So, x = 30
Sum = 19x + 16x = 35x = 35 x 30 = Rs.1050. Hence, option b.

13. Answer: (C)

Sum of their actual ages = 54
x + y = 54
(x + 1)/(y + 5) = 17/13
13x + 13 = 17y + 85
x + y = 54
Solving, we get x = 33
and y = 21
Required ratio = 33:21 = 11:7.

14. Answer: (A)

A + B + C = 900
C = (A + B)/2
B = 5A/3
C = 4A/3
A + 5A/3 + 4A/3 = 900
4A = 900
A = 225.

15. Answer: (C)

Let their ages be 2x and 3x respectively.
According to the question, 3x – 2x = 6
Therefore, x = 6
Sumi's age = 12 years and Pari's age = 18 years.
After 6 years, Sumi's age = 18 years And Pari's age = 24 years
Therefore, Ratio of their ages after 6 years = 18 :24 = 3:4.

16. Answer: (B)

The ratio of fees collected from IIT:IIM aspirants = 5x × 20y : 6x × 15y = 100xy : 90xy i.e. 10xy : 9xy
Therefore, the amount collected from IIM aspirants = 9/19 × 3.8 lakh = Rs. 180000.

17. Answer: (B)
Rehan : Gopi = 7:17 = 49:119
Gopi : Krishen = 7:17 = 119:289
Therefore, Rehan : Gopl : Krishen
= 49:119:289
Or, Rehan : Krishen = 49: 289
Thus, 49 : 289 = 49 : x
Or, x = (289x490)/49
Therefore, x = Rs. 2890. Hence, option b.

18. Answer: (D)
Let the income of the persons be Rs. 4x and Rs. 5x respectively
Let the expenses of the persons be Rs. 7y and Rs. 9y respectively
Therefore,
4x - 7y = 50
5x - 9y = 50
So, x = 2y
y = Rs. 50 and x = Rs. 100
So monthly incomes = Rs. 400 and Rs. 500.

19. Answer: (C)
70 = (2x + 3x + 5x)/3
= > x = 21
= > B's age = 63
= > C's age = 105
Required difference = 95 - 53 = 42

20. Answer: (A)
Let the age of A = 7x and age of B = 5x
After 6 years, age of A = (7x + 6) years and B = (5x + 6) years
According to the question,
(7x + 6)/(5x + 6) = 4/3 or, x = 6
Age of A = 42 years
Age of B = 30 Years
sum = (42 + 30) 72 years.