PROBLEMS BASED ON NUMBERS

To solve the question based on numbers, the number is to be written in algebraic form. For the example let the number be x.

The numerator of a fraction is written in the following form –

Three – fourth of a number = x * $\frac{3}{4} = \frac{3x}{4}$

Two – third of a number = x * $\frac{2}{3} = \frac{2x}{3}$

Double of a number = 2 x.

Thrice of a number = 3 x.

20 % of a number = $\frac{x*20}{100} = \frac{x}{5}$

And 120 % of a number = $\frac{120\,x}{100} = \frac{6x}{5}$

30 % of $\frac{3}{4}$ of one – third of a number = x * $\frac{1}{3} * \frac{3}{4} * \frac{30}{100}$

Three consecutive odd numbers are x, (x + 2) and (x + 4), or (x - 2), x and (x + 2), where x is an odd number.

Similarly three consecutive even numbers are x, (x + 2) and (x + 4) or (x - 2), x and (x + 2) where x is an even number.

Main Formulae :

(i) $(x - y)^2 = (x + y)^2 - 4\,x\,y$

(ii) $(x + y)^2 = (x - y)^2 + 4\,x\,y$

(iii) $(x + y)^2 = x^2 + 2\,x\,y + y^2$

(iv) $(x - y)^2 = x^2 - 2\,x\,y + y^2$ and

(v) $x\,y = \frac{1}{4}[\,(x + y)^2 - (x - y)^2\,]$

Some Unsolved Examples -

Example 1- The difference between the middle number of three consecutive odd numbers and the middle number of there consecutive even numbers is 7. What will be the difference between the total of these odd numbers and the total of those three even numbers ?

Example 2- When 40 % of first number is added to the second number the second number becomes 1.2 times of itself. What is the ratio between the first and second numbers ?

Example 3- The difference of two numbers of two digit each is 24 while the sum of these two numbers is 102. What is the larger number ?

Example 4- The sum of three consecutive even numbers is 28 more than the average of these three numbers. What is the first of these three numbers ?

Example 5- The product of two numbers is 24 times the different of these two numbers. If the sum of these numbers is 14, what is the larger number ?

EXERCISE

1. The sum of three consecutive add numbers is 20 more than the first number of these. What is the middle number ?

   (a) 7 (b) 8

   (c) 12 (d) 9

   (e) None of these

2. The sum of three numbers is 174. The ratio of second number to the third number is 9 : 16 and the ratio of first to the third number is 1 : 4. What is the second number ?

   (a) 52 (b) 45

   (c) 54 (d) Data is inadequate

   (e) None of these

3. When 30 % of one number is added to second number, the second number increase by one – fifth. What is the ratio of the first number to the second number ?

(a) 5 : 6 (b) 3 : 2

(c) 2 : 3 (d) 1 : 2

(e) None of these

4. The difference between a two – digit number and the number obtained by interchanging the position of the digits is 45. What is the difference between the digits of that number ?

(a) 4 (b) 5

(c) 6 (d) 7

(e) None of these

5. If on subtracting 28 from a number, the remainder is one – third of the number. What is 50 % of the number ?

(a) 23 (b) 24

(c) 22 (d) 36

(e) None of these

6. If one – third of a number is 10 more than one – fourth of the same number, what is 60 % of that number ?

(a) 144 (b) 24

(c) 18 (d) 72

(e) None of these

7. The difference between a number of two – digit and the number obtained by interchanging its digits is 63. What is the difference between its digits ?

(a) 5 (b) 6

(c) 7 (d) 8

(e) None of these

8. If the difference between the digits of a two digit number is 3 and the product of the digits is 18, what is the sum of the digits of that number ?

(a) 8 (b) 9

(c) 7 (d) 6

(e) None of these

9. If the sum of the digits of a two – digit number is 9 and the difference of those digits is 3, what is the product of the digit of the same number ?

(a) 9 (b) 36

(c) 18 (d) 72

(e) None of these

10. If one – fourth of $\frac{3}{5}$ of two – third of number is 34, what is 20 % of the number ?

(a) 68 (b) 36

(c) 86 (d) 63

(e) None of these

Answer Key

1. d	**6. d**
2. c	**7. c**
3. c	**8. b**
4. b	**9. c**
5. e	**10. a**