Aptitude Assignment 2

What quantity of water should be added to the milk water mixture so that the milk water ratio changes from 2:3 to 4:11. The quantity of milk in the mixture is 40 litres?

Solution:

Given, the ratio of milk and water = 2: 3

And we have total 40 litres of milk

Let x be the litres added to the mixture.

Step 1:

Quantity of Milk in mixture of 40 litres $= \frac{4}{5} \times 40 = 32$ litres

So, the quantity of water in mixture of 40 liters = 40 - 32 = 8 litres.

Now, let x litres of water be added to the mixture ,

And the ration of milk and water after adding water is 4:11

$\Rightarrow 4/11 = 32/8+x$

$\Rightarrow .4(8+x) = 11*32$

$32+4x=352$

$4x=352-32$

$4x=320$

$X=80$

80 liters of water should be added.

Qus2

Linear equation 2x+3y=0 meets the x & y-axis at the point?

2x+3y=0

x	y
-3	2
3	-2

0	0

Que3

a & b are positive integers such that a^2-b^2=19. Find a & b?

a^2-b^2=19

a>0

b>0

factors are 1 & 19 only as 19 is a prime number

(a+b) (a-b)=19

a+b>0

a-b>0

hence factors are 10 &9 as this value gives us the positive addition and positive subtraction.

A=10 & b=9

Que3

Find a^3+b^3+c^3+3abc , where a+b+c=5 & , a^2+b^2+c^2=10?

(a+b+c)^2=a^2+b^2+c^2+2(ab+bc+ac)⇒ =ab+bc+ca

25-10=15

a^3+b^3+c^3=(a+b+c)[a^2+b^2+c^2+ab+bc+ca]

=5[10+15]

5*25=125

a^3+b^3=c^3=125

5. Sum of two, two-digit numbers is a perfect square. The digits of the first two-digit number are two consecutive positive integers; also, when the digits of the first number are reversed, the second number is formed. Find these numbers & the square root of their sum.

Solution

The greatest possible sum of two digits is $9+9=18$. As such, we only need to consider perfect squares less than or equal to 18, of which there are four:

$1^2=1$
$2^2=4$
$3^2=9$
$4^2=16$

We can now list the ways of writing each square as a sum of two single digit numbers.
$1=1+0$
$4=4+0=3+1=2+2$
$9=9+0=8+1=7+2=6+3=5+4$
$16=9+7=8+8$

t is now a simple matter to see what two digit numbers can be formed from those combinations.
1: 10
4: $40,31,13,22$
9: $90,81,18,72,27,63,36,54,45$
16: $97,79,88$