8th Linear Equations of one or two Variables Solved

CBSE TEST PAPER – 7

11. The sum of the digits of a two digit number is 12.if the new number formed by reversing the digits is greater than the original number by 18, find the original number.

Let the two digit number is $10x + y$

A/Q, $x + y = 12$ so, $x = 12 − y$

Also,

A/Q, The new number formed by reversing the digits = the original number + 18

$10y + x = 10x + y + 18$ Putting, $x = 12- y$

$10y + 12 - y = 10(12 - y) + y + 18$

$9y + 12 = 120 − 10y + y +18$ $\Rightarrow$ $9y + 12 = 138 − 9y$

$\Rightarrow$ $9y + 9y = 138 − 12$ $\Rightarrow$ $18y = 126$ $\Rightarrow y = 126/18 = 7$ $\Rightarrow x = 12-7 = 5$

Original number = $10 \times 5 + 7 = 57$

12. Five years ago, John was twice as old as his brother Jim. Three years from now, the sum of their ages will be 31. How old is Jim now?

Let the present age of Jim = x years   and present age of John = y years

According to the given condition , $(y − 5) = 2(x − 5)$ $\Rightarrow \Rightarrow y − 5 = 2x − 10 \Rightarrow \Rightarrow y = 2x − 5$ ...... (1)

Again, according to the given condition

$(y + 3) + (x + 3) = 31$ $\Rightarrow x + y = 25$ $\Rightarrow x + 2x − 5 = 25$ [Using (1)] $\Rightarrow 3x = 30 \Rightarrow x = 10$

Hence, the present age of Jim is 10 years

13. A father is three times as old as his son is now, but 15 years from now he will be only twice as old as his son at that same time. How old is the son now?

Let the present age of son = x years   ∴ present age of father = $3x$ years

so, after 15 years age of son = $(x + 15)$ years   after 15 years age of father = $(3x + 15)$ years

According to the given condition,

$(3x + 15) = 2(x + 15)$ $\Rightarrow 3x + 15 = 2x + 30 \Rightarrow x = 15$

Hence, the present age of son is 15 years.

14. Kanwar is three years older than Amina. Six years ago, Kanwar's age was four times Amina's age. Find their ages.

Let the current age of Amina = x years So, the current age of Kanwar = (x + 3) years

According to the given condition,

(x + 3 − 6) = 4 (x − 6)   ⇒ x − 3 = 4x − 24 ⇒ − 3x = − 21 ⇒ x = 7

Hence, the current age of Amina = 7 years and the current age of Kanwar = 10 years

15. Sanjana's mother gave her rs.245 for buying cards. if she got some 10 rupee cards,2/3 as many 5 rupee cards, and 1/5 as many 15 rupee cards ,how many cards of each kind did she bought.

Let the number of 10 rupee cards be x.

Then, number of 5 rupee cards = 2x/3 and number of 15 rupee cards = x/5

Now, total amount given to Sanjana = 245

10x +5(2x/3) + 15(x/5) =245 ⇒ x = 15

Hence, number of 10 rupee cards = 15 number of 5 rupee cards = 10 number of 15 rupee cards =3

16. if a worker is engaged for 20 days on a condition that he will be paid rs.60 for each dayhe worked and will be fined rs.5 for the day he is absent.In total he recieved rs.745.so tell how many days was he absent

Let the number of days the worker was absent be x

Then the number of days the worker worked = 20 − x

Now, Money paid for working = Rs 60 × (20 − x) = Rs (1200 − 60x) and money fined for absent = Rs 5x

Thus money received = money paid − money fined

⇒ 745 = 1200 − 60x − 5x ⇒ 65x = 1200 − 745 = 455 ⇒ x =455/65=7

Hence, the worker was absent for 7 days

17. If one number is multiplied by the Number the resulting number is the sum Of thes Square of the First Number And Cube Root Of The second number. Find The Number Of Such Pairs

Let one number be x and the other number be y.

Given, $xy = x^2 + (y)^{\frac{1}{3}}$

$xy - x^2 = y^{\frac{1}{3}}$

$x(y - x) = y^{\frac{1}{3}}$

Cubing on both sides, we have

$x^3 (y-x)^3 = y$ Putting $x = 0$ and $y = 0$, we have LHS = RHS = 0

∴ (0, 0) is the ordered pair satisfying the given equation.

18. Of the three angles of a triangle , the second one is one third of the first and the third angle is 26 degrees more than the first angle. Find all the three angles of the triangle

Let the first angles of the triangle be x. then, second angle $=1/3 \; = \frac{1}{3}$ of first angle x /3

and third angle = first angle + 26 = x + 26

Now we know that sum of angles of a triangle is 180°

X + x/3 + x + 26 =180 $\Rightarrow$ x = 66^0

Hence the required angles are = 66°, 22°, 92°

19. The sum of two twin prime numbers is 60. Find the prime numbers?

Let the one prime number be x and therefore, the other twin prime number must be (x + 2).

According to the question,

Sum of two twin prime number = 60

$\Rightarrow x + (x + 2) = 60 \Rightarrow 2x + 2 = 60 \Rightarrow$ 29

∴ One prime number = x = 29   Other prime number = (x + 2) = (29 + 2) = 31

20. Sunita is as twice as old as Ashima .if six years is subtracted from Ashima 's age and 4 years added to Sunitas age, then Sunita will be four times Ashima' s age . How old were they two years ago ?

Let the Ashima 's age be x then Sunita 's age be 2x

A/q, 4(x - 6) = 2x + 4 $\Rightarrow$ 4x - 24 = 2x + 4 $\Rightarrow$ 4x - 2x = 4 + 24 $\Rightarrow$ x =14

Ashima 's present age is 14 and Sunit 's present age is 14 x 2=28.

Now Asthma 2 years ago = 14 - 2 = 12 years   Sunita = 28 - 2 = 26 years