Linear Equations Questions for CDSE, CGL Tier 2, CGL Tier 1 and SSC 10+2

Linear Equations Quiz 1

Direction: Study the following questions carefully and choose the right answer.

1. Find the value of x and y from the given equation:

3x + 2y = 4, 8x + 5y = 9.

A. {(2, 5)}

B. {(– 2. 5)}

C. {(– 2, 3)}

D. {(1, 3)}

2. Find the value of the given below information

Solve: $\frac{6}{x} + \frac{3}{y} = 7, \frac{3}{x} + \frac{9}{y} = 11$.

A. x = 3/2, y = 1

B. x = 3, y = 1

C. x = 2, y = 1

D. x = 1, y = 3

3. The value of y in the solution of the equation $2^{x+y} = 2^{x-y} = \sqrt{8}$ is:

A. 0

B. 1/4

C. ½

D. 3/4

4. The solution of the equation $x - y = 0.9$ and $\frac{11}{2(x + y)} = 1$ is

A. x = 3.2, y = 2.3

B. x = 1, y = 0.1

C. x = 2, y 1.1

D. None of these

5. The solution set of the equations $\frac{1}{2(2x + 3y)} + \frac{12}{7(3x - 27)} = \frac{1}{2}$; and $\frac{7}{2x + 3y} + \frac{4}{3x - 2y} = 2$ is:

A. {(1, 0)}

B. {(1, – 1)}

C. {(1, 2)}

D. {(2, 1)}

6. From a two digit number, sum of whose digits is 10, if 18 is subtracted, digits of the num are reversed. Then the number is:

A. 64

B. 46

C. 55

D. 73

7. A man has some hens and cows. If the number of heads be 48 and number of feet equals 140, the number of hens will be:

A. 26

B. 24

C. 23

D. 22

8. The sum of two numbers is 80. If the larger number exceeds four times the smaller one by 5. Then the smaller number is

A. 5

B. 15

C. 20

D. 25

9. If from twice the greater of the two numbers 20 is subtracted, the result is the other number. If from twice the smaller number 5 is subtracted, the result is the first number. The largest number is:

A. 12

B. 18

C. 15

D. 25

10. The system of equations 3x + y – 1 = 0 and 6x + 2y – 2 = 0.

A. Has x = 1 and y = 2 as solutions

B. Has x = – 1 and y = – 2 as solutions

C. Does not have a solution

D. Has infinitely many solutions

Correct answers:

1	2	3	4	5	6	7	8	9	10
B	A	A	A	D	A	A	A	C	D

Explanations:

1). To eliminate x, we must make the coefficients of x equal in both of the given equation.

So, multiplying the first equation by 8, second equation by 3 and subtracting, we get: y = 5.

Putting y = 5 in first equations, we get 3x + 10 = 4 or 3x = – 6 or x = – 2.

∴ Solution set is {(– 2, 5)}.

Hence, option B is correct.

2). Putting $\frac{1}{x} = u$ and $\frac{1}{y} = v$, The given equation become:

6u + 3v = 7 and 3u + 9y = 11.

On solving these equations, we get: $u = \frac{2}{3}$ and v = 1.

$\therefore \frac{1}{x} = \frac{2}{3}$ and $\frac{1}{y} = 1$. So, $x = \frac{3}{2}$ and y = 1.

Hence, option A is correct.

3). $2^{x+y} = 2^{x-y}$

$2^{x+y} = 2^{x-y} = 8 = 2^{3/2}$

$\Leftrightarrow x + y = \frac{3}{2}, x - y = \frac{3}{2}$.

Solving these equation we get:

$x = \frac{3}{2}$ & $y = 0$.

Hence, option A is correct.

4). By cross multiplication, 2nd equation becomes $2x + 2y = 11$.

Now multiplying 1st equation by 2 and adding to this equation, we get $4x = 12.8$ or $x = 3.2$.

Putting $x = 3.2$ in 1st equation, we get $y = 3.2 - 0.9 = 2.3$.

Hence, option A is correct.

5). Putting $\frac{1}{2x + 3y} = u$ and

$\frac{1}{3x - 2y} = v$,

the given equations becomes:

$\frac{1}{2}u + \frac{12}{7}v = \frac{1}{2}$ and $7u + 4v = 2$.

or $7u + 24v = 7$ and $7u + 4v = 2$.

Solving these, we get:

$v = \frac{1}{4}$ and $u = \frac{1}{7}$.

∴ 2x + 3y = 7 and 3x - 2y = 4.

Now solving these equations again, we get: x = 2 and y = 1.

∴ Solution set = {(2,1)}.

Hence, option D is correct.

6). Let ten's digit = x & unit digit = y. Then,

x + y = 10 & 10x + y - 18 = 10y + x

∴ x + y = 10 & x - y = 2. So, x = 6 and y = 4.

So, the number is 64.

Hence, option A is correct.

7). Let there be x hens and y cows. Then,

x + y = 48 and 2x + 4y = 140

Solving x + y = 48 and x + 2y = 70, we get: x = 26.

Hence, option A is correct.

8). Let the number be x and y. then,

x + y = 80 ..... (i)

and x - 4y = 5. ..... (ii)

Solving these equation, we get:

y = 15.

Hence, option B is correct.

9). Let the larger number be x and the smaller be y.

Then, $2x - 20 = y$ and $2y - 5 = x$

$\therefore 2x - y = 20$ & $x - 2y = -5$.

by solving these equation, we get: $x = 15$ & $y = 10$.

Hence, the larger number = 15.

Hence, option C is correct.

10). The given equations are $3x + y = 1$ & $2(3x + y) = 2$.

or $3x + y = 1$ & $3x + y = 1$

Thus, there is one equation in two variables.

Hence, option D is correct.