

## Basic Equations - Solved Examples

**Q 1 - If  $8x+5y = 9$  and  $3x+2y= 4$ , what is  $y$ ?**

A - 5

B - 6

C - 7

D - 8

**Answer - A**

**Explanation**

The given equations are:

$$8x+5y = 9 \dots(a)$$

$$3x+2y = 4 \dots(b)$$

On multiplying (a) by 2, (b) by 5 and subtracting, we get:  $x= -2$

Putting  $x = -2$  in (b), we get:

$$-6 + 2y = 4 \Rightarrow 2y = 10 \therefore y = 5$$

**Q 2 - If  $5/x+ 6y =13$  and  $3/x+4 = 7$ , Find the value of  $y$ .**

A - 0

B - -1

C - -2

D - -3

**Answer - C**

**Explanation**

The given equation is:

$$5/x + 6y = 13 \dots (a)$$

$$3/x + 4y = 7 \dots (b)$$

On multiplying (a) by 3, (b) by 5 and subtracting, we get:

$$-2y = 4 \therefore y = -2$$

**Q 3 - Given  $(x+y-8)/2 = (x+2y-14)/3 = (3x+y-12)/11$ . Then x,y are**

A - 1,7

B - 2,7

C - 2,6

D - 1,5

**Answer - D**

**Explanation**

Taking first two parts, we get:

$$(x+y-8)/2 = (x+2y-14)/3$$

$$\Rightarrow 3(x+y-8) = 2(x+2y-14)$$

$$\Rightarrow 3x+3y-24 = 2x+4y-28$$

$$\Rightarrow x-y = -4 \dots (1)$$

Taking last two parts, we get:

$$(x+2y-14)/3 = (3x+y-12)/11$$

$$\Rightarrow 11(x+2y-14) = 3(3x+y-12)$$

$$\Rightarrow 11x + 22y - 154 = 9x + 3y - 36$$

$$\Rightarrow 2x + 19y - 118 \dots (2)$$

Multiplying (1) by 2 and subtracting from (2) we get,

$$21y = 126$$

$$\Rightarrow y = 6$$

Putting  $y = 6$  in (1), we get:  $x = 2$

$$\Rightarrow x = 2, y = 6$$

**Q 4 - Given  $217x + 131y = 913$  and  $131x + 217y = 827$ . Then  $x, y$  are**

A - 1,6

B - 3,2

C - 12,13

D - 16,18

**Answer - B**

**Explanation**

$$217x + 131y = 913 \dots (a)$$

$$131x + 217y = 827 \dots (b)$$

It is a special case in which coefficients of  $x$  and  $y$  in (a) are interchanged in (b)

Adding (a) and (b), we get:  $348(x+y) = 1740 \Rightarrow x+y = 5 \dots (a)$

Subtracting (b) from (a), we get:  $86(x-y) = 86 \Rightarrow x-y = 1 \dots (b)$

Adding (a) and (b), we get:  $x = 3, y = 2$

**Q 5 - For what value of  $h$ , the system of equations,  $hx - y - 2 = 0$  and  $6x - 2y - 3 = 0$  has a unique solution?**

A - 2

B - 3

C - 4

D - 5

**Answer - B**

**Explanation**

For, a unique solution, we must have  $a_1/a \neq b_1/b_2$   
 $h/6 \neq -1/-2 \Rightarrow h/6 \neq 1/2 \Rightarrow h \neq 3$

**Q 6 - For what value of h, the system of equations,  $x+2y+7 = 0$  and  $2x+hy+14= 0$  have an infinite number of solutions?**

A - 3

B - 4

C - 5

D - 6

**Answer - B**

**Explanation**

For infinite solutions, we have  $a_1/a_2 = b_1/b_2 = c_1/c_2$ ;  
 $h/2 = 2/h = 7/14 \Rightarrow h=4.$

**Q 7 - For what value of h, the system of equations,  $hx-10y-3= 0$  and  $3x-5y-7=0$  has no solutions?**

A - 6

B - 5

C - 4

D - 3

**Answer - A**

**Explanation**

For no solution, we have  $a_1/a_2 = b_1/b_2 \neq c_1/c_2$

$\therefore h/3 = -10/-5 \neq -3/-7 \Rightarrow h = 6$