November 26th, 2021 Professor Ebou Janha Company QCT OF USA

Solving simultaneous equations (For the middle school or high school scholars)

Solve 2X + 5a = 12

4X + 3a = 10 **An aligned simultaneous equation**

There are many approaches one can apply to solve a simultaneous equation however, this method is the easiest method to solve such a question.

Step 1

In case the values with **X** and the values with **a** are note aligned, you will need to align the equations in the above format. Since in addition the order of the values or numbers doesn't really matter, you may be presented an equation that is not aligned like the one below.

5a + 2X = 12

4X + 3a = 10 **A simultaneous equation that is not an aligned equation**

Once you aligned the equations, go to step 2

2X + 5a = 12

4X + 3a = 10

Step 2

2X + 5a = 12

4X + 3a = 10

Now you can choose to either make all the values of **X** the same or make all the values of **a** the same. In this question, we will make all the values with X the same. To do that, we multiply all the numbers on the equation below by **(2)** and multiply all the numbers on the equation on the top by **(4).**

The multiplication of the equations produced

8X + 20a = 48

8X + 6a = 20

Step 3

Now you subtract so that you can determine the value of **a**

8X + 20a = 48

8X + 6a = 20 **20a – 6a = 14a** **48 – 20 = 28**

14a = 28

So 14a = 28

$$a = \frac{28}{14} \qquad a = 2$$

As I always recommend, since when you multiply **14** by **a** the product is **28**, then to find **a** you simply divide the product **28** by **14** which is **2** instead of dividing **14a** by **14** and dividing **28** by **14** and solve for **a** as the other methods suggest.

Step 4

Now to determine **X**, we simply plug the value of **a** to the original equation and solve for **X**

2X + 5a = 12 Plug the value of **a** which is **2** to the equation

2X + 5(2) = 12

Becomes **2X + 10 = 12**

2X = 12 - 10

2X = 2 $X = \frac{2}{2}$ **So X = 1** **X = 1** **a = 2**