Topic: Balancing equations

Question: Solve for the variable.

$$3x + 2 = x - 10$$

Answer choices:

A $x = 6$

B $x = -4$

C $x = 4$

D $x = -6$

Solution: D

We need to get the terms containing x on the same side (we'll put them on the left side), and the other terms on the opposite side (in this case, the right side), making sure that anything we do to one side of the equation, we also do to the other side.

$$3x + 2 = x - 10$$

$$3x + 2 - 2 = x - 10 - 2$$

$$3x = x - 12$$

$$3x - x = x - x - 12$$

$$2x = -12$$

$$\frac{2x}{2} = \frac{-12}{2}$$

$$x = -6$$

Topic: Balancing equations

Question: Solve for the variable.

$$2x + 3x + 5 = x - 10$$

Answer choices:

A $x = \frac{15}{4}$

B $x = 4$

C $x = -3$

D $x = -\frac{15}{4}$

Solution: D

First, we'll collect like terms.

$$2x + 3x + 5 = x - 10$$

$$5x + 5 = x - 10$$

We need to get the terms containing x on the same side (we'll put them on the left side), and the other terms on the opposite side (in this case, the right side), making sure that anything we do to one side of the equation, we also do to the other side.

$$5x + 5 - 5 = x - 10 - 5$$

$$5x = x - 15$$

$$5x - x = x - x - 15$$

$$4x = -15$$

$$x = -\frac{15}{4}$$

Topic: Balancing equations

Question: Solve this equation for x.

$$11x + 4 - 3x - 9 = 18 + 5x - 2$$

Answer choices:

A $2\frac{1}{3}$

B $3\frac{2}{3}$

C 5

D 7

Solution: D

If we start with

$$11x + 4 - 3x - 9 = 18 + 5x - 2$$

then we'll first collect like terms.

$$8x - 5 = 5x + 16$$

Add 5 to both sides.

$$8x = 5x + 21$$

Subtract $5x$ from both sides.

$$3x = 21$$

Divide both sides by 3.

$$x = 7$$