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 x terms on the same side, and the other terms on the opposite 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 $\quad x = \dfrac{15}{4}$

B $\quad x = 4$

C $\quad x = -3$

D $\quad x = -\dfrac{15}{4}$

Solution: D

First, we'll collect like terms.

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

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

We need to get the x terms on the same side, and the other terms on the opposite side, making sure that anything we do to one side of the equation, we also do to the other side.

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

$$5x = x - 15$$

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

$$4x = -15$$

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

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

Topic: Balancing equations

Question: Solve the equation for m.

$$4m - 2(3m + 2) + 4 = 3(4 - 2m) + 3m$$

Answer choices:

A   1

B   4

C   12

D   20

Solution: C

We'll use the distributive property to get

$$4m - 2(3m + 2) + 4 = 3(4 - 2m) + 3m$$

$$4m - 6m - 4 + 4 = 12 - 6m + 3m$$

Collect like terms.

$$-2m = 12 - 3m$$

$$-2m + 3m = 12 - 3m + 3m$$

$$m = 12$$