Topic: Fractional equations

Question: Solve for the variable.

$$\frac{2}{3}x = 4$$

Answer choices:

A $x = 6$

B $x = -6$

C $x = 3$

D $x = 2$

Solution: A

To get rid of a fractional coefficient, we can multiply both sides of the equation by the fraction's reciprocal, because that'll change the coefficient to 1.

$$\frac{2}{3}x = 4$$

$$\frac{3}{2} \cdot \frac{2}{3}x = 4 \cdot \frac{3}{2}$$

$$\frac{6}{6}x = \frac{12}{2}$$

$$1x = 6$$

$$x = 6$$

Topic: Fractional equations

Question: Solve for the variable.

$$\frac{1}{2}x + 2 = 10$$

Answer choices:

A $x = \frac{1}{4}$

B $x = 16$

C $x = -16$

D $x = 4$

Solution: B

In order to get rid of the fraction, we'll multiply both sides of the equation by the fraction's denominator.

$$\frac{1}{2}x + 2 = 10$$

$$\left(\frac{1}{2}x + 2\right)(2) = 10(2)$$

$$\frac{1}{2}x(2) + 2(2) = 10(2)$$

$$x + 4 = 20$$

Now we can solve for x using inverse operations.

$$x + 4 - 4 = 20 - 4$$

$$x = 16$$

Topic: Fractional equations

Question: Solve for the variable.

$$-3x + \frac{3}{4} = \frac{1}{8}$$

Answer choices:

A $x = 3$

B $x = \frac{1}{4}$

C $x = \frac{5}{24}$

D $x = -\frac{5}{24}$

Solution: C

The lowest common denominator (LCD) of the two fractions is 8, because 8 is the least common multiple (LCM) of the denominators in the equation, 4 and 8. So in order to remove the fractions but keep the equation balanced, we'll multiply both sides of the equation by 8.

$$\left(-3x + \frac{3}{4}\right)(8) = \frac{1}{8}(8)$$

$$-3x(8) + \frac{3}{4}(8) = \frac{1}{8}(8)$$

$$-24x + \frac{24}{4} = \frac{8}{8}$$

$$-24x + 6 = 1$$

Now we can solve for x using inverse operations.

$$-24x + 6 - 6 = 1 - 6$$

$$-24x = -5$$

$$x = \frac{-5}{-24}$$

$$x = \frac{5}{24}$$