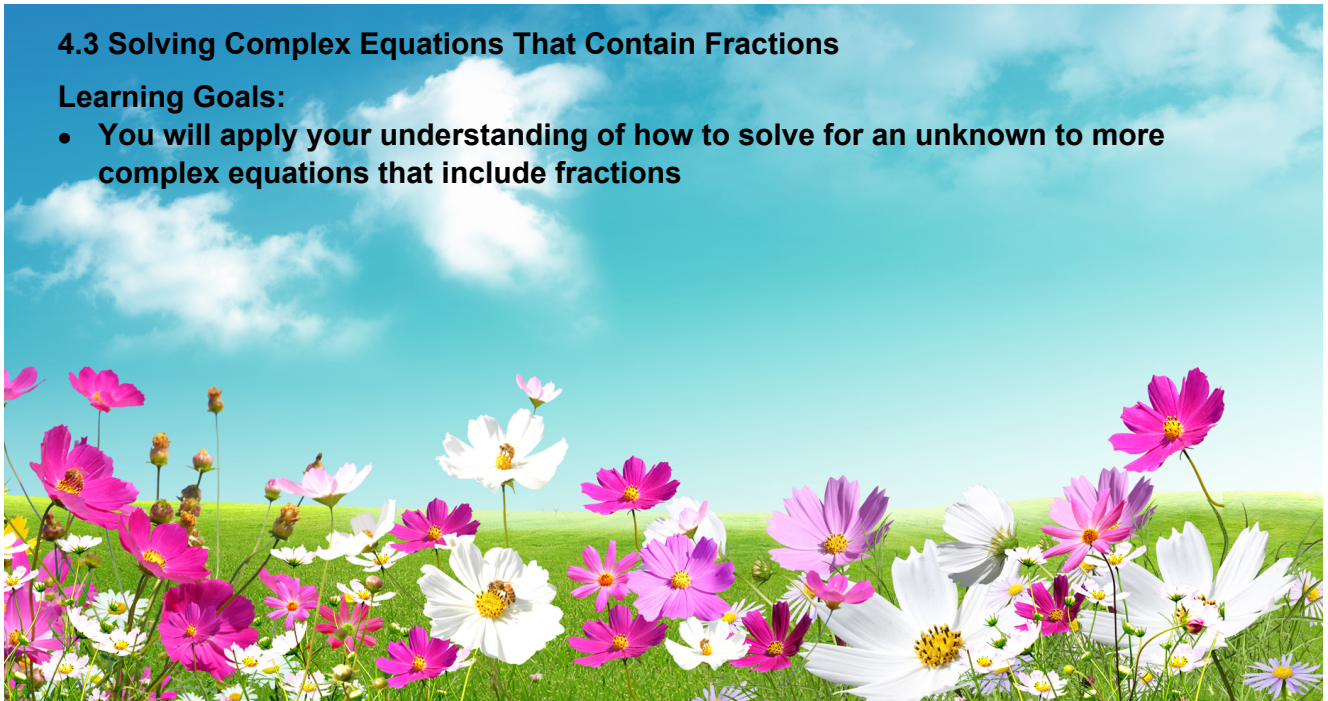


4.3 Solving Complex Equations That Contain Fractions

Learning Goals:

- You will apply your understanding of how to solve for an unknown to more complex equations that include fractions



We can simplify equations involving **one fraction** by multiplying both sides by the **denominator** of the fraction.

$$6 = \frac{1}{3}(8+x)$$

$$3(y-5) = 28$$

$$3y - 15 = 28$$

$$\frac{3y}{3} = \frac{43}{3}$$

$$y = \frac{43}{3}$$

$$\frac{3(y-5)}{4} = 7$$

$$\frac{4 \times 3(y-5)}{4} = \frac{4 \times 7}{4}$$

$$\frac{12(y-5)}{4} = 28$$

$$3(y-5) = 28$$

If we have more than one fraction, we find the **lowest common denominator** and then **multiply all terms on both sides** of the equation by this value.

$$\frac{k+2}{3} = \frac{k-4}{5}$$

$$\frac{15(k+2)}{3} = \frac{15(k-4)}{5}$$

$$5(k+2) = 3(k-4)$$

$$5k+10 = 3k-12$$

$$5k-3k = -12-10$$

$$2k = -22$$

$$k = -11$$

$$\frac{1}{3}(2x-5) = \frac{3}{4}(x-2)$$

$$12\left(\frac{1}{3}\right)(2x-5) = 12\left(\frac{3}{4}\right)(x-2)$$

$$4(2x-5) = 9(x-2)$$

$$8x-20 = 9x-18$$

$$8x-9x = -18+20$$

$$-x = 2$$

$$x = -2$$

Practice:

Pg 208 # 3, 4, 5, 7, 11