

## Finding the Zeros- HSA.SSE.B.3.A

Alignment 1: HSA.SSE.B.3.A

Factor a quadratic expression to reveal the zeros of the function it defines.

Solve the quadratic equation for  $x$  by factoring. If your answer is an improper fraction, state it as a mixed number.

a.  $x^2 - 14x + 49 = 0$

b.  $7x^2 + 9x = 0$

c.  $16x^2 - 28x + 6 = 0$

## Commentary

This task asks students to perform computations involving factoring of quadratic equations using any method they would like to factor the equation. Students will need to understand the general form of a quadratic:  $ax^2 + bx + c = 0$ . Students can complete the task by finding two numbers that will both multiply to equal the constant term  $c$  but also add up to equal the  $b$ .

A teacher who uses this activity as a classroom activity should monitor the students and they different ways that they factored to solve for  $x$ . The teacher could then further the activity by asking students to share with the class various ways they factored to solve for  $x$ .

## Solutions

$$\begin{aligned} \text{a. } x^2 - 14x + 49 &= 0 \\ (x - 7)(x - 7) &= 0 \\ x &= 7 \end{aligned}$$

$$\begin{aligned} \text{b. } 7x^2 + 9x &= 0 \\ x(7x + 9) &= 0 \\ x = 0 \quad 7x + 9 &= 0 \\ 7x &= -9 \\ x &= -1\frac{2}{7} \end{aligned}$$

$$\begin{aligned} \text{c. } 16x^2 - 28x + 6 &= 0 \\ (4x - 1)(4x - 6) &= 0 \\ 4x - 1 = 0 \quad 4x - 6 &= 0 \\ 4x = 1 \quad 4x &= 6 \\ x = \frac{1}{4} \quad x &= 1\frac{1}{2} \end{aligned}$$