## Unit 2 Lesson 5: Connecting Factors and Zeros

### 1 Notice and Wonder: Factored Form (Warm up)

#### Student Task Statement

What do you notice? What do you wonder?

$f\left(x\right)=\left(x+5\right)\left(x+1\right)\left(x−3\right)$



$g\left(x\right)=\left(x+5\right)\left(x+1\right)\left(x−2\right)$



$h\left(x\right)=\left(x+4\right)\left(x+1\right)\left(x−2\right)$



### 2 What Values of $x$ Make These Equations True?

#### Student Task Statement

Find all values of $x$ that make the equation true.

1. $\left(x+4\right)\left(x+2\right)\left(x−1\right)=0$
2. $\left(x+4\right)\left(x+2\right)\left(x−1\right)\left(x−3\right)=0$
3. $\left(x+4\right)^{2}\left(x+2\right)^{2}=0$
4. $-2\left(x−4\right)\left(x−2\right)\left(x+1\right)\left(x+3\right)=0$
5. $\left(2x+8\right)\left(7x−3\right)\left(x−10\right)=0$
6. $x^{2}+3x−4=0$
7. $x\left(3−x\right)\left(x−1\right)\left(x+0.75\right)=0$
8. $\left(x^{2}−4\right)\left(x+9\right)=0$

### 3 Factors, Intercepts, and Graphs

#### Student Task Statement

Your teacher will give you a set of cards. Match each equation to either a graph or a description.

Take turns with your partner to match an equation with a graph or a description of a graph.

1. For each match that you find, explain to your partner how you know it’s a match.
2. For each match that your partner finds, listen carefully to their explanation. If you disagree, discuss your thinking and work to reach an agreement.



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