## Unit 2 Lesson 7: Using Factors and Zeros

### 1 More Than Factors (Warm up)

#### Student Task Statement

$M$ and $K$ are both polynomial functions of $x$ where $M(x)=(x+3)(2x−5)$ and $K(x)=3(x+3)(2x−5)$.

1. How are the two functions alike? How are they different?
2. If a graphing window of $-5\leq x\leq 5$ and $-20\leq y\leq 20$ shows all intercepts of a graph of $y=M(x)$, what graphing window would show all intercepts of $y=K(x)$?

### 2 Choosing Windows

#### Student Task Statement

Mai graphs the function $p$ given by $p(x)=(x+1)(x−2)(x+15)$ and sees this graph.



She says, “This graph looks like a parabola, so it must be a quadratic.”

1. Is Mai correct? Use graphing technology to check.
2. Explain how you could select a viewing window before graphing an expression like $p(x)$ that would show the main features of a graph.
3. Using your explanation, what viewing window would you choose for graphing $f(x)=(x+1)(x−1)(x−2)(x−28)$?

### 3 What’s the Equation?

#### Student Task Statement

Write a possible equation for a polynomial whose graph has the following horizontal intercepts. Check your equation using graphing technology.

1. $(4,0)$
2. $(0,0)$ and $(4,0)$
3. $(-2,0)$, $(0,0)$ and $(4,0)$
4. $(-4,0),(0,0)$, and $(2,0)$
5. $(-5,0)$, $\left(\frac{1}{2},0\right)$, and $(3,0)$



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