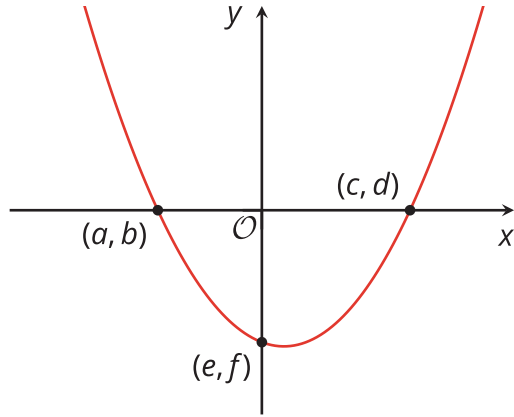


# Unit 6 Lesson 11: Graphing from the Factored Form

## 1 Finding Coordinates (Warm up)

### Student Task Statement



Here is a graph of a function  $w$  defined by  $w(x) = (x + 1.6)(x - 2)$ . Three points on the graph are labeled.

Find the values of  $a$ ,  $b$ ,  $c$ ,  $d$ ,  $e$ , and  $f$ . Be prepared to explain your reasoning.

## 2 Comparing Two Graphs

### Student Task Statement

Consider two functions defined by  $f(x) = x(x + 4)$  and  $g(x) = x(x - 4)$ .

1. Complete the table of values for each function. Then, determine the  $x$ -intercepts and vertex of each graph. Be prepared to explain how you know.

$x$	$f(x)$
-5	5
-4	
-3	
-2	-4
-1	-3
0	
1	
2	
3	
4	32
5	

$x$ -intercepts:

Vertex:

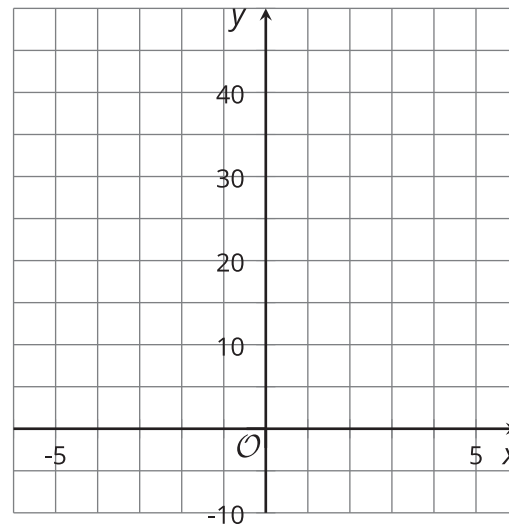
$x$	$g(x)$
-5	45
-4	
-3	
-2	12
-1	5
0	
1	
2	
3	-3
4	
5	

$x$ -intercepts:

Vertex:

2. Plot the points from the tables on the same coordinate plane. (Consider using different colors or markings for each set of points so you can tell them apart.)

Then, make a couple of observations about how the two graphs compare.



### 3 What Do We Need to Sketch a Graph?

#### Student Task Statement

1. The functions  $f$ ,  $g$ , and  $h$  are given. Predict the  $x$ -intercepts and the  $x$ -coordinate of the vertex of each function.

equation	$x$ -intercepts	$x$ -coordinate of the vertex
$f(x) = (x + 3)(x - 5)$		
$g(x) = 2x(x - 3)$		
$h(x) = (x + 4)(4 - x)$		

2. Use graphing technology to graph the functions  $f$ ,  $g$ , and  $h$ . Use the graphs to check your predictions.
3. Without using technology, sketch a graph that represents the equation  $y = (x - 7)(x + 11)$  and that shows the  $x$ -intercepts and the vertex. Think about how to find the  $y$ -coordinate of the vertex. Be prepared to explain your reasoning.

