Equation Detective

True or False?

$$(x + 2)(x - 5) = (x)(x) + (2)(-5)$$

$$= x^2 - 10$$

Equation Detective – <mark>Teacher Notes</mark>

Students will use the Distributive Property to identify the error shown in the Math Talk. Look for students who recognize that the entire binomial (x + 2) needs to distributed over both terms of the second binomial. Students may also use the associative property to distribute (x – 5) over the first binomial.

Which One Doesn't Belong?

$6x^2$	7
$2x$	$5y^2$

Which One Doesn't Belong? - Teacher Notes

Students look for relationships in these monomials. Look for students who think about the factors of each term. One expression has a composite number for its coefficient; one expression is a prime number; one expression has only one *x* as a factor; one expression is relatively prime to all the other expressions.

Find a Rule

What is the rule?

Input	Output
1	$x^2 + 2x + 1$
2	$x^2 + 4x + 1$
3	$x^2 + 6x + 9$
4	$x^2 + 8x + 16$

Find a Rule – <mark>Teacher Notes</mark>

Some students may notice that the *b* term is equal to twice the input and the c term is equal to the square of the input. Other students may recall the pattern for perfect square binomials and recognize that each out is $(x + n)^2$, where *n* is the input.
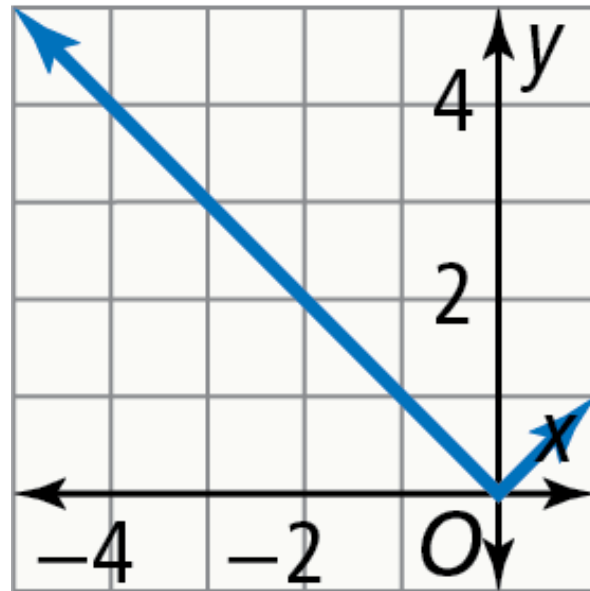
Slow Reveal Graphs (Slide 1 of 3)
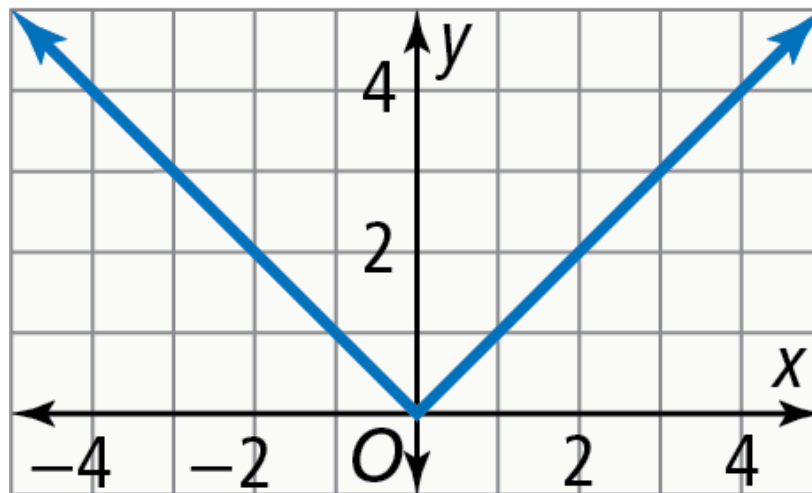
Draw $y = |x|$ on $x < -2$
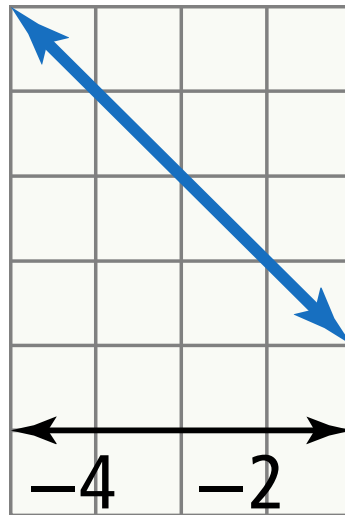
Slow Reveal Graphs (Slide 2 of 3)

Draw $y = |x|$ on $x < 0$

Slow Reveal Graphs (Slide 3 of 3)

Draw $y = |x|$ on $x < 2$


How will the graph continue for $x > 2$?

Slow Reveal Graphs – <mark>Teacher Notes</mark>

Present each of the graphs to students one at a time,
providing time to discuss each graph with a partner.
Listen for students who discuss the slope of the graph
and wonder how the function can be represented using
function notation. This Math Talk addresses F.IF.2.

Every Picture Tells a Story

Draw $y = -2x + 4$ for $0 < x < 2$ and $x = 0$ for $x > 2$
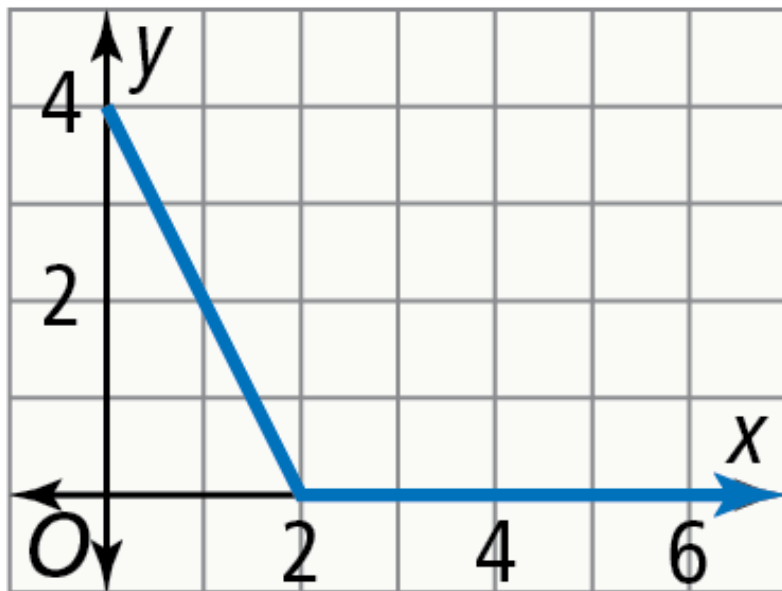
What can the graph describe?

Every Picture Tells a Story – <mark>Teacher Notes</mark>

Listen for students who describe the graph as a piecewise-defined function. Discuss what scenarios might involve a negative slope. Discuss what scenarios might involve a 0 slope. This Math Talk addresses standard F.IF.6