

## BIG IDEAS

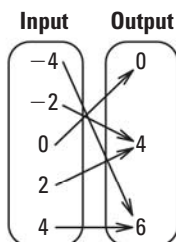
For Your Notebook

### Big Idea 1

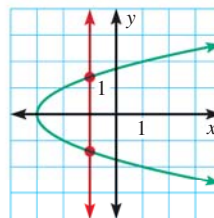
TEKS 2A.1.A

### Representing Relations and Functions

A relation pairs input values with output values. A relation is a function if each input value is paired with exactly one output value.



This relation is a function because each input has exactly one output.



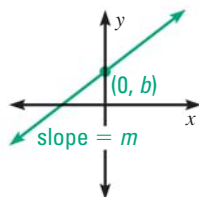
This relation is not a function because a vertical line intersects the graph at more than one point.

### Big Idea 2

TEKS 2A.4.A

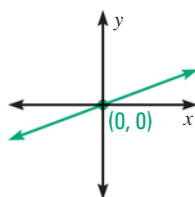
### Graphing Linear Equations and Inequalities in Two Variables

Linear Function



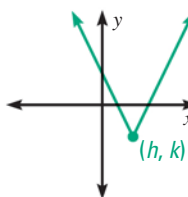
$$y = mx + b$$

Direct Variation Equation



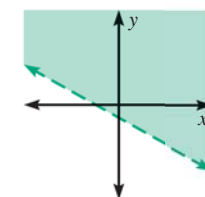
$$y = ax$$

Absolute Value Function



$$y = a|x - h| + k$$

Linear Inequality



$$Ax + By > C$$

### Big Idea 3

TEKS a.3

### Writing Linear Equations and Inequalities in Two Variables

| Form                 | Equation               | Key Facts   |
|----------------------|------------------------|---|
| Slope-intercept form | $y = mx + b$           | The graph is a line with slope $m$ and $y$ -intercept $b$ .                                       |
| Standard form        | $Ax + By = C$          | The graph is a line with intercepts $x = \frac{C}{A}$ and $y = \frac{C}{B}$ .                     |
| Point-slope form     | $y - y_1 = m(x - x_1)$ | The graph is a line that has slope $m$ and passes through $(x_1, y_1)$ .                          |
| Direct variation     | $y = ax, a \neq 0$     | The graph is a line that passes through the origin and has slope $a$ (the constant of variation). |
| Linear inequality    | $Ax + By > C$          | The graph is a half-plane with boundary line $Ax + By = C$ .                                      |