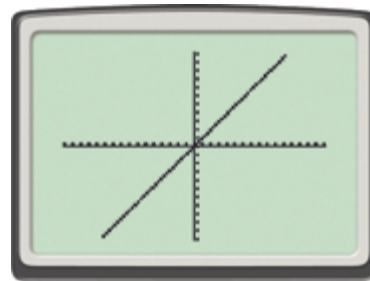# 1-8 Exploring Transformations

You can explore transformations by using the graph of a line on a graphing calculator.

Graph $y = x$ on a graphing calculator by pressing **Y=** and entering **Y1 = X** as shown. Then press **GRAPH** to see the graph.

1. Enter and graph **Y2 = X + 5**. Describe the graph of **Y2** as compared to the graph of **Y1**.

2. Enter and graph **Y3 = X − 5**. Describe the graph of **Y3** as compared to the graph of **Y1**.

3. Make a conjecture about how a change in the value of k in the equation $y = x + k$ affects the equation's graph.
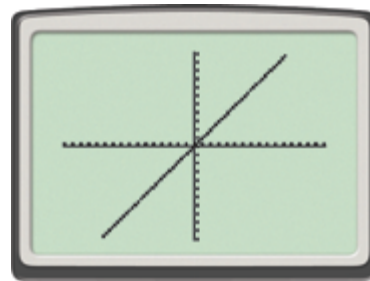
THINK AND DISCUSS

4. **Explain** what equation you would use to move the graph of $y = x$ down 3 units.

5. **Describe** how the graph of $y = x + 100$ differs from the graph of $y = x$.

Holt Algebra 2

1-8 Exploring Transformations

You can explore transformations by using the graph of a line on a graphing calculator.

Graph $y = x$ on a graphing calculator by pressing **Y=** and entering **Y1 = X** as shown. Then press **GRAPH** to see the graph.

1. Enter and graph **Y2 = X + 5**. Describe the graph of **Y2** as compared to the graph of **Y1**.

2. Enter and graph **Y3 = X − 5**. Describe the graph of **Y3** as compared to the graph of **Y1**.

3. Make a conjecture about how a change in the value of k in the equation $y = x + k$ affects the equation's graph.

THINK AND DISCUSS

4. **Explain** what equation you would use to move the graph of $y = x$ down 3 units.   *y = x − 3*

5. **Describe** how the graph of $y = x + 100$ differs from the graph of $y = x$.

1. The graph of Y2 is the graph of Y1 shifted 5 units up (or 5 units left).

2. The graph of Y3 is the graph of Y1 shifted 5 units down (or 5 units right).

3. The graph shifts up (or left) k units if k is positive and down (or right) $|k|$ units if k is negative.

5. The graph of $y = x + 100$ is the graph of $y = x$ shifted 100 units up (or 100 units left).

Holt Algebra 2