

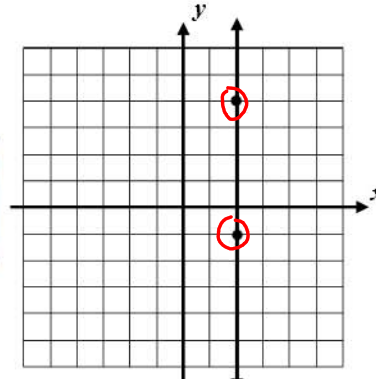
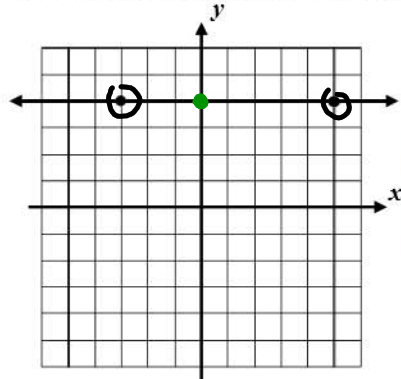
Name: _____

Date: _____

STRANGE (BUT NOT SO STRANGE) LINES – VERTICAL AND HORIZONTAL

Although they don't fit the classic linear model, it is important to understand how we write equations for **horizontal and vertical lines**. The first exercise will illustrate the idea. Never forget, though, that when we create an **equation** for a **curve**, it simply **describes what all points on the curve share in common**.

Exercise #1: Shown below are a horizontal line and a vertical line.



HORIZONTAL LINE

Write down two coordinate points:
 $(5, 4)$ $(-3, 4)$ $(0, 4)$

What do they share in common?
the same y-coordinate

What is this line's equation?
 $y = 4$

VERTICAL LINE

Write down two coordinate points:
 $(2, -1)$ $(2, 4)$

What do they share in common?
the same x-coordinate

What is this line's equation?
 $x = 2$

Equations of horizontal lines and vertical lines are so simple that students will often get them confused later, because they don't really seem like typical linear equations (because they aren't).



HORIZONTAL AND VERTICAL LINES

Horizontal Line: $y = \text{constant}$ Vertical Line: $x = \text{constant}$

(Constants can be determined by using any point the line passes through)

Exercise #2: Which of the following equations represents a vertical line that passes through the point $(5, -3)$?

(1) $y = -3$

(3) $y = -3x + 5$

(2) $x = 5$

(4) $y = 5x - 3$

x, y