

Examining Slope with Ski Bird

Slope can be expressed as:

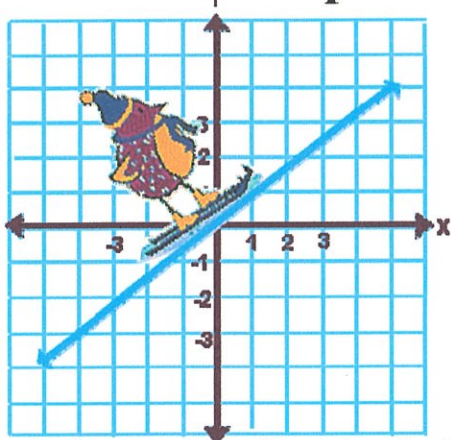
$$\begin{array}{l} \text{change in } y \\ \text{over} \\ \text{change in } x. \end{array} \quad \text{or } m = \frac{y_2 - y_1}{x_2 - x_1} \quad \text{or } m = \frac{\text{rise}}{\text{run}}$$



Ski Bird

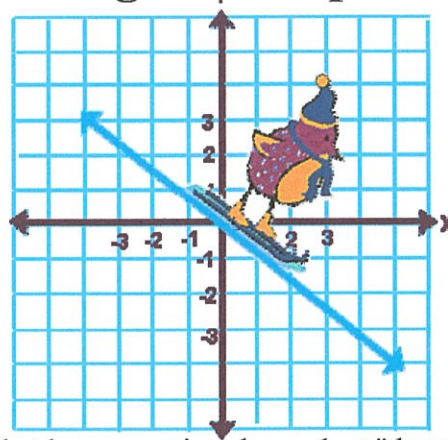
Ski Bird will try to help you remember how slope applies to straight lines.

Positive Slope



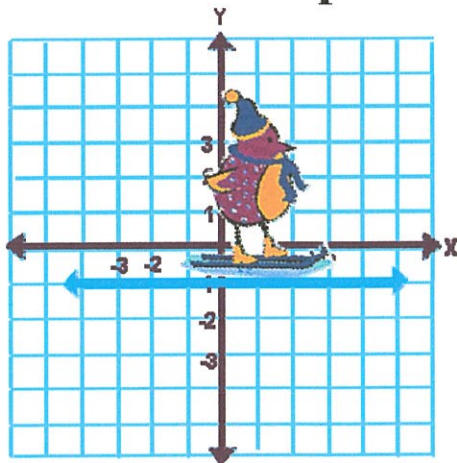
Lines that have positive slope, slant "up hill" (as viewed from left to right). Ski Bird has to work hard to make it up the hill. He needs to exert more positive (+) energy to get up the hill.

Negative Slope



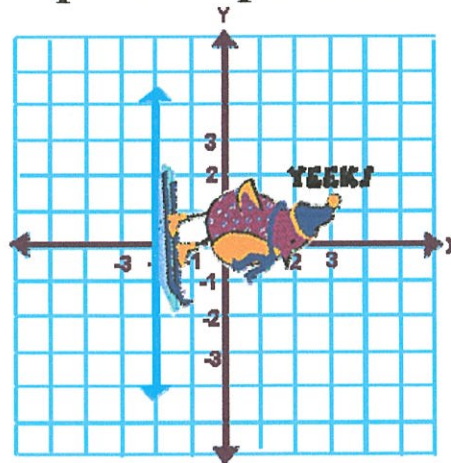
Lines that have negative slope, slant "down hill" (as viewed from left to right). Ski Bird enjoys the ride down the hill. He needs to decrease (-) energy to try to slow down.

Zero Slope



Lines that are horizontal have zero slope. Ski Bird is cross-country skiing on level ground. He is not working hard to get up a hill, nor is he trying to slow down. His energy level (and his enjoyment level) is at zero.

No Slope or Slope Undefined

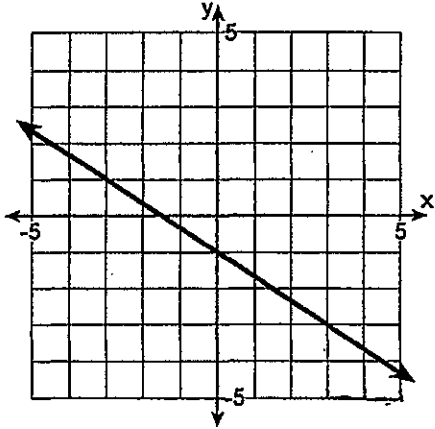


Vertical lines have no slope, or undefined slope. Ski Bird cannot ski vertically. Sheer doom awaits Ski Bird at the bottom of a vertical hill.

II. Slope of a line on a graph (numerical value):

- ❖ Horizontal = Zero
- ❖ Vertical = Undefined
- ❖ Diagonal = Count the number of spaces up/down and over ($\frac{\text{rise}}{\text{run}}$). Up = positive, Down = negative.
 - The slope will be the same between any two good points you pick on the line.
 - Because of _____, the _____ will always be the same.

1) Determine the type and the numerical value of the slope for the line graphed below.

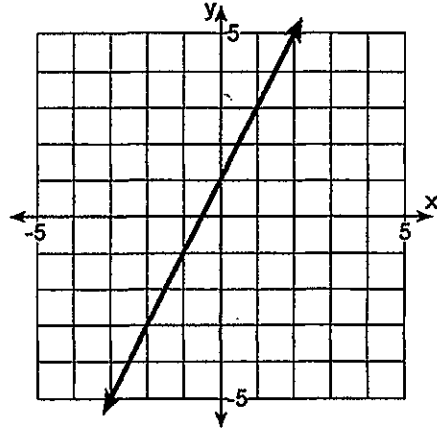


Type: _____

Value:

$$m = \frac{\text{rise}}{\text{run}}$$

2) Determine the type and the numerical value of the slope for the line graphed below.

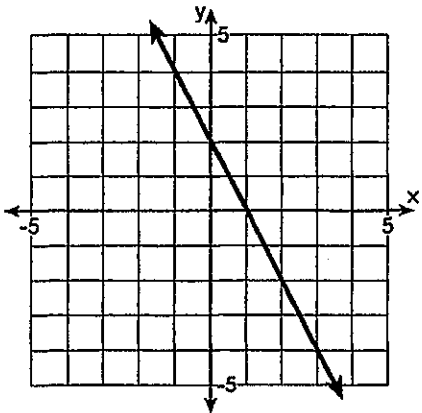


Type: _____

Value:

$$m = \frac{\text{rise}}{\text{run}}$$

3) Determine the type and the numerical value of the slope for the line graphed below.

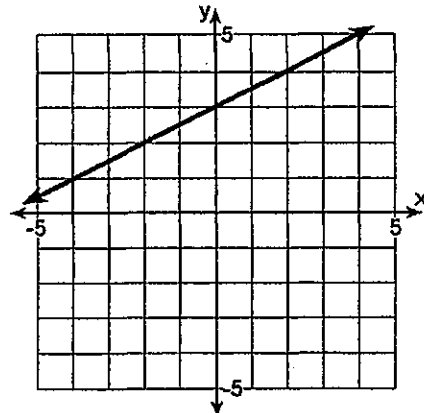


Type: _____

Value:

$$m = \frac{\text{rise}}{\text{run}}$$

4) Determine the type and the numerical value of the slope for the line graphed below.

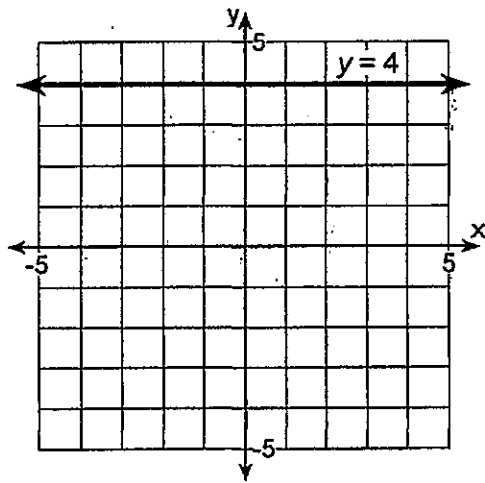


Type: _____

Value:

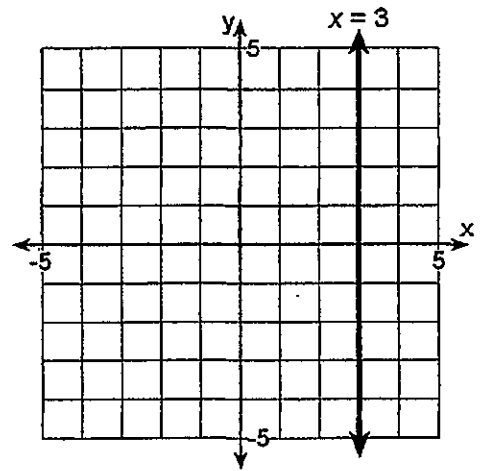
$$m = \frac{\text{rise}}{\text{run}}$$

5) Determine the slope of the line graphed below.



- A) -4
B) 4
C) 0
D) none of these

6) Determine the slope of the line graphed below.



- A) $\frac{1}{3}$
B) undefined
C) -3
D) 3