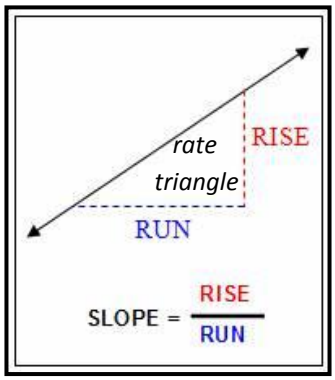
Slope and Equations of Lines

Slope

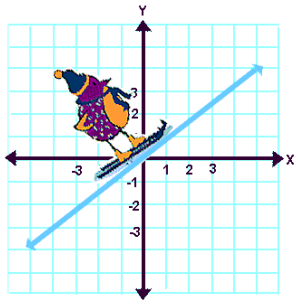
The word **slope** (aka: gradient, incline, pitch) is used to describe the measurement of the *steepness* of a straight line or line segment. The higher the slope, the steeper the line is. The slope of a line is a *rate of change*.

Slope is important in many real world situations. For example, a **wheelchair ramp** must be built so that its grade or steepness is small enough that a person in a wheelchair is capable of going up the ramp on his or her own. In addition, **roads** along mountainsides are designed with a small grade so that trucks do not drive out of control. If this happens, the positive slope of a mountain can assist slowing a truck down along an escape ramp.

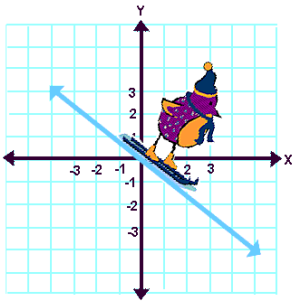


The mathematical symbol for **slope** is ***m***.

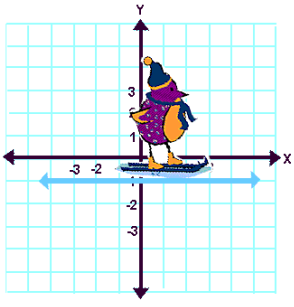
Ex1. Find the slope of the line that passes through $A(-3,4)$ *and* $B(5,-2)$.



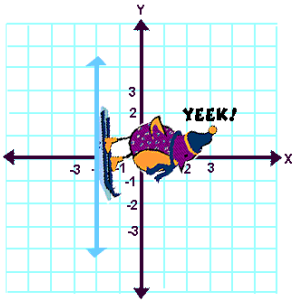
slope is _____



slope is _____



slope is _____



slope is _____

Equation of the line:

Two Formats You Can Start With:

$y = mx + b$ *(slope/y-intercept form)* $y = m(x - p) + q$ *(slope/point form)*

m = _____ m = _____

b = _____ (p, q) = _____

End With Either:

$y = mx + b$ *(slope/y-intercept form)* *or* $Ax + By + C = 0$ *(standard form)*

a) Find the equation of a line in **Standard Form** given a slope of -6 passing through the point $R(-2,3)$.

b) Find the equation of the line in **Standard Form** passing through $K(-2,5)$ *and* $G(6,-1)$.

c) Find the equation of the line in slope/y_intercept form given a slope of $\frac{2}{3}$ passing through $P(-4,5)$.

d) Find the equation of the line in y=mx+b that is perpendicular to y =3x+5 passing through W (-2, 4).

e) slope is undefined, passes through (4, -3).

f) Horizontal line passing through (-4, -2).