28. $\frac{60\text{ mi}}{1\text{ hr}} = \frac{\quad\text{ ft}}{\text{sec}}$

$\frac{60\text{ mi.}}{1\text{ hr.}} \times \frac{5280\text{ ft}}{1\text{ mi.}} \times \frac{1\text{ hr}}{60\text{ min.}} \times \frac{1\text{ min}}{60\text{ sec}} = \frac{316{,}800\text{ ft}}{3600\text{ sec}} = \frac{88\text{ ft}}{1\text{ sec}}$

Unit Multipliers

$\frac{5280\text{ ft}}{1\text{ mi.}} = \frac{1\text{ mi}}{5280\text{ ft.}}$ $\quad \frac{60\text{ sec}}{1\text{ min}} = \frac{1\text{ min}}{60\text{ sec}}$ $\quad \frac{60\text{ min}}{1\text{ hr}} = \frac{1\text{ hr.}}{60\text{ min}}$.

26. 1lb 4oz.

$16oz + 4oz = 20oz.$

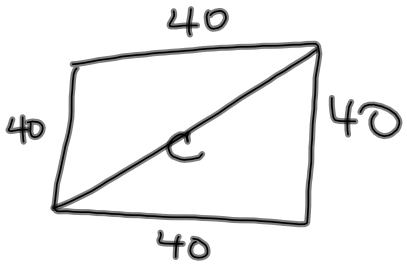
$\$\frac{4.99}{20oz.}$

2lb 6oz.

$32oz + 6oz = 38oz.$

$\$\frac{9.75}{38oz.}$

42.



4-2 Rate of Change

Slope

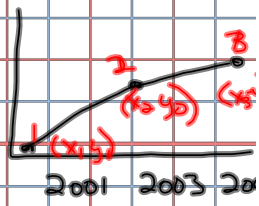
$$\text{Slope} = \frac{\text{rise}}{\text{run}} \quad \uparrow \rightarrow$$

Formula:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

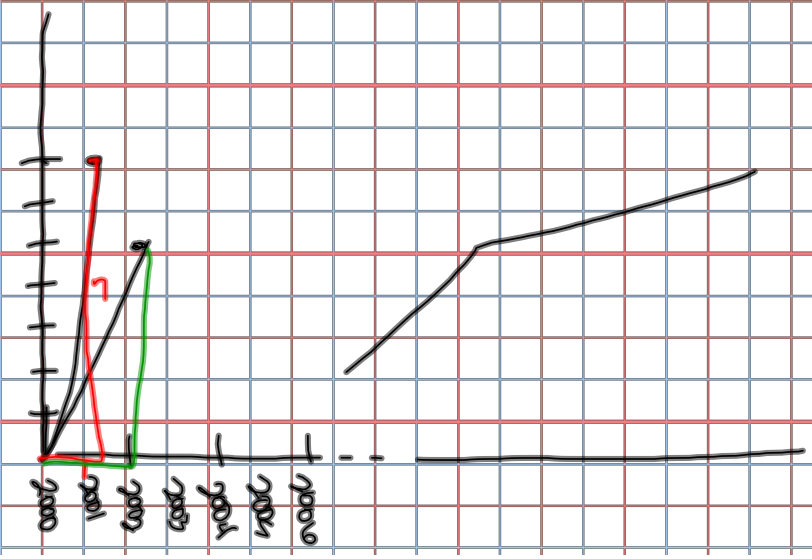
Rate of Change How one quantity changes in relation to another.

$(\overset{x}{2001}, \overset{y}{8})$ $(\overset{x_2}{2003}, \overset{y_2}{22})$ $(\overset{x_3}{2006}, \overset{y_3}{37})$



$$\frac{22-8}{2003-2001} = \frac{14}{2} = \frac{7 \text{ bears}}{1 \text{ year}}$$

$$\frac{37-22}{2006-2003} = \frac{15 \text{ bears}}{3 \text{ years}} = \frac{5 \text{ bears}}{1 \text{ year}}.$$



		x_1	x_2	
x	Age	8	11	13
y	Height	51	58	67
		y_1	y_2	

(8, 51) (11, 58) (13, 67)

x	y

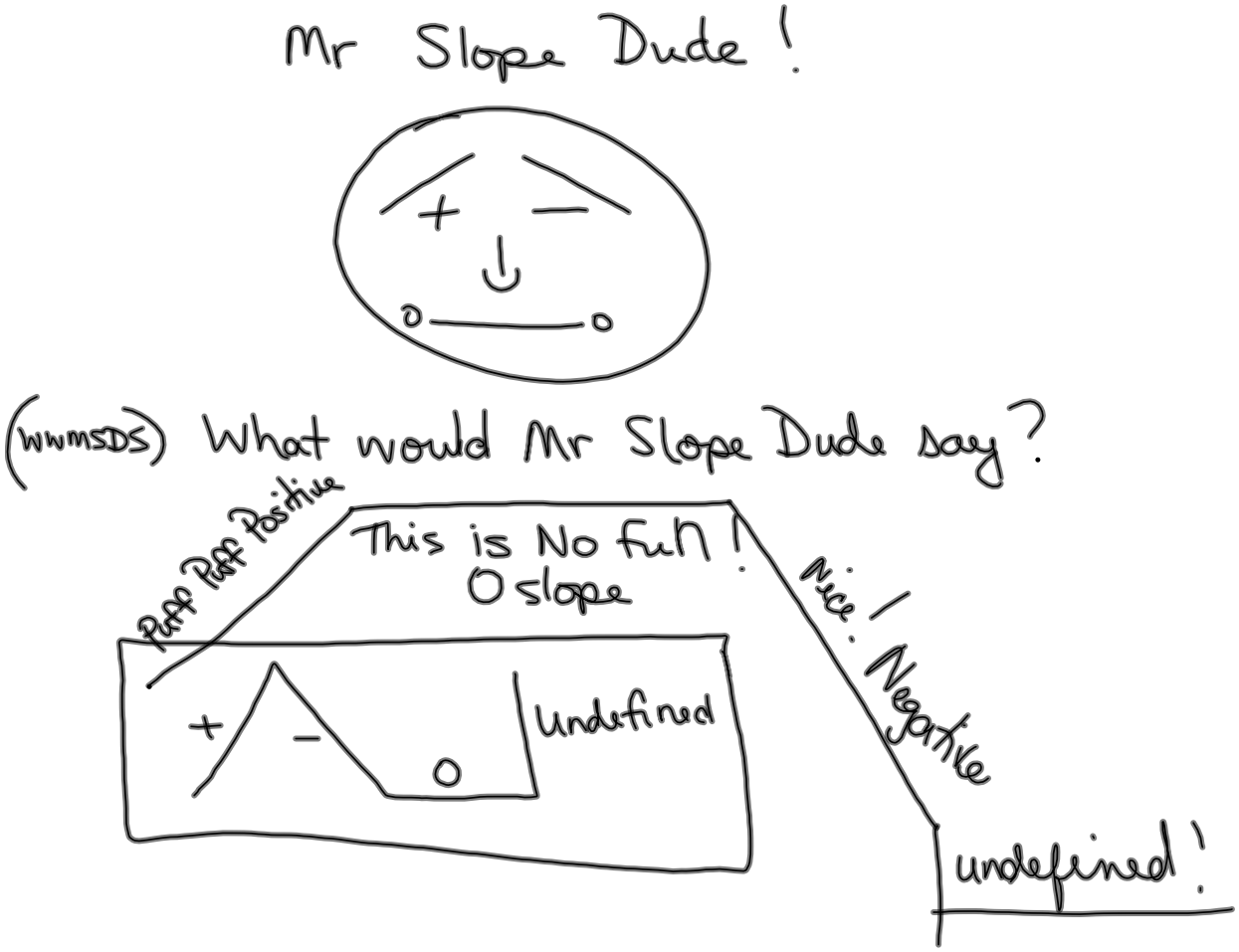
Rate of Change

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{58 - 51}{11 - 8} = \frac{7 \text{ in}}{3 \text{ yr.}}$$

$$\frac{7 \text{ in}}{3 \text{ yr}} = \frac{2.5 \text{ in}}{1 \text{ yr.}}$$

Dependent
y
Variable
Independent
x

$$\frac{67 - 58}{13 - 11} = \frac{9}{2} = \frac{4.5 \text{ in}}{1 \text{ yr.}}$$

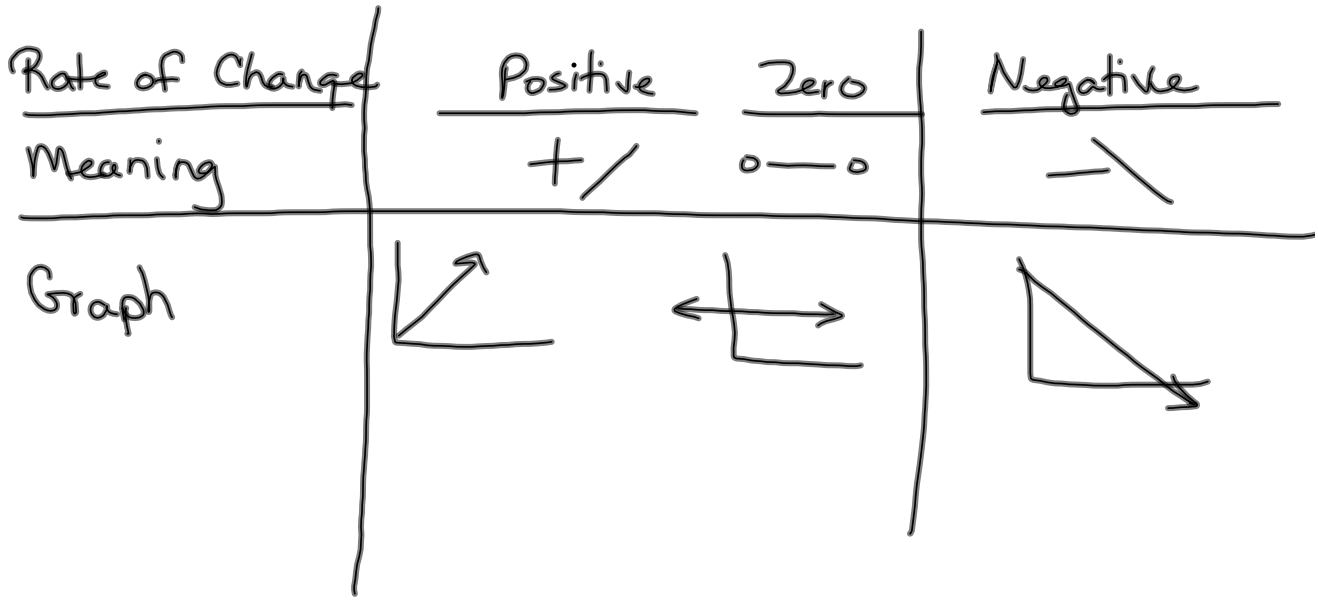

Mr Slope Dude!
+
−
(wwmsDS) What would Mr Slope Dude say?
Puff Puff Positive
This is No fun!
0 slope
Nice! Negative
+
−
0
Undefined
undefined!

Zero Rates of Change

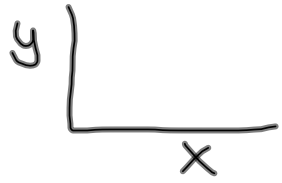
Horizontal Line
0 slope

0 in the numerator / any #

$\frac{0}{2} = 0$


Rate of Change
Positive
Zero
Negative
Meaning
+
0 — 0
Graph

Rate of Change $m = \frac{y_2 - y_1}{x_2 - x_1}$



(x, y)

x	
y	

x	y