3.3 Equations in $y=mx$ Form

A line is proportional if it goes through the origin (0,0)

$y = mx \Rightarrow \frac{y}{x} = \frac{mx}{x}$ (slope (constant rate of change))

$m = \frac{y}{x}$

A line that goes through the origin (0,0) has a slope, m, constant of variation of $m = \frac{y}{x}$

$(\overset{x}{2}, \overset{y}{15})$ $(\overset{x}{3}, \overset{y}{22.5})$ $(\overset{x}{4}, \overset{y}{30})$

Constant of variation $= \frac{y}{x}$ $\frac{15}{2} = 7.5 = 7\frac{1}{2}$

$\frac{30}{4} = 7.5 = 7\frac{1}{2}$

$\frac{7.5}{1}$ is the unit rate when the # is over 1

* this slope m

Example

slope

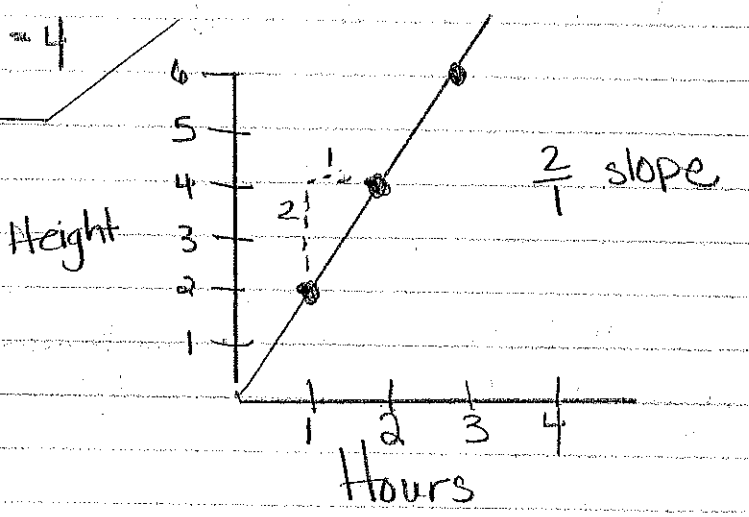
$y = 2x$

$y = 2(0)$ $y = 0$

$y = 2(1)$ $y = 2$

$y = 2(2)$ $y = 4$

Hours X	Height Y
0	0
1	2
2	4
3	6



Example

X	Time worked (h)	15	12	22	9
Y	Total pay ($)	112.50	90	165	67.50

p. 198 in wkbk

Find $ per hour $= \frac{Y}{X}$

$\frac{90}{12} = 7.5$

$\frac{165}{22} = 7.5$