Direct Variation

What is it? a linear equation whose graph goes through (0,0)
a relationship that can be represented by a function in the form $y = kx$, where $k \neq 0$

Constant:

$k = \frac{y}{x}$ is constant for all ordered pairs

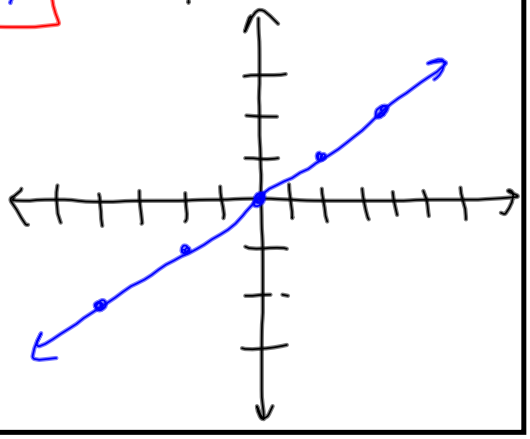
Equation:

$y = mx$ (y-int is 0) ($y = kx$ or $y = ax$)

m ↓ constant

Table: $y = \frac{1}{2}x$ Graph.

	x	y
	-4	-2
	-2	-1
*	0	0
	2	1
	4	2



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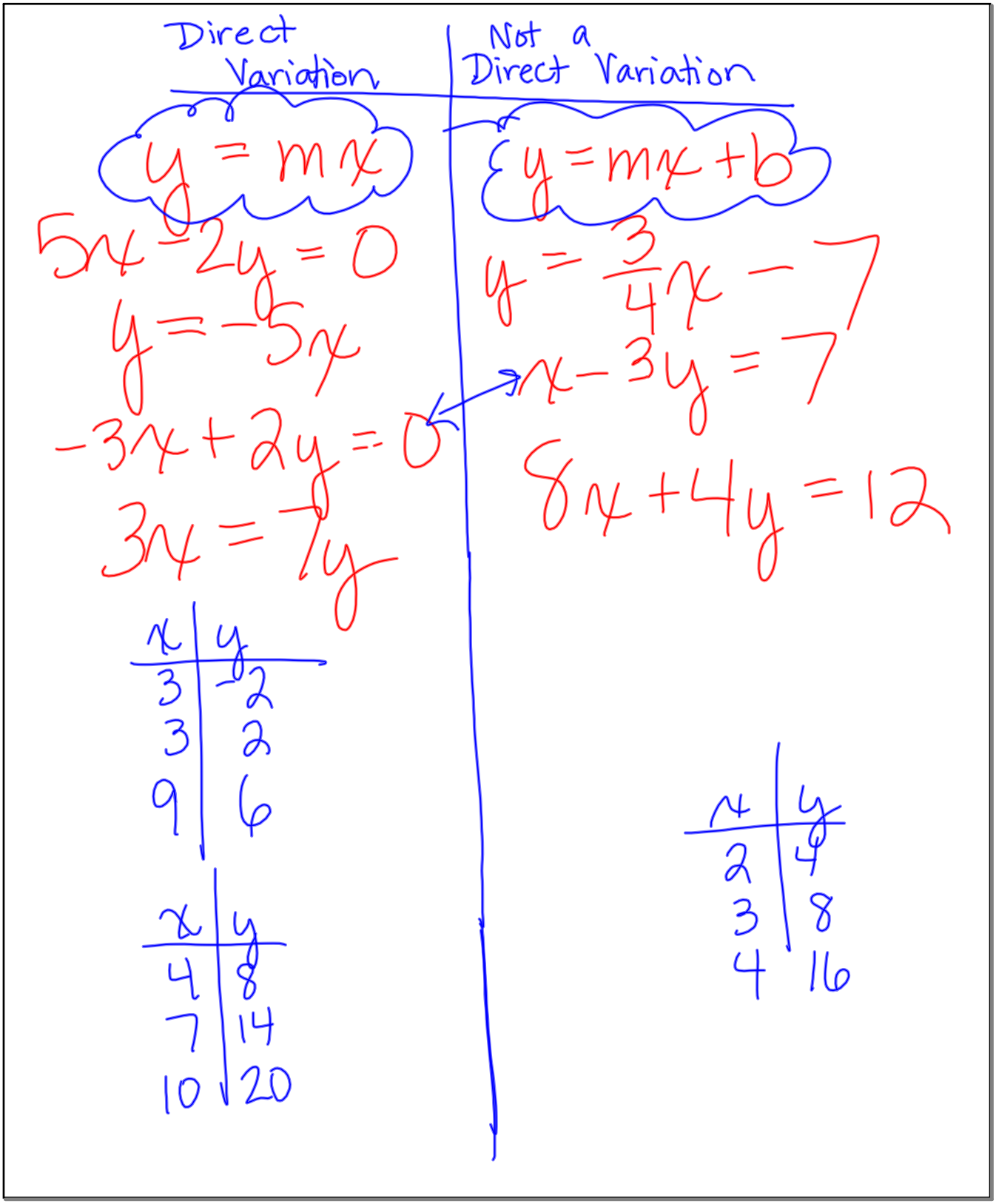
Direct Variation
Not a Direct Variation
y = mx
y = mx + b
5x − 2y = 0
y = −5x
−3x + 2y = 0
3x = 7y
y = 3/4x − 7
x − 3y = 7
8x + 4y = 12
x | y
3 | −2
3 | 2
9 | 6
x | y
4 | 8
7 | 14
10 | 20
x | y
2 | 4
3 | 8
4 | 16

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Problems 5.2

① $\frac{2y}{2} = \frac{3x}{2} + \frac{1}{2}$ Is this D.V.?

$y = \frac{3}{2}x + \frac{1}{2}$ NO, $b = \frac{1}{2}$, not 0

② y varies directly with x.
Write a direct variation equation.
Find the value of y when $x = 10$.

$y = 9$ when $x = 5$ $m = \frac{y}{x} = \frac{9}{5}$

$y = mx$

$\frac{9}{5} = \frac{m5}{5}$

$\frac{9}{5} = m$

$y = \frac{9}{5}x$

$x = 10$, $y = \frac{9}{\cancel{5}_1} \cdot \frac{\cancel{10}^2}{1} = 18$

18