

What's Going On?

Checking In Word Wall!

Minds on Baby-sitters Club

Action! Partial Variation

Consolidation Tables of Values, Equations, & Graphs

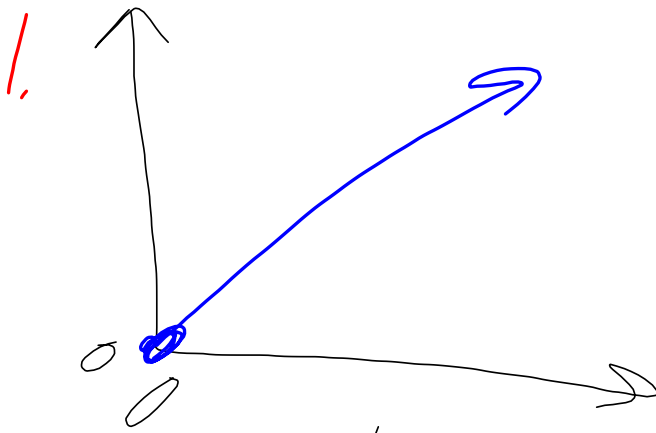
Learning Goal - I will be able to identify Partial Variation!

L.G.L.

In your learning goal log from the other day, please explain how you can tell if a relationship is **direct** variation.

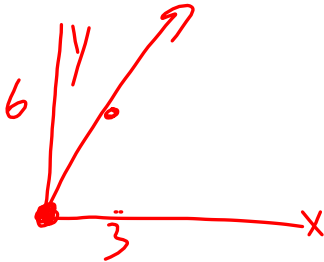
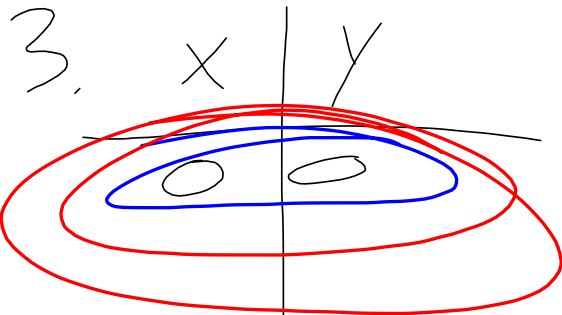
Please include with your explanation:

1. A graph
2. An equation
3. A table
4. An example of something that is NOT direct variation.



$$E = -\frac{H}{3}$$

2. $N = 2t$ $E = 8h$
 $y = -3x$ $y = 2x + 0$

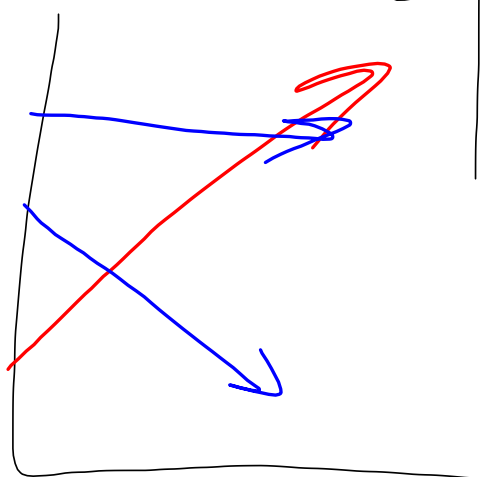


3	6
4	8
5	10

$y = 2x$

4.

x	y
0	2



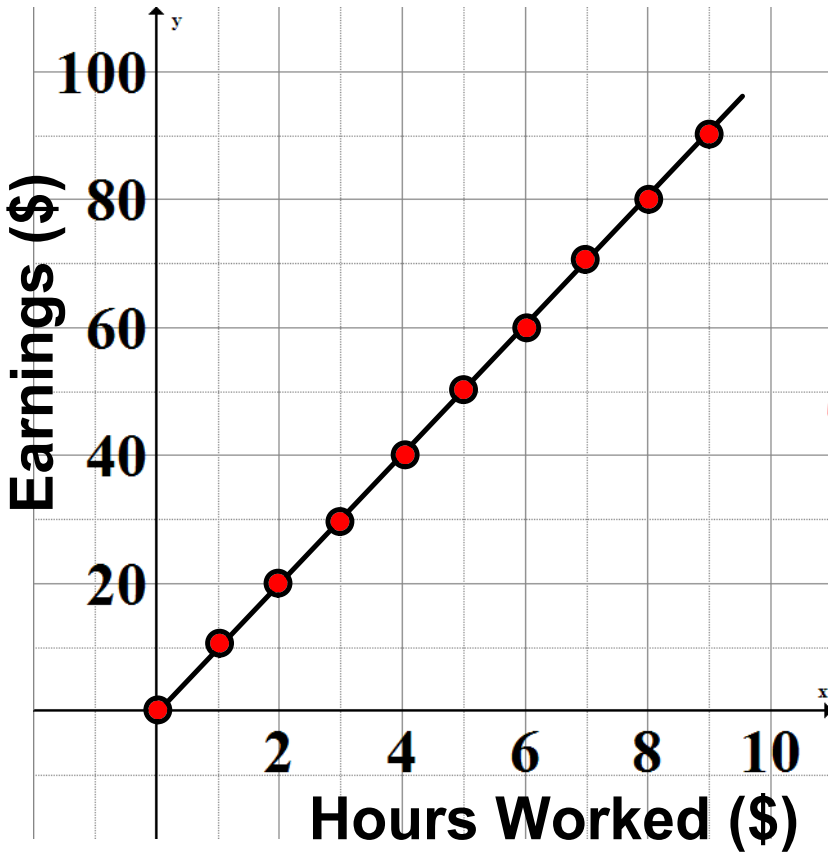
$$y = 2x + 5$$

$$y = 3x - 1$$

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- Determine an equation for total earnings.



x	y
0	0
1	10
2	20
3	30
4	40

CoV is 10

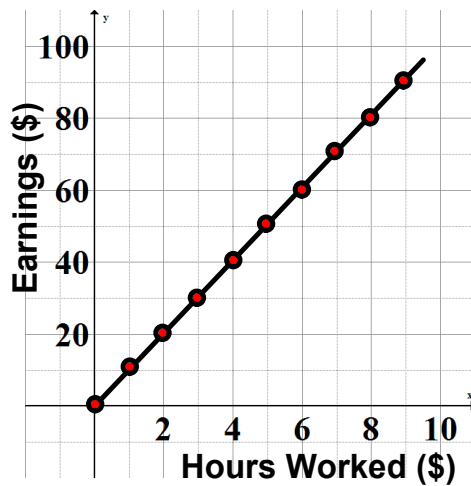
~~HE~~

$E = 10h$

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$$E = 10h \quad \text{OR} \quad y = 10x$$



x	y
0	0
1	10
2	20
3	30
4	40

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$$E = 10h \quad \text{OR} \quad y = 10x$$

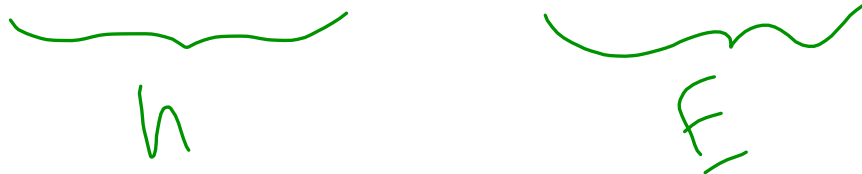
Is this an example of DIRECT VARIATION?
Why or why not?

This is an example of direct variation!

The independent variable is a constant multiple of the dependent variable!

The graph of the line goes through the origin (0, 0).

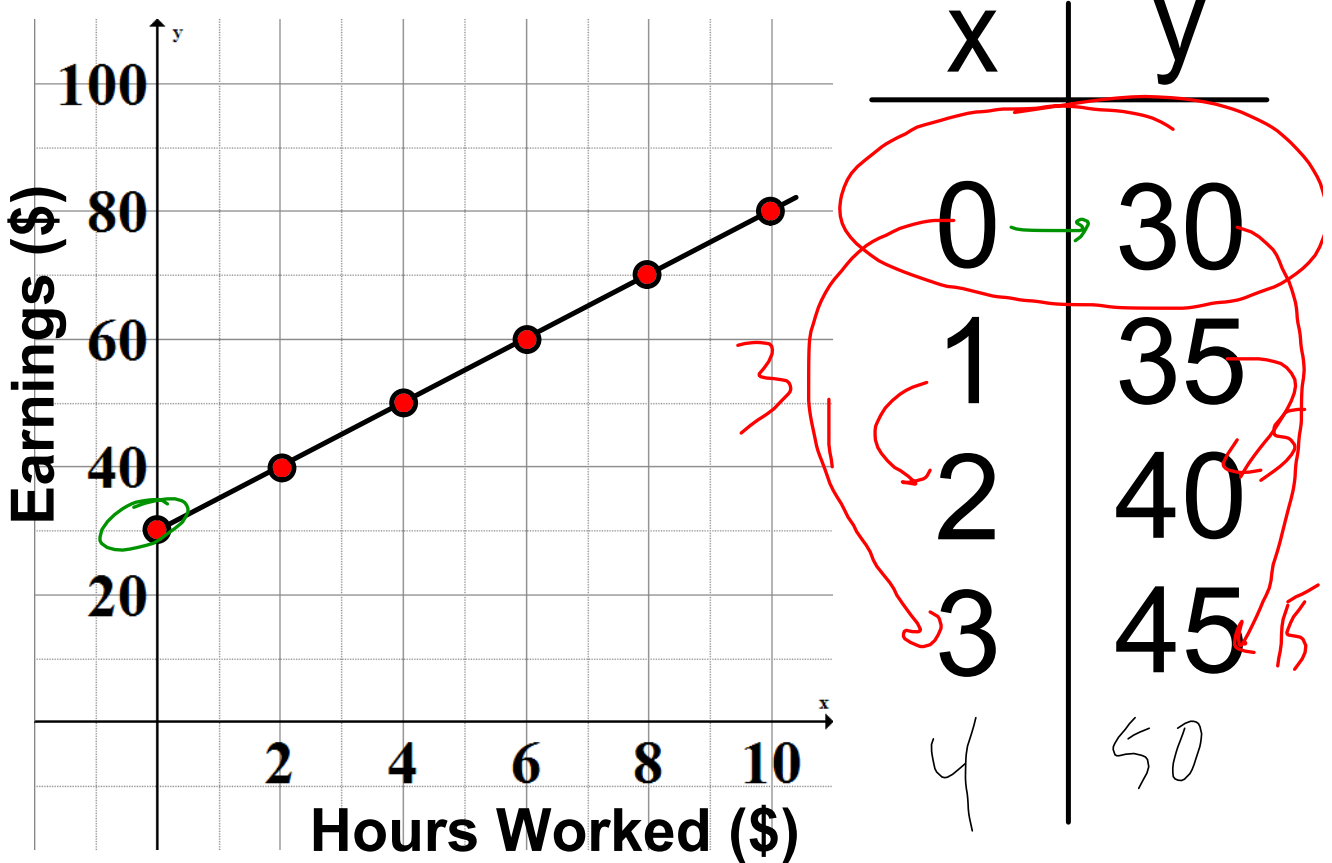
When the independent variable is 0, the dependent variable is also 0.

The image shows the equation $E = 10h$ with two green handwritten brackets. The first bracket is under the variable h , and the second bracket is under the variable E .

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Determine an equation for total earnings.



How much if you worked 7 FULL days?

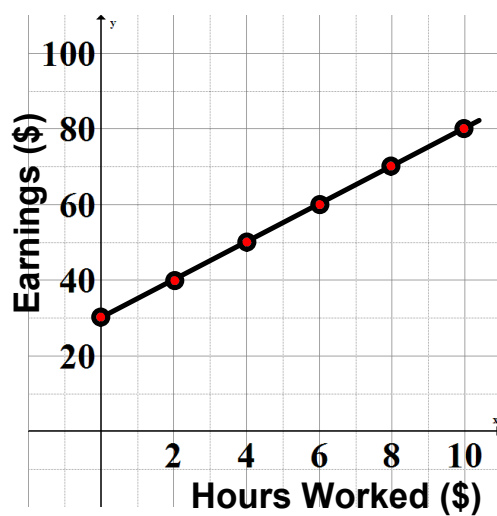
That's 168 hours.

$$E = 5h + 30$$

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$$E = 30 + 5h \quad \text{OR} \quad y = 30 + 5x$$



x	y
0	30
1	35
2	40
3	45

$$E = 5h + 30$$

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$$E = 30 + 5h \quad \text{OR} \quad y = 30 + 5x$$

Is this an example of DIRECT VARIATION?

NO

Why or why not?

Because initial value is 30 not zero.

This is not an example of direct variation!

The independent variable is not a constant multiple of the dependent variable!

The graph of the line does not go through the origin (0, 0).

When the independent variable is 0, the dependent variable is not 0.

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$$E = 5h + 30$$

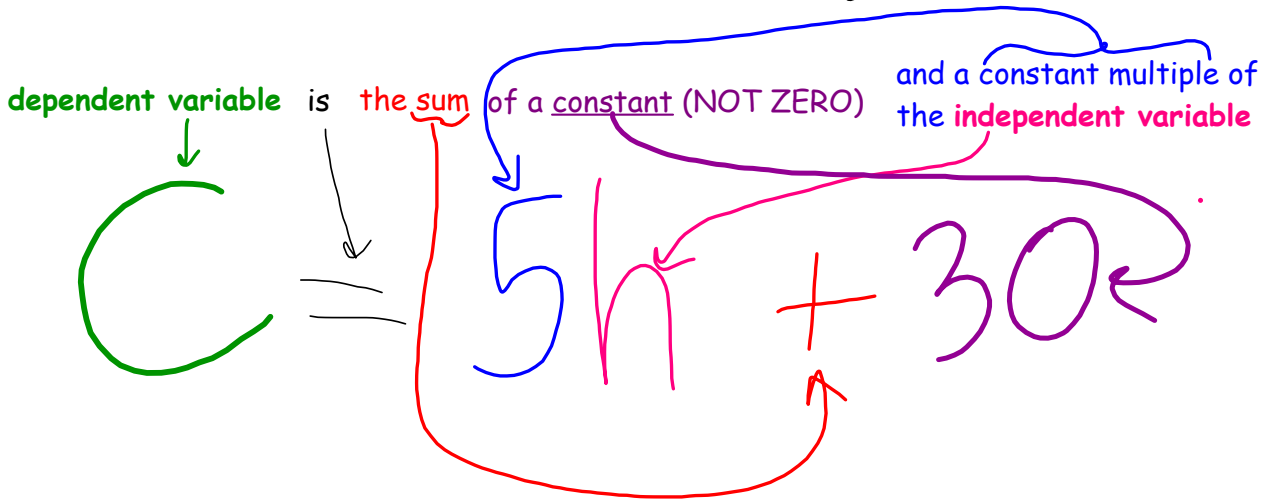
This is not an example of direct variation!

So what is it??

Partial Variation

A relationship between two variables in which the **dependent variable** is the sum of a constant (NOT ZERO) and a constant multiple of the **independent variable**.

$$C = 5h + 30$$



Action!**Taxi!**

A taxi charges a flat rate of \$2 to enter the cab, plus 50 cents per kilometer. Determine an equation to represent the cost of a taxi.

$$\text{Cost} = 2 + 0.5 * \text{Distance}$$

$$C = 0.5k + 2$$

Variable Cost
50 cents PER kilometre

Fixed Cost
2 dollars to enter the cab

$$C = 0.5k + 2$$

23 km

$$C = 0.5(23) + 2$$

$$= 11.5 + 2$$

$$= 13.5$$

It costs \$13.50

Cost is \$53.50

$$C = 0.5k + 2$$

$$53.50 = 0.5k + 2$$

$$\begin{array}{r} -2 \\ \hline \end{array}$$

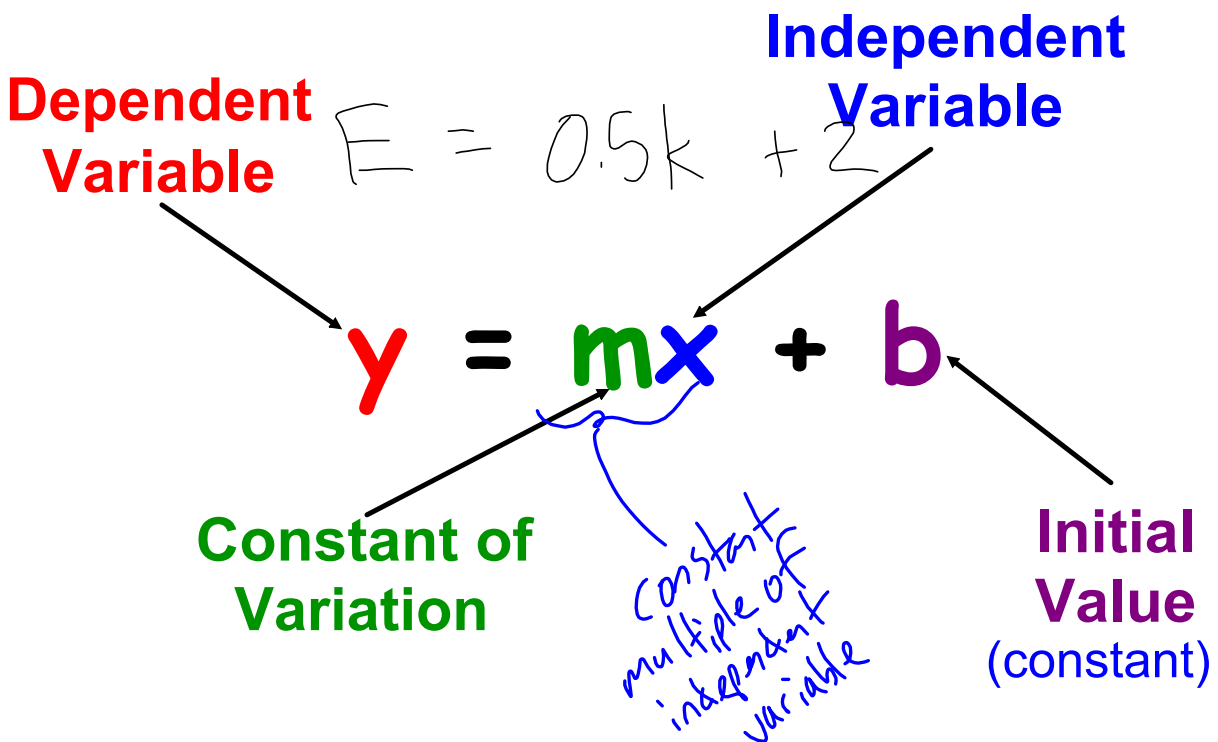
$$\frac{0.5k}{0.5} = \frac{51.50}{0.5}$$

$$k = 103$$

the trip was
∴ it costs \$103/km

Action!

Writing equations in the form $y = mx + b$



Copy and complete the table of values given that y varies *partially* with x .

x	y
0	6
1	<input type="text"/>
<input type="text"/>	12
3	<input type="text"/>
4	18
5	<input type="text"/>
<input type="text"/>	27

Identify the initial value of y and the constant of variation from the completed table.

The initial of y always occurs when $x = 0$.
When x is 0, y is 6.

The initial value of y is **6**.

The constant of variation is what y
increases by when x increases by 1.
When x increases by 1, y increases by 3.

The constant of variation is **3**.

x	y
0	6
1	9
2	12
3	15
4	18
5	21
7	27

Write an equation relating y and x in the form $y = mx + b$.

Remember:

m is the constant of variation
 b is the initial value

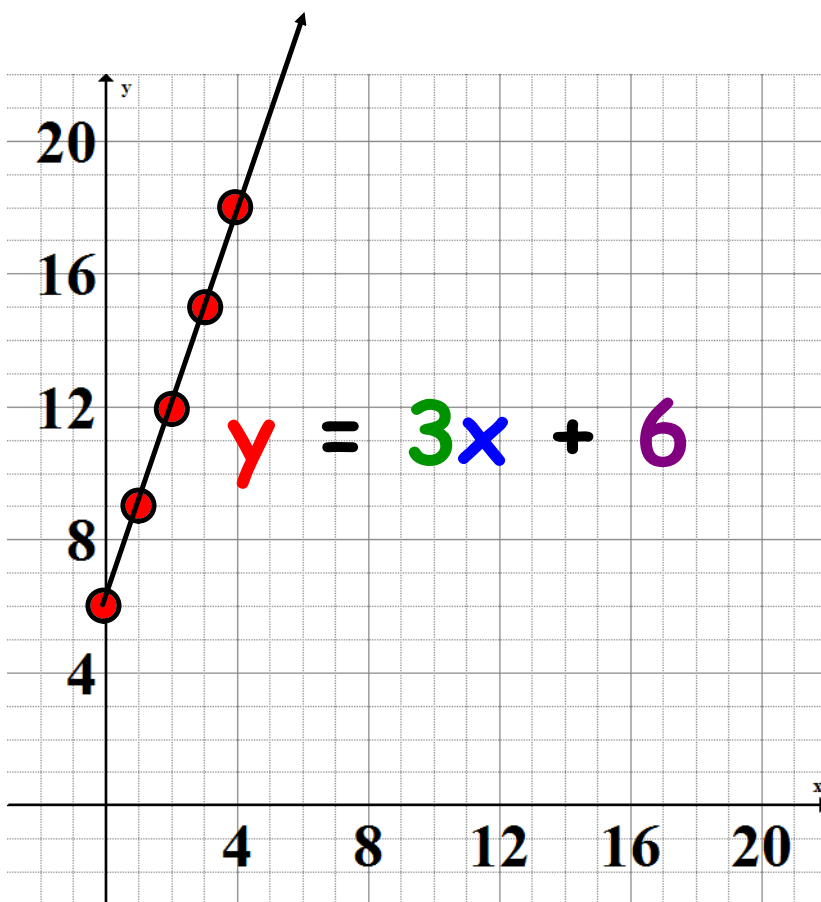
$$y = 3x + 6$$

x	y
0	6
1	9
2	12
3	15
4	18
5	21
7	27

ind.
dep.

(0 → 6) 3
(1 → 9) 3
(2 → 12) 3
(3 → 15) 3
(4 → 18) 3
(5 → 21) 3
(7 → 27) 3

Graph this relation.



x	y
0	6
1	9
2	12
3	15
4	18
5	21
7	27

Consolidation

The KEY Points

1. A partial variation has an equation of the form $y = mx + b$.

b - the initial value of y

m - the constant of variation

(what y increases by when x increases by 1)

2. The graph of a partial variation is a straight line that **does not** pass through the origin.

Consolidation

Practice it!