Worksheet: Linear Situations

1) Napoleon has $40.00 saved up already. To earn more money, he plans to start mowing lawns. He will earn $12.00 for each lawn he mows.

    a) Write an equation to represent the situation: $y = 12x + 40$ or $y = 40 + 12x$

    b) The inputs (x) represent: __#of lawns__

    c) The outputs (y) represent: __amount of money he has__

    d) The slope is __12__ and it represents __$ earned per lawn__

    e) The y-intercept is __40__ and it represents __original amount of money__
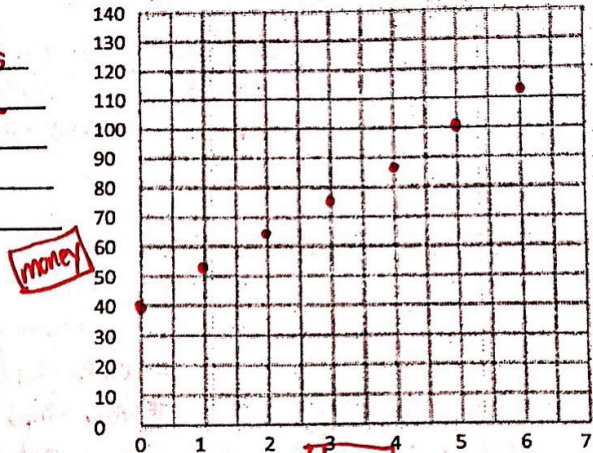
    f) Make a table.

x	y
0	40
1	52
2	64
3	76
4	88
5	100
6	112

    g) Graph. Make sure you label your axes.

    h) Should you connect your points? Why or why not?
__No; the decimals wouldn't make sense. He doesn't mow fractions of a lawn. He gets the $12 all at once.__

(y-axis labeled: money / x-axis labeled: lawns)

Notice: The y-axis is not scaled by 12's. Nobody scales graphs by 12's. You should always use a "common" number, like 1's, 2's, 5's, 10's, 20's, 100's, etc. You will have to estimate where the points go.

2) Napoleon is now mowing one of the lawns. All together, the lawn has an area of 1300 square feet. Napoleon is able to mow 150 square feet of the grass per minute.

    a) Write an equation to represent the how many square feet are LEFT unmowed: $y = 1300 - 150x$ or $y = -150x + 1300$

    b) The inputs (x) represent: __#of minutes__

    c) The outputs (y) represent: __sq. ft. of lawn unmowed__

    d) The slope is __-150__ and it represents __amount of lawn mowed per minute__

    e) The y-intercept is __1300__ and it represents __original amount of lawn unmowed__
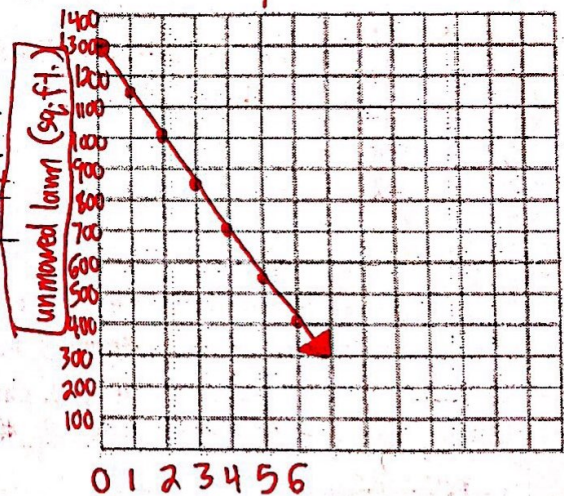
    f) Make a table.

x	y
0	1300
1	1150
2	1000
3	850
4	700
5	550
6	400

    g) Graph. Make sure you label your axes.

    h) Should you connect your points? Why or why not?
__Yes, the decimals would make sense. In half a minute, he would mow half of 150 feet.__

(y-axis labeled: unmowed lawn (sq. ft.) / x-axis labeled: minutes)

3) The temperature at 6:00 AM is 35°F. Each hour, the temperature rises by 4°F.

    a) Write an equation to represent the situation: $y = 35 + 4x$ or $y = 4x + 35$

    b) The inputs (x) represent: __#of hours after 6:00__

    c) The outputs (y) represent: __temperature (°F)__

    d) The slope is __4__ and it represents __temp. change per hour__

    e) The y-intercept is __35__ and it represents __the original temp. at 6:00__

(continued on back)

f) Make a table.

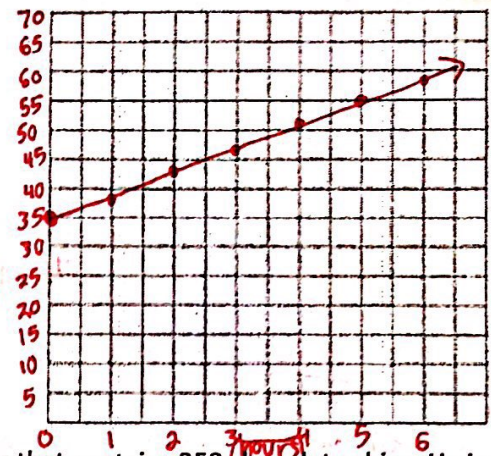| x	y
0	35
1	39
2	43
3	47
4	51
5	55
6	59

g) Graph. <u>Make sure you label your axes.</u>

h) Should you connect your points? Why or why not?

Yes; the temperature rises continuously. The decimals make sense. (Ex: 0.5 hours = 37°)

temp (°F)

3 hours

4) Pedro is making chocolate chip cookies. He has a bag of chocolate chips that contains 250 chocolate chips. He is very particular about his cookies, so he makes sure that there are exactly 7 chocolate chips in each cookie.

a) Write an equation to represent the **number of chocolate chips used**: ~~~~ $y = 7x$

b) The inputs (x) represent: #cookies made

c) The outputs (y) represent: #choc. chips used

d) The slope is __7__ and it represents #choc. chips used per cookie

e) The y-intercept is __0__ and it represents #of choc. chips for 0 cookies

f) Make a table.

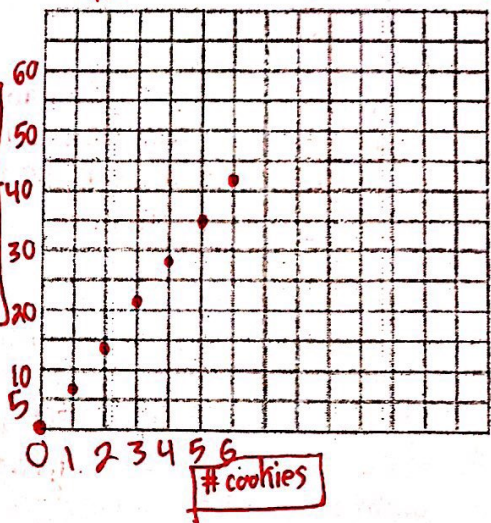| x	y
0	0
1	7
2	14
3	21
4	28
5	35
6	42

g) Graph. <u>Make sure you label your axes.</u>

h) Should you connect your points? Why or why not?

No; he will not make fractions of a cookie.

#choc. chips used

#cookies

5) Use the same situation as #4.

a) Write an equation to represent the **number of chocolate chips left in the bag**: $y = 250 - 7x$ or $y = -7x + 250$

b) The inputs (x) represent: #cookies made

c) The outputs (y) represent: #choc. chips left

d) The slope is __-7__ and it represents #choc. chips used per cookie

e) The y-intercept is __250__ and it represents original #of choc. chips in the bag

f) Make a table.

x	y
0	250
1	243
2	236
3	229
4	222
5	215
6	208

g) Graph. <u>Make sure you label your axes.</u>

h) Should you connect your points? Why or why not?

No; he will not make fractions of a cookie.

#choc. chips left

#cookies