

Chemistry Bell Work, March 12 – March 15

ACT Prep, Mass and Volume 2:
Density, Density Graphs,



Chemistry, Bell Work, Monday, 3/12/18

Describe and explain a linear equation: understand that the graph of a linear equation models a process or system in the real world.

1. Write the linear equation. Define the variables & constants:

$$y = mx + b$$

x & y are variables, IV & DV.
 m and b are constants.

m is the slope $\left(\frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x}\right)$ Δ = change, b is the y -intercept,

2. Explain this equation: **$y = 4.75x + 0.465$**

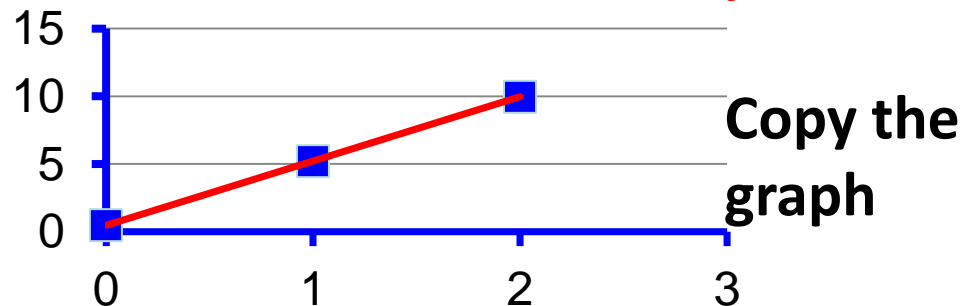
4.75 = the slope, where when x increases by 1, y increases by 4.75

0.465 = the y -intercept, b : where the line crosses the y axis.

y = A value of the DV

x = A value of the IV

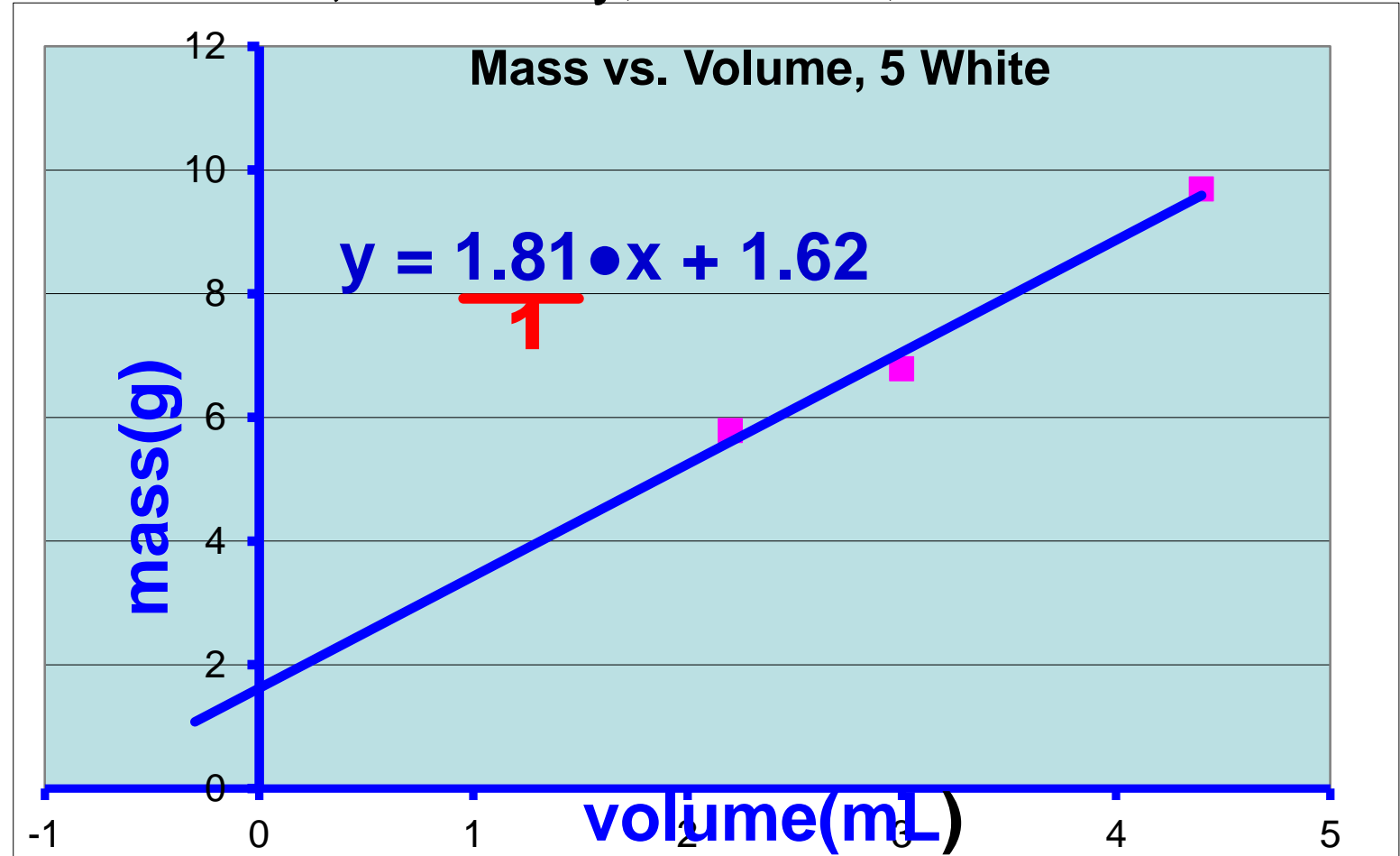
The points are the data from the experiment.



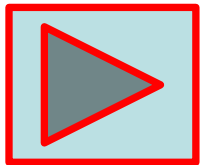
Chemistry, Bell Work, Tuesday, 3/13/18, 9 Questions

**Sketch
the graph**

Silver	
x, volume	y, mass
2.2	5.78
3	6.78
4.4	9.69



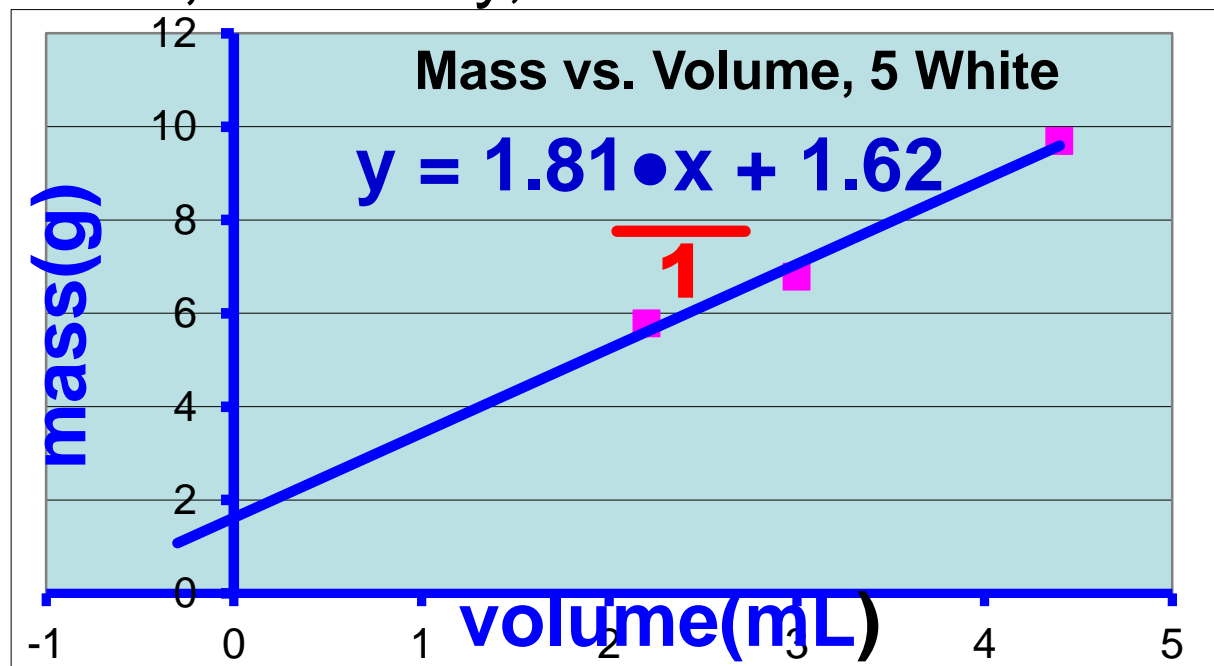
1. For a piece of silver metal, what does a slope of 1.81 mean?
2. What does the y-intercept of 1.62 mean?
3. Is the y-intercept on this graph negligible?
4. What does negligible mean?



Chemistry, Bell Work, Tuesday, 3/13/18

1. For a piece of silver metal, what does a slope of 1.81 mean?

1 mL has a mass of 1.81 g.
Every time the volume changes by 1 mL, the mass changes by 1.81 g.



2. What does the y-intercept of 0.465 mean?

When the volume is zero, the mass = 1.62 g



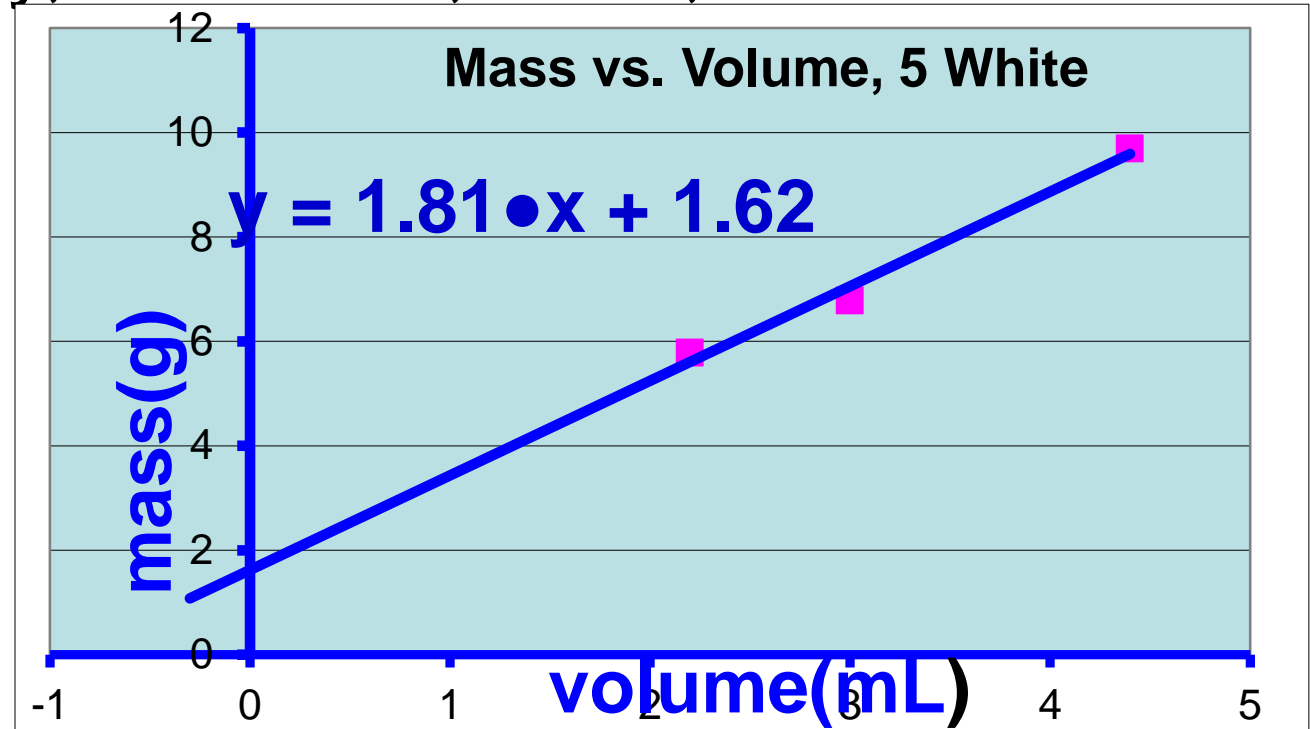
3. Is the y-intercept on this graph negligible?

The y-intercept is negligible and can be assumed to be zero because it is close to zero.

4. What does negligible mean?

Insignificant, not meaningful, and can be changed to a value of zero.

x	y
d	a
Volume of Sample (mL)	Mass (g)
2.8	5.8
3.0	7.8
6.0	11.7



- What does the y axis represent? **mass**
- What does the x axis represent? **volume**
- What is the relation ship between y and x?
It is the mass to volume ratio: for each 1.81 g increase in mass the volume increases by 1 mL, or 1.81 g of mass per each 1 mL of volume.
- What is the slope of this mass- volume graph? **1.81 or 1.81 g/ 1mL**
- What is the name of the this mass to volume ratio? **Density**

ACT Prep, Bell Work Wednesday, March 14

1. What is the ACT science test strategy?

A. Pacing: Decide if you will attempt to answers 20, 25 or 30 questions.

- ***If 20 - 25 questions, skip two passages and all the associated questions.**
- ***If 30 questions, skip one passage and the questions.**

B. Know which questions to answer.

- Find and answer all the Now Questions. If time answer the Later Questions, otherwise guess.
- **Be able to spot the one or two Never passages that you will skip.**
- **Don't read the Never passages or questions. Guess the answers.**

C. Process of Elimination (POE):

- **Cross off incorrect answers in the test booklet. Use the test booklet to mark your answers . Don't bubble in until the final 5 minutes.**

D. Guessing:

- **Never leave anything blank on the answer document. Guess.**
- **Decide on your "letters of the day" pair and use it for all guessing.**

ACT Prep, Bell Work Wednesday, March 14

2. What are some common science patterns ACT uses?

One answer says "increase," one says "decrease," one says "increase, then decrease" and one says "stays the same."

If there is a consistent relationship in the figures, the correct answer will be either "increase" or "decrease."

3. The results of Trials 3-5 indicate that as the coefficient of friction (μ) increases, the minimum distance (d) of point W from point X required for the bowling ball to barely reach Point Z:

Trials	μ	θ	d	KE -X	KE-Y	PE
1	0.2	20	50	28.1	17.5	6.7
2	0.2	30	50	28.1	14.3	9.8
3	0.2	40	50	28.1	11.6	12.6
4	0.25	40	30	29.1	11.6	12.6
5	0.3	40	17	30.,0	11.6	12.6

A. only increases.

B. only decreases.

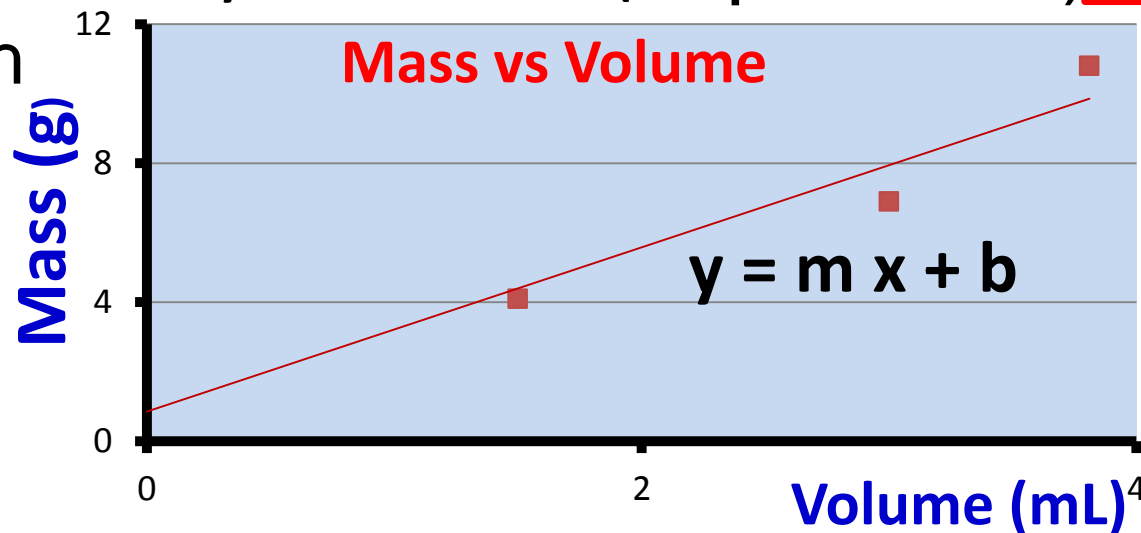
C. remains the same.

D. varies, but with no general trend

Chemistry Bell Work, Thursday, 3/16/18 (8 questions)

Draw the graph

x	y
Volume of Sample (mL)	Mass of Sample (g)
1.50	4.10
2.70	7.20
3.81	10.3



1. What does the y axis represent? **mass**
2. What does the x axis represent? **volume**
3. What is the relationship between y and x (the mass & volume)?
It is the mass to volume ratio, aka - density:

Density is how much mass there is for each milliliter or $\frac{\text{mass}}{\text{volume}} = \text{Density}$

4. What are the units of the slope?

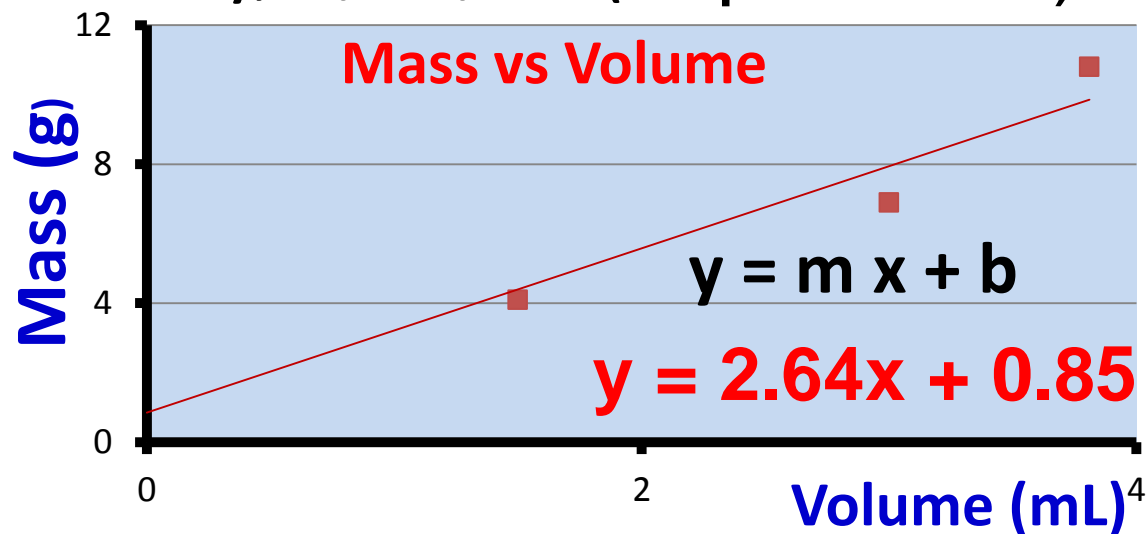
Units of rise, grams, over units of the run, mL = $\frac{\text{grams}}{\text{milliliters}} = \frac{g}{\text{mL}} = g/\text{mL}$

5. What are the units of the y-intercept (b) **Grams or (g)**



Chemistry Bell Work, Thursday, 3/16/18 (6 questions)

x	y
Volume of Sample (mL)	Mass of Sample (g)
1.50	4.10
2.70	7.20
3.81	10.3



6. What is the slope of this mass- volume graph with units?

2.64 grams of mass per each 1 mL of volume. 2.64 g/mL

7. What is the significance of the slope of a mass- volume graph?

Density

8. Write a mathematical model (equation) for this mass to volume ratio in the form of $y = m \bullet x + b$

$$\text{Mass} = (2.64 \text{ g/1 mL}) \bullet \text{volume} + 0.85 \text{ g}$$

$$M = (2.64 \text{ g/mL}) \bullet V + 0.85 \text{ g}$$

