EDUCATIONAL ASSIGNMENT for JOSEPH JOHN WUNDERLICH for his 3rd trimester of 10th grade

This assignment covers the following Educational Objectives (Subjects marked with a "■" are the main subject, and those marked with an "□" are secondary subjects):

- □ 1. READING (ENGLISH)
- □ 2. WRITING (ENGLISH)
- ■ 3. ALGEBRA 2
- ■ 4. CHEMISTRY
- □ 5. WORLD HISTORY
- 6. LATIN II
- □ 7. WORLD CULTURAL ARTS
- 8. PHYSICAL EDUCATION

ASSIGNMENT:

A) Recall your travels in Japan in 2013 and Europe in 2014 and think about some of the photos of infrastructure that you took (like the ones you took above), then do the following:

1. ***Write down the freezing point and boiling point of water in both Fahrenheit and Celsius***
2. ***Let Celsius be X and Fahrenheit be Y, and plot the freezing point and boiling point on a graph***
3. ***Draw a line through these points***
4. ***Write the equation of a line with M = slope, and b = y intercept***
5. ***Find the y intercept (b) from your graph***
6. ***Calculate your slope (M) = Rise / Run by using the points on your graph (make a right triangle)***
7. ***Plug M and b into your equation for a line***
8. ***Use your equation for a line to find the equivalent Fahrenheit for 20 and 25 degrees Celsius (i.e. the two temperatures that you and I disagreed on in Japan and Venice about what is a comfortable temperature to sleep with – you like it colder than me).***

B) Recall your travels in Japan in 2013 and Europe in 2014 and discuss the variations in electrical power between Japan, the U.S., Belgium, Italy, and England and show a picture of the different power adapters we needed

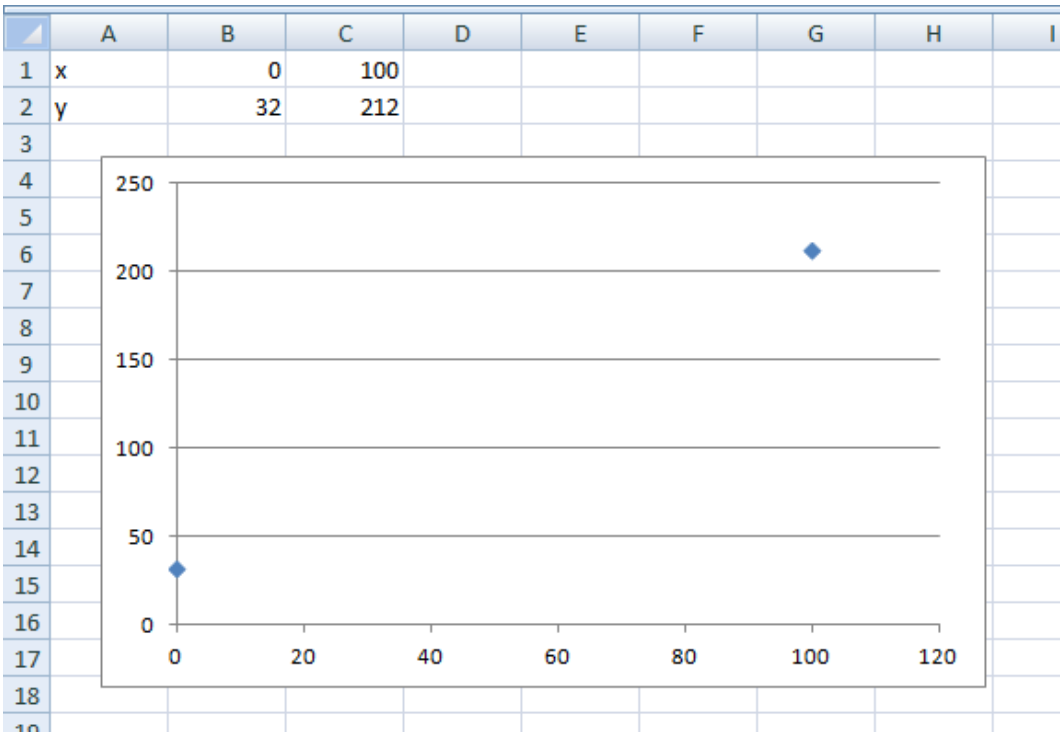
C) Discuss the type of power our laptop needs internally and how that is changed from the power available from wall sockets (any wall socket anywhere)

D) Discuss some of ways energy is saved in Europe and Japan including what you see in these pictures:

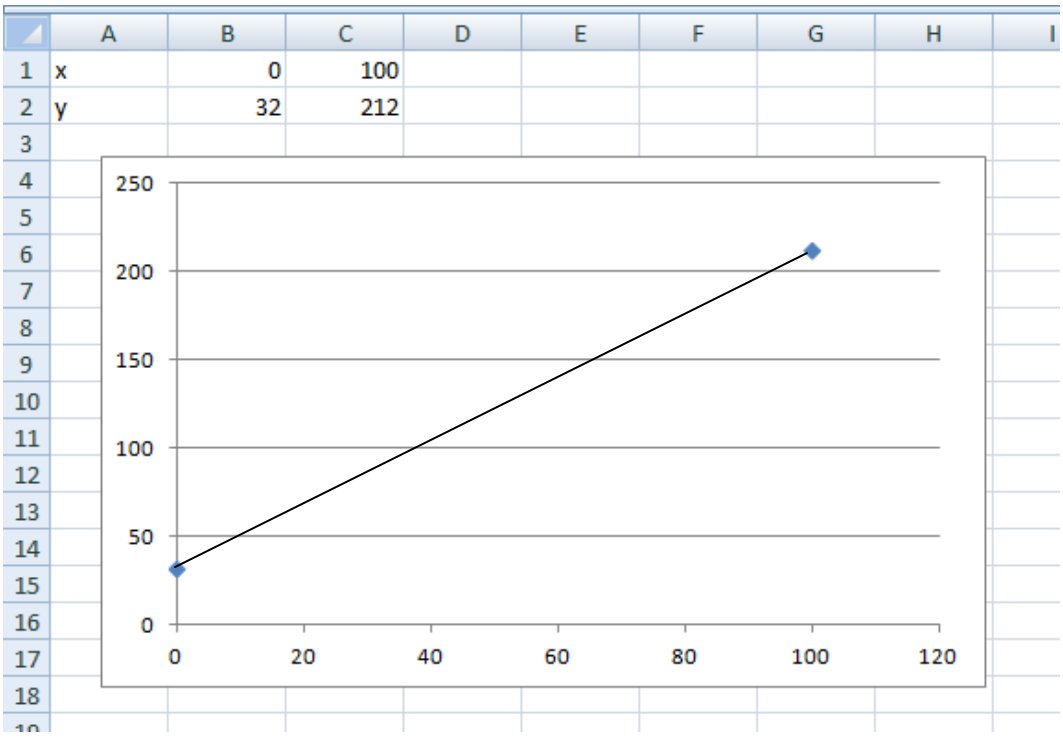
JOSEPH'S WORK:

A.1: Freezing point: 0°C or 32°F, Boiling Point: 100°C or 212°F

A.2:



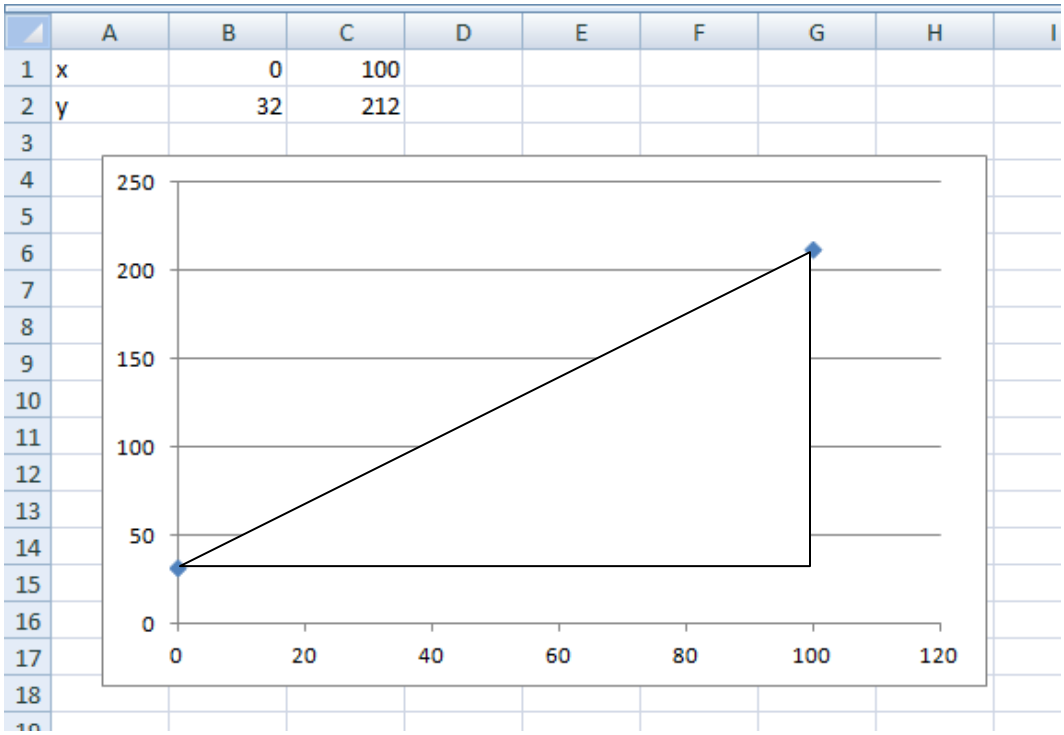
A.3:



A.4: Y=Mx+b

A.5: b = 100

A.6:



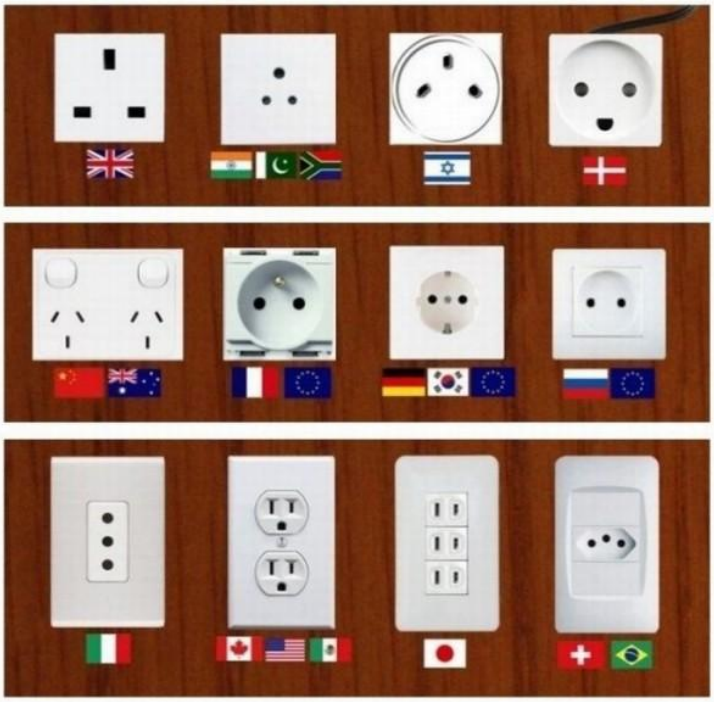
Rise = 212 – 32 = 180 Run = 100 Slope = Rise ÷ Run = 1.8

A.7: y=Mx+b y=1.8x+32

A.8: y=(1.8 ● 20°C) + 32 y= 68°F
y=(1.8 ● 25°C) + 32 y= 77°F

B: We needed a transformer in europe identical to the one below because of different voltages.

- **Italian and Belgian outlets were 230 volts AC at 50 hz**
- **British outlets were 240 volts AC at 50 hz**
- **US outlets are 120 volts AC at 60 hz**



In Japan we did not need a voltage converter, though we did need an ungrounded adapter for the laptop charger (grounded) for the Japanese outlets (shown bottom left) (ungrounded).

US: 120 volts AC at 60 hz
Japan: 100 volts AC at 50/60hz

To use British outlets we needed to use a Britian to European standard adapter (in my hand), then we plugged our European voltage converter into that, then the ungrounded adapter, then the laptop charger. The process is shown below. This was incredibly annoying because it kept falling out of the sockets because this whole mess was weighing itself down.

C: The converter brick in the center of the charger cable takes 100-240 volts at 1.5 amps and converts it into the input for our dell laptop, which is designed to take in exactly 19.5 volts at 4.62 amps.

D: In both Japan and where we stayed in Europe, the hotels we stayed in required the room's card key to be inserted into a wall slot to turn on the power, this is to keep any unnecessary electricity from being used such as lights or to keep from accidental fires like a coffee maker left on or something. The downside of this is that you cannot charge your electronics while you are away, luckily you can avoid this if your hotel room window is close enough to the ground to escape through and jump back in through during your visit, or if you are near a fire escape.

Some other ways they saved power in Europe was by using automated lighting systems that shut off after a while, power outlets had a switch on them in certain places, solar panels planted across the tops of buildings in most modern cities, clothing is commonly dried on racks instead of drying machines, and bidets (anal spraying devices) (shown right) are used in lieu of toilet paper, though most public bathrooms and hotels still use paper as well. Electronic Japanese toilets had built a bidet, as well as a seat warmer, amongst other features. (shown below)

Also worth noting is that both Japan and Europe had a habit of recycling and used separate bins almost everywhere. In Europe there were generally 3 or 4 bins, one for plastic, paper, metal/cans, and trash. While Japan would often use an elaborate color coded system of recycling, even in rural areas (shown below). Neither countries made recycling political.