

Name:

Key

Period:

Unit 1 Review

Observation

Scientific Method: Read the following paragraph and identify each part in the scientific method.

Hypothesis

Christina and Evan loved listening to their ipods over the wifi in the cafe while studying. There was just one problem, the music would cut in and out during the lunch rush the closer they sat to the student microwave. Evan proposed that they try to figure out what caused the problem, Christina agreed and they paid attention the next day during lunch. They hypothesized that whenever someone used the microwave to heat up their food, the music temporarily stopped playing. That evening, they decided to test their hypothesis. Using 4 different ipods, they set each one up one at a time in their kitchen. One ipod was right next to the microwave, the second was 5 feet away, the 3<sup>rd</sup> was 10 feet away, and the fourth was 15 feet away from the microwave. Once the music was playing, Christina would heat a cup of water in the microwave while Evan wrote down exactly which times the microwave was running and which times the music stopped playing for each ipod. Their data is below.

Experiment

Data

	Time microwave was on	Times music stopped playing
1 <sup>st</sup> ipod	7:05:00pm – 7:06:07pm	7:05:00pm – 7:06:07pm
2 <sup>nd</sup> ipod	7:08:21pm – 7:09:20pm	7:08:41pm – 7:09:03pm
3 <sup>rd</sup> ipod	7:12:02pm – 7:13:03pm	7:12:48pm – 7:12:59pm
4 <sup>th</sup> ipod	7:15:12pm – 7:16:10pm	Music did not stop playing

Analysis

	Microwave time	Music stop time
1 <sup>st</sup> ipod	1min. 7 sec.	1min. 7 sec.
2 <sup>nd</sup> ipod	59 sec.	22 sec.
3 <sup>rd</sup> ipod	1min. 1 sec.	11 sec.
4 <sup>th</sup> ipod	58 sec.	0 sec.

Conclusion

Christina and Evan hypothesized that a microwave, when in use, causes music played on an ipod using wifi to stop playing. They tested this by placing 4 ipods at distances of 0 ft, 5 ft, 10 ft, and 15 ft away from the microwave. They played each ipod, one at a time, while using the microwave. They timed the length of microwave use and the time the music stopped playing. According to

## Conclusion continued

the analysis, the farther the distance the ipod was from the microwave, the less affect it had on the wifi music. At a distance of 15 feet, there was no effect at all.

## 2. Significant Figures

A. Identify how many significant figures are in the following measurements:

1)  $\underline{3006.040g}$   
7 s.f.

2)  $\underline{0.0065L}$   
2 s.f.

3)  $\underline{8.60} \times 10^{-4}kg$   
3 s.f.

B. Solve the following problems and answer in the correct number of significant figures.

1)  $3006.040g + 5368g =$

$8374.04g$   
↓  
 $8374g$

2)  $68.5007mL - 33.06487020mL =$

$35.4358298mL$   
↓  
 $35.4358mL$

3)  $754.045g / 0.0653mL$

$= 11547.39463 \frac{g}{mL}$   
↓  
 $11500 \frac{g}{mL}$  or  $1.15 \times 10^4 \frac{g}{mL}$

4)  $0.078632m \times 0.000437m =$

$0.000034362184 m^2$   
↓  
 $0.0000344 m^2$  or  $3.44 \times 10^{-5} m^2$

3. Algebra: Solve the following problems for the variable in bold.

A.  $d = m/V$

if  $d = 8.65g/mL$  and  $V = 14.10mL$

$8.65 = \frac{m}{14.10}$

$m = (8.65)(14.10) = 121.965g = 122g$

B.  $F = 1.8(C) + 32$

if  $F = 88$

$88 = 1.8(C) + 32$   
 $-32$   
↓

$\frac{56}{1.8} = \frac{1.8(C)}{1.8}$

$C = 31.1111111$   
↓  
 $31$

4. Conversions: Solve the following problems.

A. Convert  $92.00g$  to  $kg$ .  
GIVEN ?

$1kg = 1000g$

$92.00g \left( \frac{1kg}{1000g} \right) = 0.09200kg$

B. Convert  $0.0586L$  to  $mL$ .  
GIVEN ?

$1L = 1000mL$

$0.0586L \left( \frac{1000mL}{1L} \right) = 58.6mL$

C. Convert 4.1104g/mL to kg/L.  $1000\text{g} = 1\text{kg}$   $1000\text{mL} = 1\text{L}$

$$\frac{4.1104\text{g}}{\text{mL}} \left( \frac{1\text{kg}}{1000\text{g}} \right) \left( \frac{1000\text{mL}}{1\text{L}} \right) = 4.1104\text{ kg/L}$$

D. Convert 70. miles/hr to feet/min  $1\text{mile} = 5280\text{ft}$   $1\text{hr} = 60\text{min}$

$$\frac{70.\text{miles}}{\text{hr}} \left( \frac{5280\text{ft}}{1\text{mile}} \right) \left( \frac{1\text{hr}}{60\text{min}} \right) = 6160 \frac{\text{ft}}{\text{min}} = 6200 \frac{\text{ft}}{\text{min}}$$

5. Scientific Notation: Write these numbers in scientific notation.

A.  $0.000478\text{mm} = 4.78 \times 10^{-4}\text{mm}$

B.  $83490000\text{g} = 8.349 \times 10^7\text{g}$