

Grade 11 NTI Day #9 Chemistry

Please do the following:

(1) Watch this youtube video:

<https://www.youtube.com/watch?v=XLY1QXLrMxg&list=PL5wpmHJhOEi-i3V7JYsWcWp0hLqybi5Kt&index=5>

(2) Review the slidedeck/presentation (see below). It will match the video presentation above.

(3) Complete the question sheet below the slidedeck at the end of this document.

If you have any questions, please email me: tyler.hampton@pineville.kyschools.us . This assignment is on Google Classroom. **Please turn it in through Google Classroom.** While you are there, make sure to sign the sign-in sheet. The assignment is also on the school homepage <https://www.pineville.kyschools.us/>. Go to the tab that says, "NTI". Then go to the appropriate day. **However, please turn in the assignment through Google Classroom, even if you access it through the school website.**

Day 4 - Notes

Unit: Introduction to Chemistry

*Types of Measurements and
Observations, Scientific Notation*



After today, you should be able to:

- Distinguish between qualitative and quantitative measurements
- Identify data as accurate or precise
- Write numbers in scientific notation
- Perform calculations using you calculator with numbers expressed in scientific notation



- **Measurement**: a type of observation
- **Qualitative measurements**: descriptive
 - Ex: hot, cold, heavy, light, big, blue, furry
- **Quantitative measurement**: observation made with a measuring instrument and includes both a number and a unit
 - Ex: ruler, balance, thermometer, graduated cylinder, 13.5° C, 25kg, 17L

- **Accuracy**: How close a measurement is to the true or *accepted value*

- Ex: Weighing a 50g mass

- 50.00g - accurate

- 32.18g - not accurate

- 49.99g - accurate



- **Precision**: How close multiple measurements are to each other

– Ex: Take the weight of a 50g mass

Accurate, precise:

50.00g

50.00g

50.00g

Accurate, precise:

50.00g

49.99g

50.00g

Not accurate, precise:

32.18g

32.18g

32.18g



An easy way to remember...

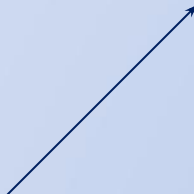
Accurate = Correct

Precision = Reproducibility




Scientific Notation

- Short hand for writing very large or small numbers
- Two parts: **Coefficient** and **Power of 10**



A number between 1 and 10 (can include 1 but not 10).



Exponent:
>1, positive exponent
<1, negative exponent

Scientific Notation Examples:

Write the following numbers in scientific notation:

1. 41,000

$$4.1 \times 10^4$$

2. 0.0029

$$2.9 \times 10^{-3}$$

3. 60,000

$$6 \times 10^4$$

4. 0.000 000 132

$$1.32 \times 10^{-7}$$

5. 123,000,000

$$1.23 \times 10^8$$



Calculator time!!

Try plugging these into your scientific calculator.
Put all answers in scientific notation.

**Instead of typing “x 10^,” use the
“EE” or “EXP” button!**

$37,000 \times 7,000$	2.59×10^8
0.0008×0.0009	7.2×10^{-7}
$(7 \times 10^6) \times (8 \times 10^5)$	5.6×10^{12}



Questions?
Please complete the
exit ticket.

Day #9 Questions

Multiple-Choice Questions

1. Which of the following is an example of a quantitative measurement?
 - a) Blue
 - b) 25 kg
 - c) Furry
 - d) Cold

2. What does "precision" refer to in measurements?
 - a) How close measurements are to each other
 - b) How close a measurement is to the true value
 - c) The ability to measure using qualitative observations
 - d) Using scientific notation for small numbers

3. Write 0.00029 in scientific notation.
 - a) 2.9×10^3
 - b) 2.9×10^{-3}
 - c) 29×10^{-4}
 - d) 2.9×10^4

Short Answer Question

4. Explain the difference between accuracy and precision. Provide one example of each.