

Warm Up

The number sequence {1, 3, 9} obeys a particular rule. Raise your hand to test a 3-number sequence and I'll tell you if it obeys the rule or not. Use this process to figure out what the rule is.

Objective: SWBAT use significant figures to estimate the accuracy of a combination of measurements

SWBAT convert quantities from one system of units to another

Agenda:

- Warm Up
- Lab: Bouncing Ball
- Notes
- Practice
- Reflection

HW: Read Chapter 1;
pg. 22 #7-25 odd

Lab: Ball Drop

What do you observe when I bounce the ball?

General lab question: How does _____ affect _____ ?

Lab: Ball Drop

- How does the height of the drop affect the height of the rebound?
- Your group must determine the relationship between the height of the drop and the height of the rebound and present some sort of mathematical model of your data.
- Record your procedure and all of your data in your lab notebook. Do at least 3 repetitions of at least 6 drop points.
- Write up your procedure, model, and a graph of your data on a sheet of poster paper.

Sources of Error:

- parallax
- reaction time
- measuring off-vertical

Lab Practice:

- be specific in the procedure

Notes: Uncertainty & Significant Figures

You may have noticed during the lab that measurements can only be so accurate. Significant figures (sig figs) are a way to deal with that.

In general,

- measure to the greatest accuracy possible
- all nonzero digits are significant
- zeros used to locate a decimal point are not significant, and neither are trailing zeros (unless they're after a decimal)

- for combining: round to the number of sig figs in the least accurate measurement

Notes: Unit Conversion

A unit of length is a unit of length no matter how it's measured, but our measurements have to be converted to the same units before we can combine them.

Great Secret:

Units can be combined & canceled with each other like variables!



example: $15.0 \text{ in} \times \frac{2.54 \text{ cm}}{1.00 \text{ in}} = 38.1 \text{ cm}$

Practice

Significant figures & unit conversion worksheets

Reflection

What factors can limit the accuracy of your measurements?