Unit 2: Heat and Energy in the Earth's Systems

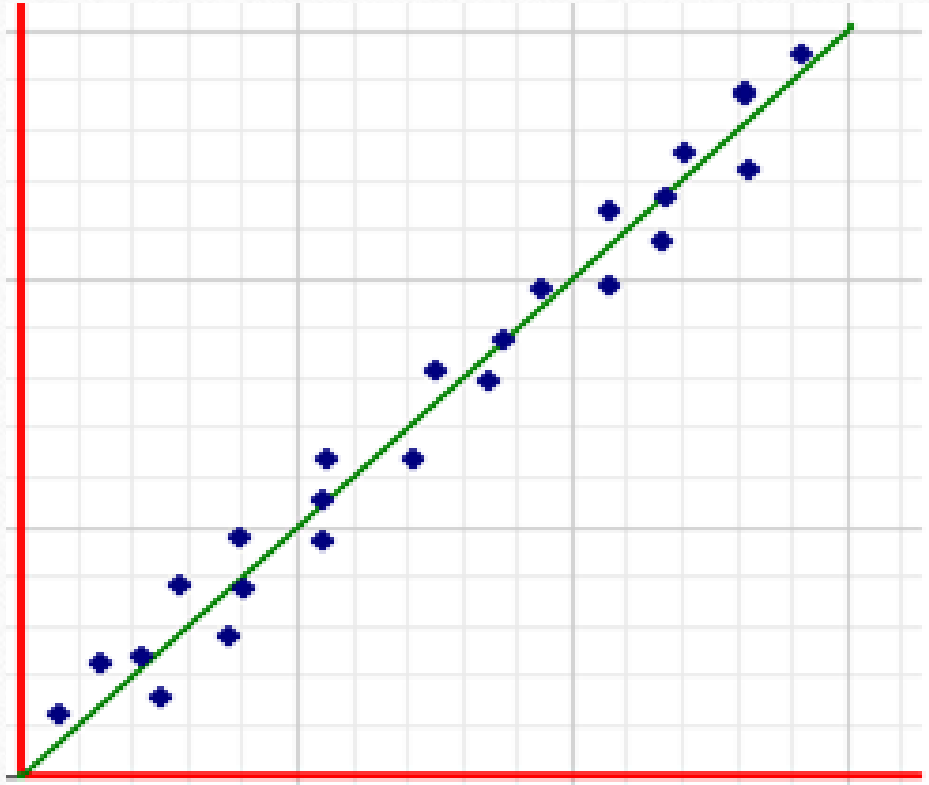
L7: Massive Change

Guiding Question: How can we use a graph to predict information about an object or substance?

- Do Now:
  - Write this down: "No Do Now for Today"

Notes

- A line of best fit goes through the middle of all the data, rather than connecting the dots.



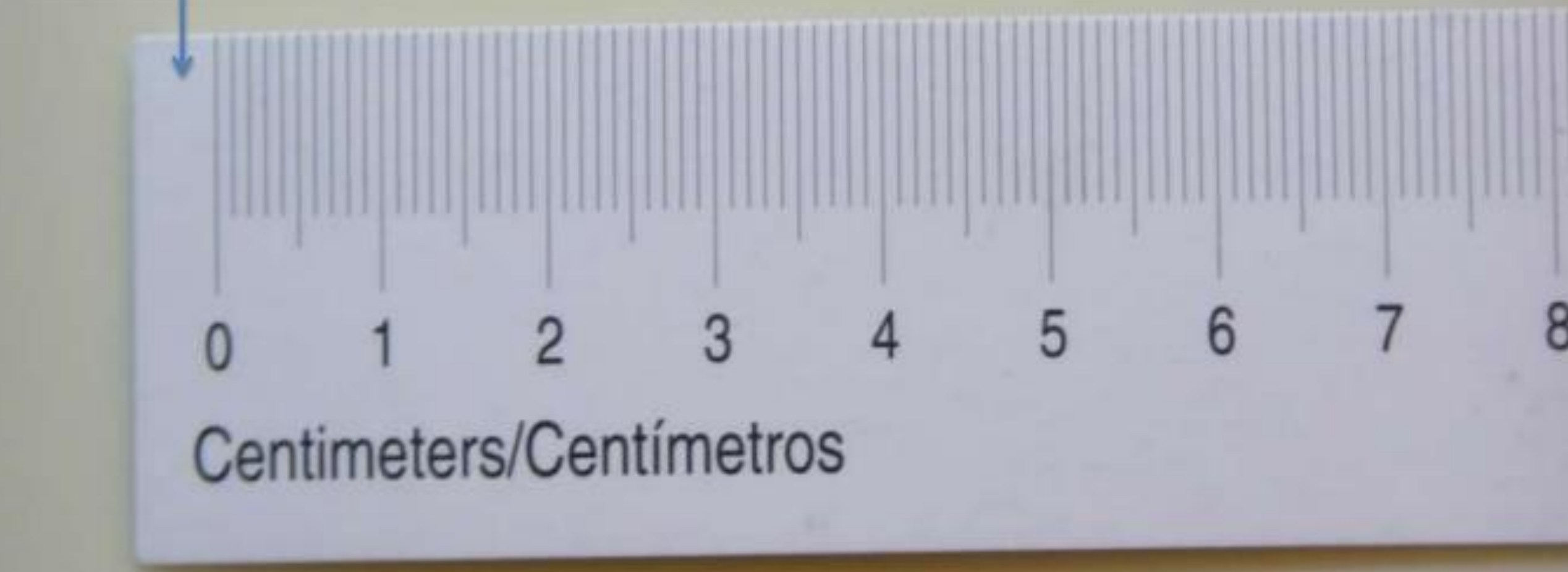
Notes

- It is useful for predicting the value of an unknown variable given part of the data point.
  - If you know x, you can find y by following the x value up to the line and over to the y value
  - If you know y, you can find x by following the y value over to the line and down to the x value

Closure

- Homework #6 due Friday!
- Achieve 3000: These Lights are Too Cool! Due Friday 10/6 at 11:59pm

Some rulers start at the very end of the stick and others have a small space before the actual ruler starts.



Lab Directions

- Pennies used need to be newer than 1983 (so 1984-2017); you need 10
  - Measure mass of pennies and height of stack of pennies (turn on side and use ruler, there is a small border on ruler before zero starts)
- Graph data on 2 separate graphs in workbook
- Use a straight edge to draw a straight, best fit line -- DO NOT CONNECT DOTS
- When ready, get an unknown roll from Ms. Wilson -- DO NOT OPEN!
  - Measure mass or height of stack, then use that to determine amount of pennies; write down unknown number (on the roll) and how many pennies you think are in there in your workbook.

Significant Figures (SigFigs)

- There are two kinds of numbers:
  - Exact – counting
  - Inexact – measurements

Rule #1 – Nonzero

- Nonzero digits always count
  - 5
  - 23
  - 248.85

Rule #2 – *Leading* Zeros

- Leading zeros never count as significant digits

- 0.004728 4 sig figs

Rule #3 – *Trapped* Zeros

- Trapped zeros always count as significant digits.
  - 1.08 — 3 sig figs
  - 400.5 — 4 sig figs

Rule #4 – *Trailing* Zeros

- Trailing zeros only count when there is a decimal point.
  - 500 — 1 sig fig
  - 500. — 3 sig figs

Adding and Subtracting

- Your final answer will have only as many **decimal places** as the measurement with the fewest decimal places.
- 4.53124 ← 5 decimal places

  \+ 2.1 ← 1 decimal place

  6.63124

Final Answer = 6.6

Multiplying and Dividing

- Your final answer will have only as many **sig figs** as the measurement with the fewest sig figs.
- 13.1 ← 3 sigfigs

  x 3.200 ← 4 sigfigs

  41.92

Final Answer = 41.9

Summary

- Nonzeros always count
- Leading zeros never count
- Trapped zeros always count
- Trailing zeros
  - With a decimal always count
  - Without a decimal never count
- Adding & subtracting: lowest number of decimals
- Multiplying & dividing: lowest number of sigfigs