

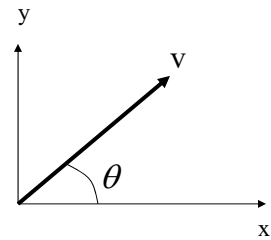


PHYS 210 - General Physics I

Check the
Web page!
MH

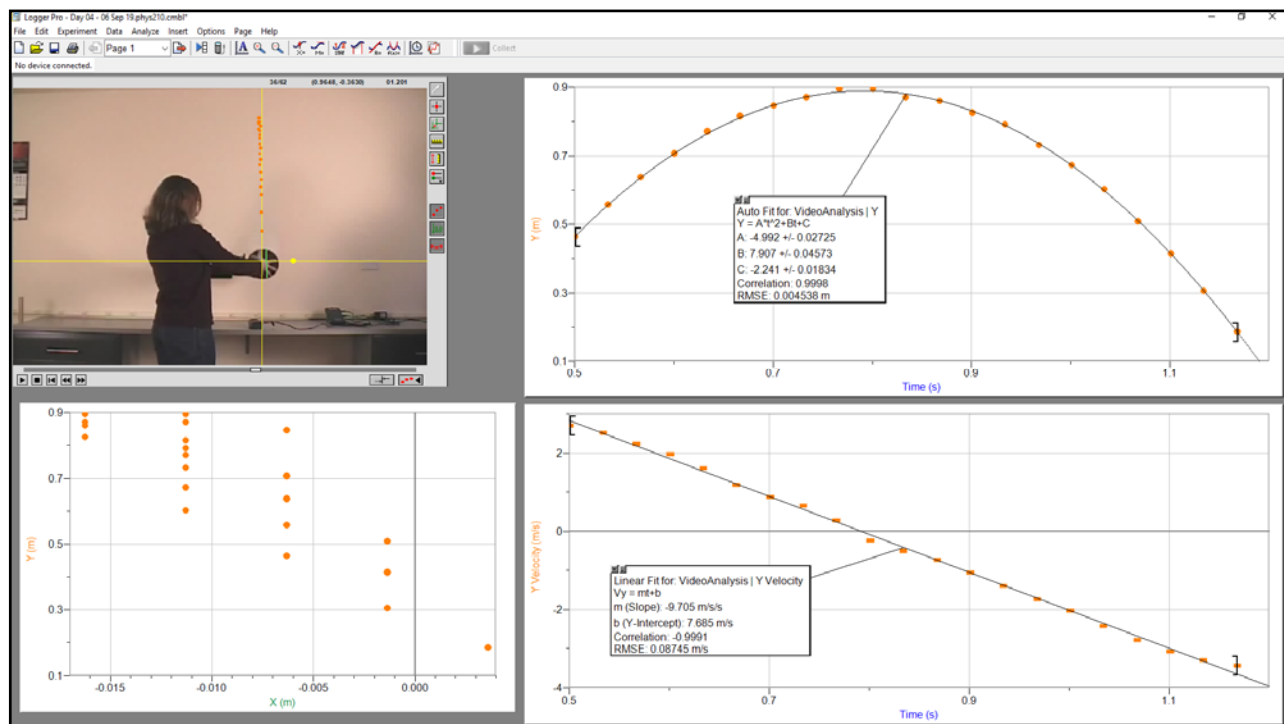
- Dimensional analysis
- Lab review
- Motion diagrams – a bit more
- Vectors
- Slopes and motions graphs
- Average and instantaneous acceleration

04 Sep 19



From Lab ...

- Slope on graph of position vs. time is equal to ...
- Slope on graph of velocity vs. time is equal to ...
- Let's look at LoggerPro a bit more ...



Dimensional Analysis

- Often we can make reasonable calculations of quantities by examining the units (**dimensional analysis**) and finding a way to combine them to get what we want.
- Examples:
 - It's 80 miles to South Bend. If a car gets 24 mpg, how many gallons will it take to get there? If gas costs \$2.60 per gallon, how much will the trip cost?

Informal Groups



- 1. **Formulate** your own answer to the question/problem.
- 2. **Share** your answer with your partner.
- 3. **Listen** carefully to partner's answer. Change your mind only if persuaded by logic or information to do so.
- 4. **Create** a new answer, as a pair, that is superior to or incorporates each member's initial answer by synthesis, critical analysis, and cooperation.

Dimensional Analysis

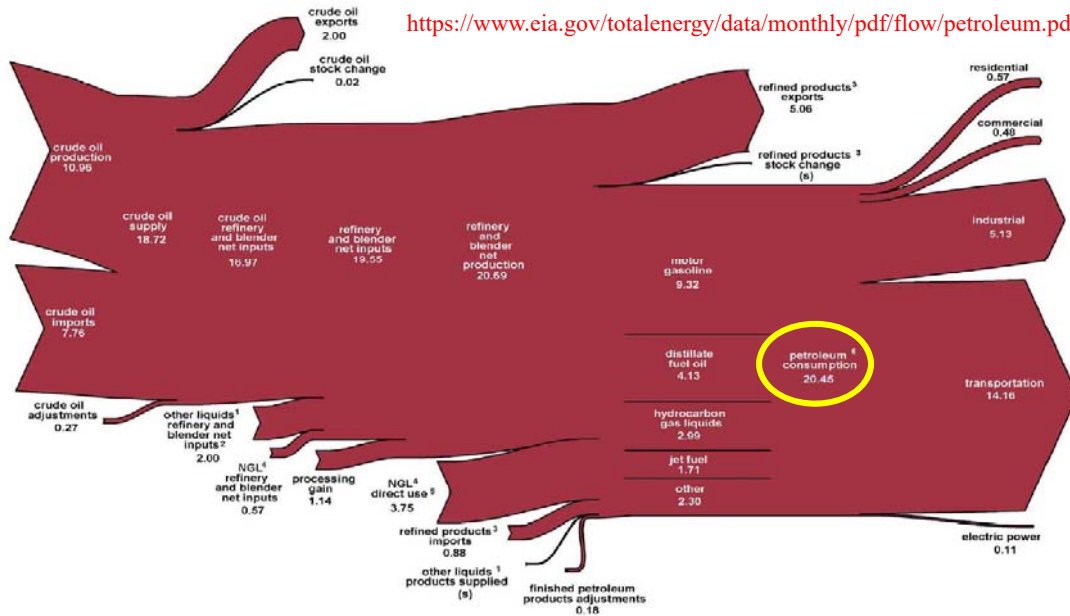
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 - U.S. "proved" oil reserves are estimated (2017) to be about 39.2 billion bbl (bbl = barrels). How many years will these reserves last at our current consumption rate of about 20.45 million bbl/day (2018 data)?

U.S. petroleum flow, 2018

million barrels per day



<https://www.eia.gov/totalenergy/data/monthly/pdf/flow/petroleum.pdf>



Dimensional Analysis

Proved reserves of crude oil as of December 31 of the report year are the estimated quantities of all liquids defined as crude oil, which geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions.”

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Review from lab ...

- Motion Diagrams
& Motion graphs!
& LoggerPro!

Have a nice afternoon

