Administration

Review: Units and Significant Figures

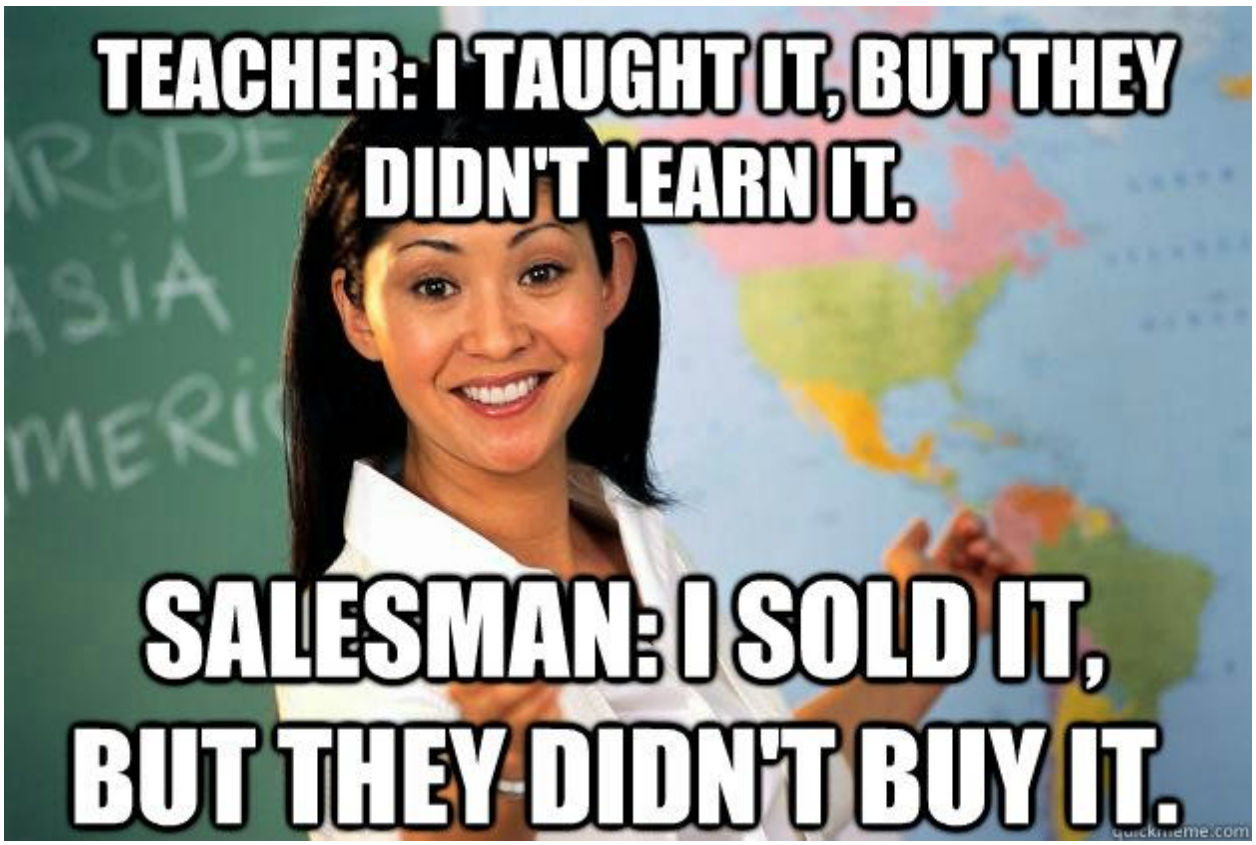
Intro:

My name is Mr. Connor.

I am a teacher in training with UBCO.

My email is david.connor@sd23.bc.ca

I will be in this room before class. During lunch. After school. Most days.



I am here to help. Use me. I want you to do well, and I want you to learn.

I will post class notes and solutions on my website: Math1337.weebly.com

Textbook: Monday @ 9:50
Bring your student card!

Test after every unit 75%
Labs (≈1/unit) 25%

Safety:

Where to go?
What to do?

Who are you?

Attendance.

Card:

NIF/ISS/LHL

Let's get down to work!

Physics gives us a general understanding of the universe.

We just have to agree on how to communicate about it to each other.

1999: A disaster investigation board reports that NASA's Mars Climate Orbiter burned up in the Martian atmosphere because engineers failed to convert units from English to metric. $125,000,000 mistake.

What are SI (*Système Internationale*) units?

There are seven.

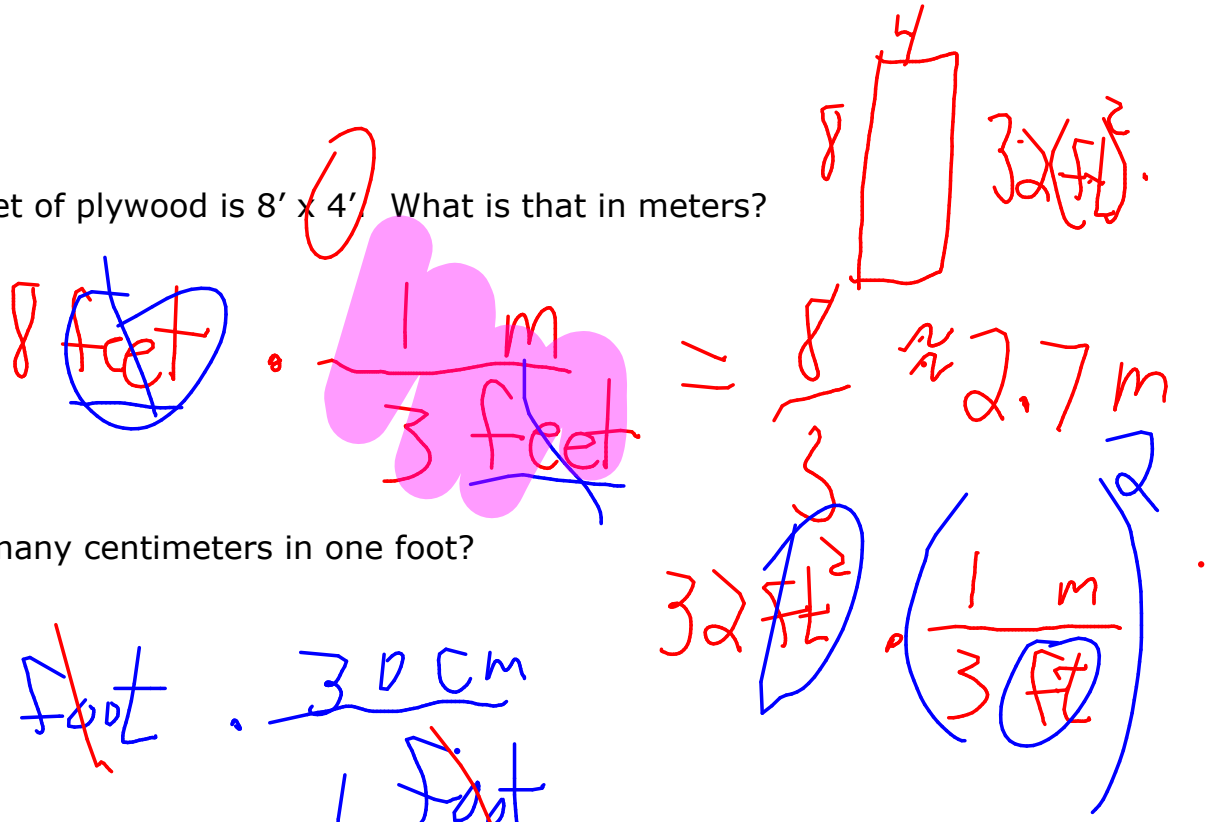
mass	kilogram (kg)
time	second (s)
temperature	Kelvin (K) °C
electric current	Ampere (A)
amount of substance	mol
luminous intensity	candela (cd)
distance	meters (m)

However, we do not always get those units. If you're given a time of one hour. How many seconds do you have?

$$1 \text{ hour} \cdot \frac{60 \text{ min}}{1 \text{ hour}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} = 3600 \text{ sec}$$

A lot of building material is still in the ridiculous imperial system. Only 3 countries still cling to this (**Liberia**, **Myanmar**, and the **United States**).

A sheet of plywood is 8’ x 4’. What is that in meters?



How many centimeters in one foot?

$$1\ \text{foot} \cdot \frac{30\ \text{cm}}{1\ \text{foot}}$$

You drive at 120km/hr. What is that in SI units (m/s)?

$$120\ \frac{\text{km}}{\text{hr}} \cdot \frac{1\ \text{hr}}{60\ \text{min}} \cdot \frac{1\ \text{min}}{60\ \text{s}} \cdot \frac{1000\ \text{m}}{1\ \text{km}} \approx 33\ \frac{\text{m}}{\text{s}}$$

My room in 1,000 square feet. In meters please.

$$1000\ \text{ft}^2 \cdot \frac{1\ \text{m}}{3\ \text{ft}} \cdot \frac{1000\ \text{m}^2}{9} = 111.1\ \text{m}^2$$

STP Physics by Democracy

Object	Velocity m/s	Velocity km/hr
Marathon Runner	4.2	15.12
Asphalt paving machine		0.80
Indy Car	90	324
School Zone	8.3	29.88
Escape Velocity	11186.11	40,270
Sound	333	1198

Significant Digits: = 2 or 3

There are 33 million people in Canada. Are there really exactly that many? not ± any people?

What is different about saying the desk is 1 meter wide, and the desk is 1.03 m wide?

Significant digits are how we show how sure we are about a number. Are any of the number in the above table too precise?

ALWAYS use two or three significant digits in your answers. Saying 5m/s is not good enough. You MUST write 5.0 m/s or 5.00 m/s for full marks.

How many significant figures in these numbers?

1337 : 4

1.337 4

0.0000000001337 4

1,337,000,000 4

1,337,000,000.0 10

1 3 3 7

5

1.3370×10^{9}