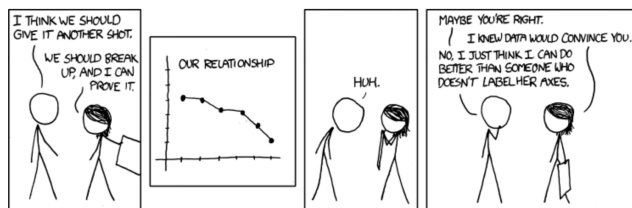


Physics 20 Unit 0 - Review



POS Checklist

use appropriate numeric, symbolic, graphical and linguistic modes of representation to communicate ideas, plans and results

Graphing and Algebra

Review:

1. Convert the following time measurements into seconds.

a. 58 ns

b. 9270 ms

c. 12.3 ks

2. State the number of significant digits.

a. 3218 kg

b. 0.000534 m

c. 60.080 W

d. 5.60×10^1 m

Graphing — See UA pt B

Some graphing guidelines to follow:

1. **Title:** Printed at top of graph and underlined. It should be titled in a "y variable vs. x variable" format.

2. **Label the axes:** manipulated variables go on the x-axis, responding on the y-axis. **INCLUDE UNITS!**

3. **Increments:** use the entire graph paper and choose appropriate increments that will make an easy to read graph.

*Note: graphing rules are also included in your lab manual.

4. **Dots:** always graph in pencil and circle your points.

5. **Line of Best Fit:** put the same number of dots above the line as below the line. Don't just connect the dots!

6. **Interpolating:** means to estimate a value between two data points.

7. **Extrapolating:** means to estimate a value beyond the data points.

8. **Slope:** can be found using $m = \text{rise/run}$ or $m = \frac{y_2 - y_1}{x_2 - x_1}$

Manipulation of Equations: Algebra

Algebra is used every single day in Physics. Therefore, you must have mastery of this concept.

See UA pt B

What you do to one side, you do to the other.

ex) $v = \frac{d}{t}$ Solve for t. ex) $T = \frac{1}{f}$ Solve for f.

ex) $E = mgh$ Solve for h.

ex) $a = \frac{v_f - v_i}{t}$ Solve for v_f .

ex) $T = 2\pi\sqrt{l/g}$ Solve for l.

ex) $\lambda = \frac{d \sin \theta}{n}$ Solve for θ .

Trigonometry Review



Special TI-83 Note:

By default, your calculator is set to RADIAN mode (this is a different unit of angle measurement using in 30 level math classes). We will be using exclusively the DEGREE mode on our calculators.

You will need to set your calculators to DEGREE each time after the calculator is reset (i.e. during exams/quizzes).

degree mode



Special Hint: Rounded vs. Unrounded Answers

The trig ratios for most angles are irrational numbers. As such, you will want to keep your answers unrounded in your calculator if you want to get the correct answer.

Alternatively, you can carry 4 or 5 guard digits on your page to get about the right answer.

ex) Solve. Express your answer to the nearest tenth.

$$3(\sqrt{2}) + 7(\sqrt{9})$$

ex) Take your answer from the last example and multiply by $5\sqrt{2}$. What number do you get, rounded to the nearest tenth?

The Three Trig Ratios

Recall for any right angle triangle:

SOH $\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$

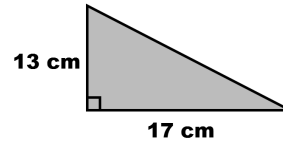
CAH $\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$

TOA $\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$

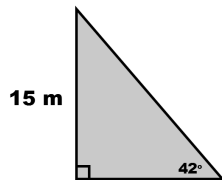
Use these ratios to find:

1. A side, if the angle and one side is known.
2. An angle, if two sides are known.

ex) Solve the triangle.

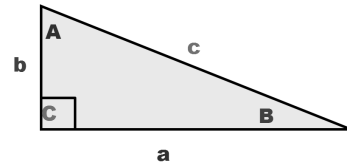


ex) Solve the triangle.



The Pythagorean Theorem

For use in right angle triangles when two sides are known and you want to find the third side.



$$c^2 = a^2 + b^2$$

Where c = hyp

ex) Solve for the missing side.



Practice: Finish UA pt B