

Practice Problems #1: Physics 2A

Please work with a group in order to solve these problems within your laboratory notebook. Turn them in before you leave today.

These problems, as well as the solutions, will be available at <http://www.astrofurniss.com/teaching/physics-2a-lab-fall-2014/>

Working with Units

1. The power output of a typical large power plant is 1000 megawatts (MW). Express this in (a) W, (b) kW, (c) GW
2. A car is moving at 35.0 mi/h. Express this speed in m/s.
3. Change 100 m³ to cm³

Scalars versus Vectors

volume velocity acceleration displacement mass speed pressure energy time

1. From above, name which quantities which are scalars
2. From above, name which quantities which are vectors
3. Is it possible for an object to be moving in one direction but accelerate in another?
4. Does having a speed of zero require zero acceleration? Why?
5. Does having having zero acceleration mean having zero speed? Why?
6. You walk west 220 m, then north 150 m. What are the magnitude and direction of your displacement vector?
7. An object is moving at 18m/s at 220° counterclockwise from the x-axis. Find the x- and y-components of this velocity. Draw a diagram which includes the velocity vector, and the x- and y-components of the velocity vector.