Finding Variables, the Right Equation, and Units

- Quantities all have UNITS associated with them - this can help us figure out what they are!

Displacement/Distance: Meters (m)

Velocity: $\frac{\text{meters}}{\text{seconds}}$ $\left(\frac{m}{s}\right)$ Time: Seconds (s)

Acceleration: $\frac{\text{meters}}{\text{seconds}^2}$ $\left(\frac{m}{s^2}\right)$

- Equations can be manipulated using algebra.

$$t \cdot v = \frac{d}{t} \cdot t \qquad d = v \cdot t$$

- All answers should include units so we know what the numbers mean.

$d = 5$

incorrect

$d = 5$ m down the ramp

correct

If You Know...	You Can Find...	By Using ...	Units/Direction
displacement, time	velocity	$v = \frac{d}{t}$	$\frac{m}{s}$ + direction
time, velocity	displacement	$d = v \cdot t$	m + direction
displacement, velocity	time	$t = \frac{d}{v}$	s

$$\text{velocity} = \frac{\text{displacement}}{\text{time}} \qquad v = \frac{d}{t}$$

A derby racer is riding on the back of a tortoise down a ramp. If the derby racer has an average velocity of 0.23 m/s down the ramp and it travels for 1.2 seconds, what was its displacement?

#. ① $v = 0.23\ m/s$, $t = 1.2\ s$

② d

③ $d = v \cdot t$

④ $d = 0.23 \cdot 1.2$

$= 0.276$

⑤ $d = 0.276\ m$ down the ramp

Speed of Sound ... (and everything else!)

- Follow instructions (overall and for each step)
- Turn in everything requested
- Try! Your effort matters.
  - > Look at your notes
  - > Ask another student
  - > Ask a teacher
  - > Strain your brain to figure it out
  - > Take a guess and give it a shot
- We want you to think more than we want anything else
  - > Thoughtfulness matters more than correct answers
  - > Thoughtfulness matters more than remembering stuff
  - > Thoughtfulness matters more than what shows up on a test
  - > When you think, you exercise your brain: you become smarter.

For example:

- "Our distance was too long because of the football field."
- "The time may have been wrong."
- "Our speed was off by 40."
- "We weren't sure about the time."
- "Maybe there was too much time or distance."
- "Yes because you can't get it exact."

If you got less than 6.5/8, you need to completely redo your written work. Include your procedure, your estimated measurements, the Five Steps, and answer all three questions completely.