Physics Final Exam Review

- Draw a position-time graph for an object that is accelerating from rest:

- Can an electromagnetic wave move through a vacuum?
- Can a mechanical wave move through a vacuum?
- Is a sound wave electromagnetic or mechanical?
- Can you talk to your friend in space?

Harmonic or Linear Motion

- A pendulum
- A kid on a swing
- A dude skiing down a hill
- A superhero jumps to the top of a cliff and stays there.

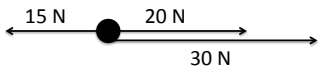
- Draw a position-time graph for an object moving with a constant velocity.

- If a transverse wave moves through this particle, draw how the particle oscillates:

- If a longitudinal wave moves through this particle, draw how the particle oscillates:

- I run north 2 miles, south 6 miles, and anorth 1 mile.
- What is my distance?
- What is my displacement?

- What is the net force on this object:



- What two things does every vector have:
- Write an example of a scalar:
- Write an example of a vector:

- If you a trying to push a giant bookshelf and it is not moving, what type of friction is resisting the motion?
- If you are trying to push a giant bookshelf and it is moving, what type of friction is resisting the motion?

$p = mv$

- A truck with a mass of 5000 kg is moving at a speed of 20 m/s. What is its momentum?
- A rat with a mass of 0.4 kg is running and has a momentum of 0.08 kg m/s. What is its velocity?

- When a ball rolls down a hill, describe how the energy of the ball changes:
- When a ball rolls up a hill, describe how the energy of the ball changes:

- Draw a diagram of a wave.
- Label the amplitude and the wavelength of the wave.

- Describe what happens to the molecules in a cup of water as you heat the water up.
- If you heat the water until it starts boiling, what happens to the temperature? Why?

$\Sigma F = ma$

- An object with a mass of 5 kg is experiencing a net force of 2 N. What is the acceleration of the object?
- An object with a mass of 6 kg is accelerating at a rate of 8 m/s^2. What is the net force acting on the object?

- Write the seven types of electromagnetic wave.
- Which has the longest wavelength?
- Which has the highest frequency?
- What happens to frequency when wavelength is longer?

V = IR

- A circuit has a total voltage of 12 V and a total current of 4 Amps, what must be its total resistance?
- A circuit has a total resistance of 20 Ohms and a total current of 0.4 Amps, what must be its total voltage?

- Draw a diagram of an object moving in a clockwise circle.
- Draw two vectors indicating the *centripetal force* and the *velocity* of the object at the particular moment you drew.