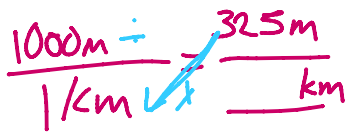
P5 Physics Quiz Review

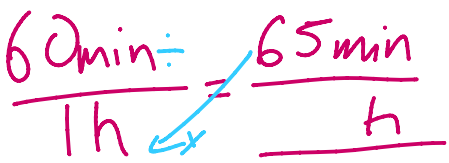
March 2, 2020 7:49 AM

Physics Unit Review

- **Intro**
  - Unit conversion
    - See formula sheet for what is provided.
      - Remember to set up equivalent fractions for this.
    - Know how to convert units of time and distance
      - Ex: 325 m = __0.325 km

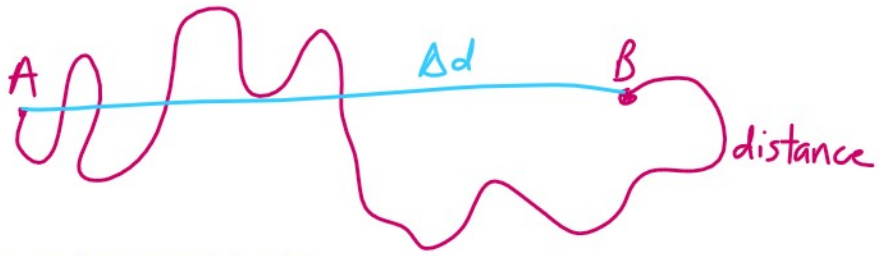


      - Ex: 65 min = __1.083 hr



- Time and time intervals
  - Remember units: seconds, minutes, hours
  - Time interval (Δt= final - initial)
- Scalar vs. Vector
  - Know the difference between the two, and which values need a direction or not.
    - **Scalar**: quantity/measurement that does not have a direction
      - Example: time, distance, speed, acceleration (if speed is used)
    - **Vector**: quantity/measurement that includes a direction
      - Example: displacement, velocity, acceleration (if velocity is used)

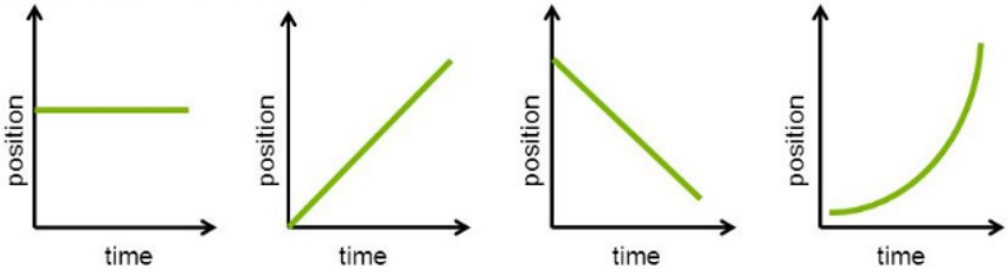
  - **Kinematics**
  - Distance vs Displacement
    - Know the difference between the two (be able to state what they are).
    - Take note displacement (Δd) is the change in position (final – initial)
    - Know how to calculate both from word problems
      - **Distance**: how far an object travels
        - Measuring the total length of a journey
        - Total ground covered
      - **Displacement**: how far your initial position is from your final position
        - Change in your position
        - Straight line distance from your start to end



- **Difference between** Δd and d:
  - Distance doesn't need a direction, and displacement does
  - Distance measures every twist and turn of a path, while displacement only measures from the final to the initial

- Speed vs Velocity
  - Know the difference between the two (be able to state what they are).
  - Take note: velocity needs a direction (vector)
  - Know how to calculate both from word problems
  - Know how to use the speed/velocity equation to solve for distance/displacement or time.
    - How far = distance
    - How long = time
    - How fast = speed/velocity
    - **Speed**: how much you move in a certain amount of time
      - The distance covered in an amount of time
      - How fast an object moves
    - **Velocity**: how fast an object's position is changing
      - The difference in position over an amount of time

- Position-Time Graphs
  - Make sure to include graph title, axis titles, scales, and to **use as much space as possible.**
  - Make sure to always have time on the x-axis and position/distance on the y-axis.
  - Know how to find Slope, and what value that represents. Slope = speed/velocity
  - Know what the different types of slope lines mean
    - Include: positive or negative slope, straight line, curved line, horizontal line
    - Do not forget title or units!!!



Horizontal Line	Positive Slope	Negative Slope	Curved Line
-position is not changing -object is not moving (stationary)	-position is changing at a constant rate -constant speed (uniform motion) -object is moving in the positive	- Position is changing at a constant rate. - Constant speed (uniform motion) - The object is	-position is changing, but not at a constant rate (non-uniform motion) -object is accelerating!

	direction	moving in the negative direction	

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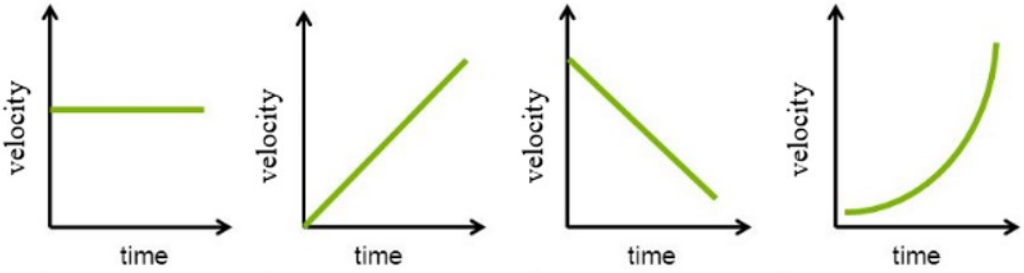
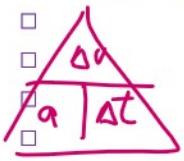
- Velocity-Time Graphs
  - Make sure to include all graph requirements as above.
  - Know how to find the Slope and what that means. Slope = acceleration
    - Know what the different types slope lines mean
  - Include: positive or negative slope, straight line, curved line, horizontal line



Horizontal line	Positive slope	Negative slope	Curved line
-object is moving at a constant velocity (uniform motion)	-object's velocity is changing (acceleration) -positive slope means it's speeding up (increasing from 0)	-object's velocity if changing (acceleration) -negative slope means it's slowing down (decreasing to 0)	-object's velocity is changing at a non-constant rate - not constant acceleration

  - Acceleration
    - Know what acceleration is
    - Know how to calculate it.
    - Know how to use the equation for acceleration to solve for the change in speed/velocity or time
    - Know how to calculate final velocity by using the equation.
      - **Acceleration**: rate of change of an object's speed or velocity
        - How much the speed/velocity of an object is changing in an amount of time
        - **Change in speed/velocity** divided by the change in time
        - Positive (speeding up) or negative (slowing down)
        - ***this describing non-uniform motion!



$$\Delta v = a\,\Delta t$$

$$v_f - v_i = a\,\Delta t$$

$$+v_i \quad +v_i$$

$v_f + v_i + v_i$

$$V_f = a\Delta t + V_i$$

- Take note of summary page at the end of Note Package 1.
  - Know which symbol stands for which quantity
  - Know which units go with which quantity

Vocabulary

These are terms that should look familiar to you. No, I won't ask for definitions. I may ask what they mean with an example. Read through the list make sure that these terms are familiar to you and that you could explain them, or at least know when you would need to use them.

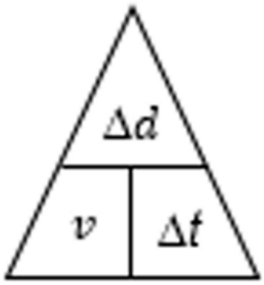
- Acceleration
- Delta (Δ)
- Displacement
- Distance
- km/h
- m
- m [E]
- m/s
- m/s^2
- Scalar
- Slope
- Speed
- Time
- Time interval
- Units
- Vector
- Velocity

Formulas Given

Conversion Factors:

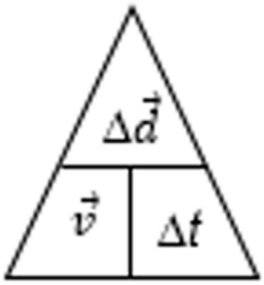
1000 m = 1 km 100 cm = 1 m 10 mm = 1 cm

1 min = 60 s 1 hour = 60 min 1 hour = 3600 s



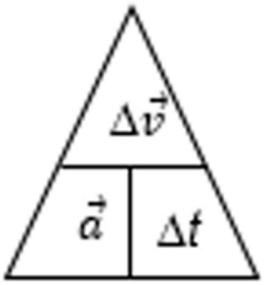
Speed:

$$v = \frac{\Delta d}{\Delta t}$$



Velocity:

$$\vec{v} = \frac{\Delta \vec{d}}{\Delta t}$$



Acceleration:

$$\vec{a} = \frac{\Delta \vec{v}}{\Delta t}$$

$$Intervals: \Delta = Final - Initial$$

$$Slope = \frac{rise}{run} = \frac{\Delta y}{\Delta x}$$

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