Review of Math & How to Think Physics

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These are the problems that you and a team of other 2-3 students will be asked to solve during the recitation session next week. Your team can get a higher grade if you think about the approach and explanation for each of these problems BEFORE coming to the recitation session.

1. A grain of sand has in average ### µg.
   a. How many grains of sand are in average in ### kg of sand?
   b. What is the weight of this quantity of sand?
   c. If the density of the sand is ### g/cm³, what is the volume of ### kg of sand?

2. An object moves along the s-axis. Its position at a given moment t is

   \[ s = \#\# - \#\# t + \#\# t^2 \]

   a) What is object’s location at t=0?
   b) What is object’s location at t=2s?
   c) What is object’s displacement between t=0 and t=2s?
   d) What is the distance the object travels between t=0 and t=2s?
   e) What is object’s velocity at t=0?
   f) What is object’s velocity at t=2s?
   g) What is object’s average velocity between t=0 and t=2s?
   h) What is object’s acceleration at t=0?
   i) What is object’s acceleration at t=2s?
   j) What is object’s average acceleration between t=0 and t=2s?
3. A cart is moving in two dimensions from the point \( A(##, ##) \) to the point \( B(##, ##) \) (in meters) in ### seconds.
   a) Sketch the displacement then write the displacement and the average velocity.
   b) If the acceleration during this motion is given by the law \( a = ## \text{ (m/s}^2) \), what would be the velocity in the point \( B \)?
   c) Sketch the graph velocity vs. time for this motion.
**Approach:** Under this tab, list the steps taken by your team for finding each solution. You answer here the questions WHAT? and HOW?

**Approach 1.**

**Approach 2.**

**Approach 3.**

**Explanation:** Under this tab, explain why your team has chosen those approaches. You answer here the questions WHY? and WHEN?

**Explanation 1.**

**Explanation 2.**

**Explanation 3.**