

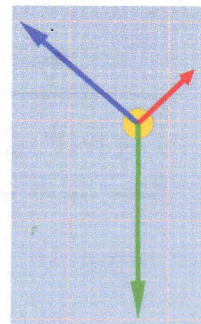
$$\text{ave} = 7.8$$

$$\sigma = 2.3$$

Quiz #1: Representing Motion

Problem 1 (2 points)

The sum of the following three vectors will be a vector pointing in which quadrant?



C

- a) I
- b) II
- c) III
- d) IV

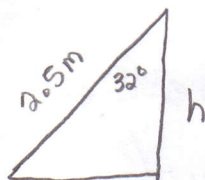


Problem 2 (2 points)

A 2.5-m ladder leans against a wall and makes an angle with the wall of 32° as shown in the figure. What is the height h above the floor where the ladder makes contact with the wall?

A

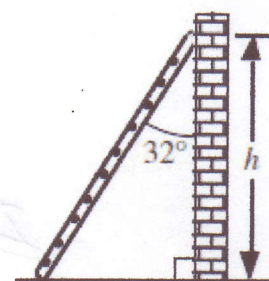
- a) 2.1 m
- b) 1.3 m
- c) 2.4 m
- d) 1.6 m
- e) 1.9 m



$$\cos 32^\circ = h / 2.5 \text{ m}$$

$$h = (2.5 \text{ m}) \cos 32^\circ$$

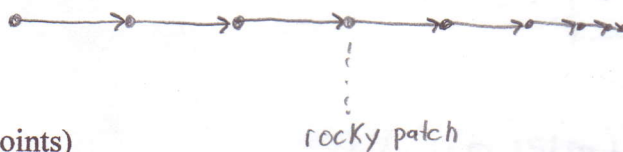
$$= 2.1 \text{ m}$$



Problem 3 (2 points)

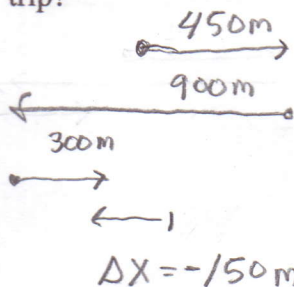
Draw a motion diagram, using the particle model, showing the velocity vectors for the following situation:

A child is sledding on a smooth, level patch of snow. She encounters a rocky patch and slows to a stop.



Problem 4 (4 points)

Foraging bees often move in straight lines away from and towards their hives. Suppose a bee starts at its hive and flies 450.0 m due east, then 900.0 m due west, then 300.0 m east. If the entire trip takes 50.0 s, what is the bee's (a) average speed and (b) average velocity for the entire trip?



distance = 1650m

distance traveled = 1650m

displacement $\Delta \vec{x} = -150 \text{ m}$

(a) ave. speed = $d / \Delta t = \frac{1650 \text{ m}}{50.0 \text{ s}} = 33.0 \text{ m/s}$

(b) $\vec{V}_{\text{ave},x} = \frac{\Delta \vec{x}}{\Delta t} = \frac{-150 \text{ m}}{50.0 \text{ s}} = -3.00 \text{ m/s}$