

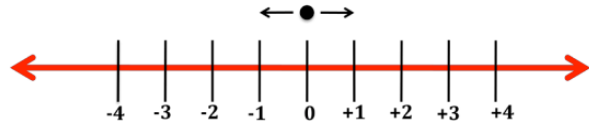
Name _____

Physics 132
Spring 2017

Quiz #3 (done with clickers)
(10 points)

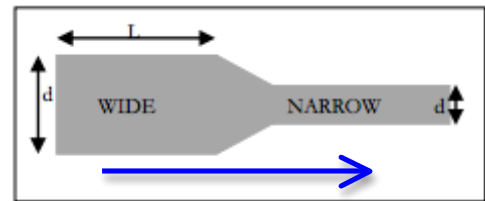
Prof. Redish
13.Feb.17

1. (3 points) A marker in a game is constrained to move along a one-dimensional grid. It begins at 0 and moves according to a coin flip: left for heads, right for tails. After 3 flips it will be either 1 step away from its starting point or 3. How much more likely is it to be 1 step away than 3 steps?



- A. They are equally probable.
- B. 3 steps away is three times as probable as 1 step.
- C. 1 step away is three times as probable as 3 steps.
- D. None of these are correct.

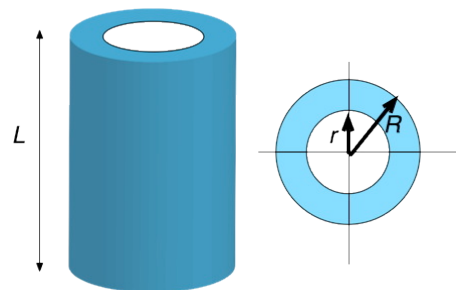
2. (3 points) Fluid is flowing in the direction indicated by the blue arrow through a channel that has a wide and a narrow part in series. Is the volume of fluid crossing a plane perpendicular to the flow greater in the wide (W) or narrow (N) part? Is the speed of flow greater in the wide (W) or narrow (N) part?



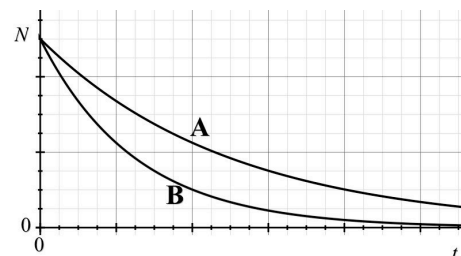
- A. Flow greater in W, speed greater in W.
- B. Flow greater in W, speed greater in N.
- C. Flow greater in N, speed greater in W.
- D. Flow greater in N, speed greater in N.
- E. Flow same in both, speed greater in N.
- F. Flow same in both, speed greater in W.
- G. Speed same in both, flow greater in N.
- H. Speed same in both, flow greater in W.

3. (2 points) Which is the appropriate formula to use for the volume of a circular pipe given the indicated measurements?

- A. $V = 2\pi rRL$
- B. $V = \pi(R^2 - r^2)L$
- C. $V = \pi(R^2 + r^2)L$
- D. $V = \pi(R - r)^2 L$
- E. None of these work



4. (2 points) The number of atoms of a radioactive element decreases like $N(t) = N_0 e^{-\beta t}$ where N_0 is the number of atoms at time $t = 0$ and β is a parameter with units of inverse time. Two radioactive materials start at $t = 0$ with the same number of atoms. The graphs show how their numbers fall. Which element has the larger value of β ?



- A. A
- B. B
- C. They are the same