

Review for Test 1—Steve Liebling

PHY 3

Your Name

MULTIPLE CHOICE

In the following multiple choice questions, **circle** the answer (either (a), (b), (c), or (d)) that *best* answers the question. There is no partial credit for these. Each is also worth the same amount, 1 point.

1. I walk 9.0 miles East, then turn and go 4.0 miles North. What is the magnitude of my vector displacement after these two segments?
 - (a) 3.6 miles
 - (b) 5.0 miles
 - (c) 9.8 miles
 - (d) 13 miles
 - (e) 26 miles
2. Convert the quantity $33.1 \text{ cm}^2 \cdot \text{minutes}/g$ to SI units
 - (a) $0.331 \text{ m}^2 \text{ s}/kg$
 - (b) $199 \text{ m}^2 \text{ s}/kg$
 - (c) $1.98 \times 10^4 \text{ m}^2 \text{ s}/kg$
 - (d) $33.1 \times 10^3 \text{ m}^2 \text{ s}/kg$
3. What is the magnitude a and direction θ_a (w/r/t the positive x -axis) of the vector $\vec{a} = 9.5\hat{i} + 1.0\hat{j}$?
 - (a) 9.6, 0.11°
 - (b) 9.6, 6.0°
 - (c) 92, 0.11°
 - (d) 92, 6.0°
 - (e) 10.5, 13.0°

SHORT ANSWER

The following are short answer for which partial credit may possibly be awarded. Therefore, it is to your advantage to show all your work. However, also be clear about what is your final answer by boxing it. Each problem is labeled with how many points it is worth.

1. (3pts) A skateboard is left alone at rest atop a sloped driveway. The skateboard undergoes constant acceleration and, after 3.4 s , has traveled 2.4 m . After two more seconds, the skateboard has reached the bottom of the driveway.
 - (a) What was the skateboard's acceleration?
 - (b) How long was the incline
2. (3pts) We have the following three vectors:
 $a_x = 9.0 \text{ m}$ and $a_y = -5.0 \text{ m}$
 $|\vec{b}| = 14 \text{ m}$ with $\theta_b = 140^\circ$
 $|\vec{c}| = 8.0 \text{ m}$ with $\theta_c = 0^\circ$

- (a) What are the x and y components of the vector sum of the vectors above?
 - (b) What's the magnitude of this vector sum?
 - (c) What angle does the vector sum form with respect to the positive x axis?
3. (3pts) A bullet is shot horizontally over level ground at a height of $1.7m$. If its initial speed is $345m/s$, then how far does the bullet travel before hitting ground?