

Name: _____

Quiz 5
Physics 105
23 October 2002

- 1. According to the principle of relativity, an observer who has no communication with the world outside of her laboratory will be unable to detect
 - (a) her laboratory's acceleration.
 - ⇒ **(b) her laboratory's velocity.**
 - (c) both of the above.
 - (d) gravity.
 - (e) all of the above.

- 2. Velma is in a rocket ship moving north past Mort at half of lightspeed relative to Mort. She fires a laser beam forward from the front of the ship. Mort sees the laser beam move at
 - (a) slightly slower than speed c [lightspeed].
 - ⇒ **(b) c .**
 - (c) $0.5c$.
 - (d) $1.5c$.
 - (e) slightly faster than c .

- 3. The original purpose of the Michelson-Morley experiment was to show or measure
 - (a) that nothing goes faster than light.
 - (b) that light has the same speed for all observers.
 - (c) the predictions of Einstein's theory of relativity.
 - (d) that the ether does not exist
 - ⇒ **(e) Earth's speed through the ether.**

- 4. A light year is
 - (a) the amount of time it takes for light to travel 300,000 km.
 - (b) the amount of time it takes for light to travel 9.467×10^{12} km.
 - ⇒ **(c) the distance light travels in one year.**
 - (d) the distance the sun travels in one year.
 - (e) a year in college with few classes.