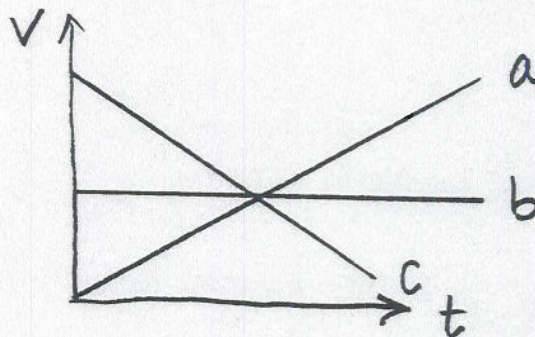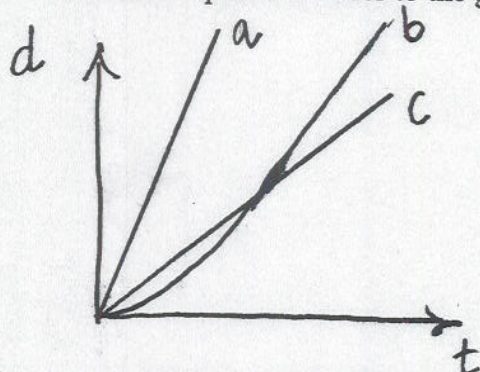Key.

This is P110, Quiz 1. You are allowed to use a cheat sheet and a calculator.

The first 4 questions refer to the graphs below:

A+C   1. Which trajectories are consistent with constant velocity motion (non-zero)?   always straight so (a) + (c)

B   2. Which velocities are consistent with constant velocity motion (non-zero)?

A   3. Which trajectory represents the fastest motion?   steepest (a)   └ flat → so (b).

B   4. Which trajectory represents accelerated motion?

                 └ curved → (b)

5. The 2008 Boston Marathon had roughly 22,000 finishers and the winner runner finished the 26.2 mile course in just over 2 hours with an average speed of 13 mph. The slowest runners finished in a little over 7 hours. What was their average speed?

a) 6.6 mph
b) 13 mph
c) 2.2 mph
d) 3.3 mph
e) 4 mph (circled)

2 hrs → 13 mph

7 hrs → ?

Distance same so velocity gets smaller by $\frac{7}{2} = 3.5$ times.

$v_7 = \frac{1}{3.5} v_2 = \frac{13}{3.5} \approx 3.7 \approx 4 \, mph$

OR

$d = 26.2 \, mi$
$t = 7 \, hrs$

$v = \frac{26.2}{7} \, mph = 3.7 \, mph \approx 4 \, mph.$