Name _____Answer Key_____   Date _____

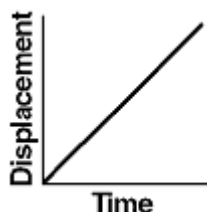Honors Physics   Kinematics WS #3H

Period _____   Mrs. Nadworny

A

MORE Constant Velocity

Directions: Read textbook pages 45 – 46. Solve the following problems using the GUESS method. Show all work clearly.

1. The graph below represents the motion of an object.

   According to the graph, as time increases, the velocity of the object

   A) decreases   B) remains the same   C) increases

2. How long does it take a skier to travel 595 meters, going 16.1 m/s?

$$t = \frac{d}{v} = \frac{595 \text{ m}}{16.1 \text{ m/s}} = 37.0 \text{ s}$$

3. A bicycle averages 4.9 m/s while traveling for 11.0 minutes. How far does it travel?

$$11.0 \text{ min} \left(\frac{60 \text{ s}}{1 \text{ min}} \right) = 660.\text{sec}$$

$$d = vt = (4.9 \text{ m/s})(660 \text{ s}) = 3200 \text{ m}$$

4. Mike travels 4.6 meters east and 2.2 meters south in 3.67 seconds.
   a. What is his displacement?

$$d = \sqrt{a^2 + b^2} = \sqrt{(4.6 \text{ miles})^2 + (2.2 \text{ miles})^2} = 5.1 \text{ meters SouthEast}$$

   b. Calculate his average speed.

$$v = \frac{d}{t} = \frac{6.8 \text{ m}}{3.67 \text{ s}} = 1.9 \text{ m/s}$$

   c. Calculate his average velocity

$$v = \frac{d}{t} = \frac{5.1 \text{ m}}{3.67 \text{ s}} = 1.4 \text{ m/s SE}$$

5. What is the average speed of a car that travels 5.7 x 10⁴ meters in 1.0 hour? Give your answer in SI units.

$$1.0 \text{ hr} \left(\frac{60 \text{ min}}{1 \text{ hr}} \right) \left(\frac{60 \text{ s}}{1 \text{ min}} \right) = 3600 \text{ sec}$$

$$v = \frac{d}{t} = \frac{5.7 \times 10^4 \text{ m}}{3600 \text{ s}} = 16 \text{ m/s}$$

6. A dog runs 25 meters to fetch a stick and then returns to his owner. The entire trip takes 5.7 seconds.
   a. Calculate the dog's average speed.

   $$v = \frac{d}{t} = \frac{50. \text{ m}}{5.7 \text{ s}} = 8.8 \text{ m/s}$$

   b. Calculate the dog's average velocity.

   $$v = \frac{d}{t} = \frac{0 \text{ m}}{5.7 \text{ s}} = 0 \text{ m/s}$$

Answers in size order: 0, 1.4, 1.9, 5.1, 8.8, 16, 37.0, 3200