Average Speed and Velocity Worksheet 2: Calculations

Directions: Answer each of the following questions using the F, G, E, S format discussed in class, and as exemplified in the sample problem below. Watch out for conversion-requiring problems! Remember that you cannot solve problems unless all distances are in the same units, and all time quantities are as well! SHOW ALL OF YOUR WORK ON A SEPARATE SHEET OF PAPER! HOMEWORK WILL BE GRADED ACCORDING TO THOROUGHNESS, ORGANIZATION, AND NEATNESS!

Example: A cyclist travels 10 km at a speed of 2.5 m/sec. How long will it take to complete the trip in minutes?

F: time (in min)

G: $d = 10$ km, $s = 2.5 \frac{m}{s}$

E: $S = \frac{dist}{time}$

G: Conversion → $\frac{10\,km}{1} \left| \frac{1000\,m}{1\,km} \right. = 10{,}000\,m$

$2.5 \frac{m}{s} = \frac{10{,}000\,m}{t}$

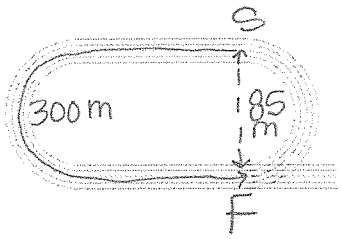
$t = 4000\,s$

$2.5(t) = 10{,}000$

$\frac{2.5(t)}{2.5} = \frac{10{,}000}{2.5}$

$4000\,s \left| \frac{1\,min}{60\,s} \right. = 66.7\,min$

1. In the 2008 Olympics, Jamaican sprinter Usain Bolt shocked the world as he ran the 100-meter dash in 9.69 seconds.
   a. Determine Usain's average speed for the race in m/s.
   b. Determine Usain's average speed for the race in mi/hr (1 mi = 1.61 km). Show your conversion in the straight line format.
2. A swimmer swims the 100m breaststroke event in 1m 8s. The event is in a 50m pool. She finishes the event at the same end at which she started. If she begins the event swimming due north and takes 35 sec to swim the first 50 m, and 32 seconds to swim the second 50 m, calculate her:
   a) average speed?
   b) average velocity?
3. Hoover High School's Marlon Humphrey won the 300 meter hurdles with at time of 35.60 seconds at last year's AHSAA Outdoor Track State Meet. What was his
   a) average speed?
   b) average velocity?



4. A school bus travels 15 kilometers in 0.75 hours. What is the speed of the school bus in km/hr?
5. An object travels at a speed of 50 km/hr for 24 hours. What distance does it cover?
6. A bird flies at a speed of 25 km/hr for 2 days straight. What distance the bird travel in km?**
7. A satellite travels at a speed of 15,000 mi/hr for 30 days. How far has the satellite traveled in miles?**
8. A skier travels 1200 meters in 56 seconds. What is the speed of the skier?
9. A golf ball travels 250 yards in 6.4 seconds. What is the speed of the golf ball?
10. A car travels 500 miles at an average speed of 54.9 mi/hr. How long will the trip take?
11. A plane travels at a speed of 200 m/sec over a distance of 55000 meters. How long did it take in minutes?**
12. If you travel 720 meters in 30 seconds, what is your speed in m/s?
13. Celebrity cruise line is heading to your favorite destination at a whopping 50 km/hr. How far will the ship travel in 14 hours?
14. The speeding bullet is traveling at 1,000 m/s at a distance of 40 meters. What is the bullet's time?
15. Super Man's speed is 500 m/s at a distance of 20 meters. What is Super Man's time?
16. The road runner is zooming don the desert highway. Beep Beep! How fast is he zooming if it takes R.R. 1.2 hours to zoom down 15 miles of desert highway?

** = Hint → You may need to convert!