

CP --Avg. Speed, Inst. Speed, & Velocity Worksheet

Name _____

Answer all questions & problems completely and also be sure to show all work....including equations

1) If a car was moving at a speed of 25 mph for 6 hours, how far would the car travel? (be sure to show your work)



2) Which car has a higher average speed? (circle correct choice)

- a) a car that travelled 150 km in 3 hrs
- b) a car that travelled 40 km in .5 hrs
- c) a car that travelled 500 km in 8 hrs

3) In the 2008 Olympics, Jamaican Usain Bolt became the fastest man in history by winning a Gold Medal for running the 100 m dash in a World Record time of 9.69 seconds (*while seemingly not even trying for the last 15 meters!*).



- a) What was his average speed (in m/s) during this race?
- b) Several days later Bolt also won Gold and broke another World Record in the 200 m dash with a time of 19.30 sec. In which race did he have a higher average speed??
- c) Why do you suppose this is??
- d) In addition to winning the two gold medals in the 100m, and 200m Usain Bolt also won Gold and set another world record in the 4x100 m relay where 4 teammates each run 100m. They set the world record with a time of 37.10 sec. What was the average 100 m time of each of the four runners?
- e) If you notice, the answer to d) is significantly lower than the 100 m dash world record time Usain Bolt ran. Assuming the obvious, that he is the only man in the world that can run this time, how is it possible that 4 guys each ran a significantly better 100 m time in the relay?

3) If a cheetah could run with an average speed of 25 m/s and was running for 6.5 seconds, how far did it run?



4) **Circle** any of the following quantities that are velocities. Put an **X** through any of the following quantities that are speeds.

- a) 24 m/s North
- b) 10 mph
- c) - 100 km/h
- d) 75 m/s to the Right
- e) 25 m/s

5) The speed of sound in air is roughly 340 m/s. How far, in meters, would a sound wave travel in 7 seconds?

6) During car trip across the state of Ohio you travel 275 miles in 6 hours.

a) what was your average speed for the entire trip (in mph)?



b) if most of this trip was driven on the highway at the speed limit, how come your answer for a) is so much lower than the speed limit on the highway of 65 mph? (explain using the difference between instantaneous speed and average speed)

7) The following chart plots the time and the distance travelled by a car that was travelling at a constant 23 m/s. Fill in all blanks.

Time (s)	Distance (m)
0	0
1	
2	46
3	
4	
8	
10	

8) In August 2009, a year after the Beijing Olympics, at the Track & Field World Championships in Berlin Usain Bolt again broke both of his own records in the 100 m dash, with a time of 9.58, and in the 200 m dash, with a time of 19.19. By how much did he **improve** his average speed **in each race** from his performance in 2008 in Beijing?



9) ****Bonus****. Looking back at Question #8, What was Usain Bolt's average speed in the 100 m dash in **miles per hour (mph)**? (Hint- 1 mile = 1609 meters)