Homework – Accuracy vs. Precision; Scalar vs. Vector; Speed, Velocity, Acceleration

Due: Thurs., Aug 25 (Reg)
Assigned: Tues., Aug 23

1) Which would be more useful as a scientific instrument: one that is consistently 10% off, or one that is 1% off, but erratic? Why? (And I'm looking for a particular word…)

2) The actual mass of an object is 1.21 kg. You measure it three times with a scale and read 1.34, 1.33, and 1.35. Are your numbers accurate or precise?

3) Why would you take multiple samples when measuring a small or difficult to measure quantity? Be specific.

4) *Scalar or vector?* A student runs 5 m/s. ____; A person pushes 3 N to the left. ____.
5) *Speed or velocity?* A car moving 15 km/hr north. ____; A plane flying 250 m/s. ____.

6) A race car drives around a circular track with a radius of 35 m. If the car drives 5 times around the track and ends up back at its starting position.
a) Find the total displacement of the car.

b) Find the total distance the car traveled.

7) An object is moving 4 m/s to the right. Later it is moving 6 m/s to the left. Find Δv.

8) An object travels to the right 150 m in 25 seconds. Then it moves to the left 100 m in 30 seconds.
a) find its average speed.

b) find its average velocity.

9) A car traveling at 7 m/s and 2.5 m/s^2 reaches a speed of 12 m/s. How long did it accelerate?

10) You are dropped on a deserted island. You will have to establish yourself in your new environment. List 3 biotic and 3 abiotic factors particular to an island.

Biotic	Abiotic
1.	1.
2.	2.
3.	3.