Biology 4605/7220                     Quiz #1b          NAME_____
13 September 2005

1. Name a quantity of interest to you that has dimensions of M/T. In the spaces below provide a complete five-part definition of the quantity (name, symbol, procedural statement, numbers, units).

|  |  | TYPICAL |  |
| --- | --- | --- | --- |
| NAME | SYMBOL | VALUES | SCALE (typical units) |

Procedural statement  (you may have to invent this)

$$sum(X) = \sum_{i=1}^{n} X_i = X_1 + X_2 + \cdots + X_n \qquad \text{n is number of observations (it has no units)}$$

$$mean(X) = \overline{X} = \frac{1}{n} \sum^{n} X \qquad\qquad variance(X) = s^2 = \frac{1}{n-1} \sum \left( (X - \overline{X}) \right)^2$$

coefficient of dispersion $\qquad\qquad cd(X) = \dfrac{variance(X)}{mean(X)}$

2. Substitute the symbol for your quantity within the parentheses in the following expressions, and fill in the blanks.

$sum($  $)$ has units of _____

$mean($  $)$ has units of _____

$cd($  $)$  has units of  _____

3a. The median is defined as a value such that half the observations are above and half are below. Report the mean and median values of the following quantity (don't forget units).

$E = [\ 65 \quad 5 \quad 5 \quad 10 \quad 15\ ]$ Joules $\qquad\qquad mean(E) = $ _____

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad median(E) = $ _____

3b. State which is greater (mean or median)  _____

3c. Explain why.