

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).

NAME	SYMBOL	TYPICAL VALUES	SCALE (typical units)
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K

Procedural statement (you may have to invent this)

[This should be clear enough so that another investigator could make comparable measurements]

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

$$\text{mean}(X) = \bar{X} = \frac{1}{n} \sum X \quad \text{variance}(X) = s^2 = \frac{1}{n-1} \sum ((X - \bar{X}))^2$$

$$\text{coefficient of dispersion} \quad \text{cd}(X) = \frac{\text{variance}(X)}{\text{mean}(X)}$$

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

$\text{sum}(\quad)$  has units of \_\_\_\_\_K\_\_\_\_\_

$\text{mean}(\quad)$  has units of \_\_\_\_\_K\_\_\_\_\_

$\text{cd}(\quad)$  has units of \_\_\_\_\_K\_\_\_\_\_

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).

$E = [ 65 \ 5 \ 5 \ 10 \ 15 ]$  Joules

$$\text{mean}(E) = \underline{\underline{100/5=20}}$$

$$\text{median}(E) = \underline{\underline{10}}$$

3b. State which is greater (mean or median) \_\_\_\_\_mean\_\_\_\_\_

3c. Explain why. The mean exceeds the median because the mean is influenced by an extreme value, 65.