Biology 4605/7220 Name _____
Quiz #2 18 September 2007

According to D.S. Vaughn (*Canadian Special Publications in Fisheries and Aquatic Sciences* 120:231-241) recruitment of juvenile Atlantic Menhaden *Brevoortia tyrannus* is related to stock size as follows:

$$\text{Recruits}(S) = 0.221\ S\ e^{k * S}$$

Stock size has units of metric tons (ton = 10^3 kg).
Recruits(S) has units of megacounts/yr = million fish per year.

k is a parameter with a numerical value of k = –0.0000101

1. Calculate the expected recruitment for a stock of 1.1 million tons._____ [2]
   Be sure to show your calculations by writing values
   underneath each symbol in the equation.

2. Write a data equation for stock size of 1.1 million tons, with a recruitment measured as 4.5 million fish per year.

   _____ = _____ + _____ [6]

3. The parameter 0.221 has units of $[S^{-1}][\text{Recruits}(S)]$.
   Write its units _____[1]

4. The parameter 0.221 has what dimensions ? _____[1]
   (Use the symbol # for the dimensions of countable entities)

5. Convert a 10 cubic mile volume of seawater to cubic kms of seawater
   Be sure to show your calculations.
   1 km = 0.62137 mile _____[2]