Biology 4605/7220 Name_____
Quiz #2a 22 September 2004 (revised version)

For both (1) and (2) report computations to two decimal places.

(1). Based on data from Arrhenius (1921 *Journal of Ecology* 9:95-99) the expression relating the number of species in a large quadrat to the number in a smaller quadrat in a *Pinus* woodland in Sweden is:

$$\frac{Nsp(large)}{Nsp(small)} = \left(\frac{A_{large}}{A_{small}} \right)^{0.4582}$$

If area is quadrupled ($A_{large}/A_{small} = 4$) what is the expected ratio of species in the large relative to smaller quadrat ? *Nsp(large) / Nsp(small)* = _____

If area were increased by a factor of 100, would the number of species increase by a factor of 100? _____

If there are 10 species in a small quadrat, how many species in a quadrat that is 100 times larger ? _____

(2). Calder (1984 *Size, Function and Life History*, Cambridge University Press, p. 305) combined several allometric equations to obtain a relation between foraging bouts (T = days) and body size (M = kg). The relation that Calder obtained is that:

$$T = 3.04\ M^{-0.26}$$

What is the expected time between foraging bouts for a 25 kg mammal?

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Write a data equation for 20 kg mammal with a measured time between bouts of 1 day.

_____ = _____ + _____