

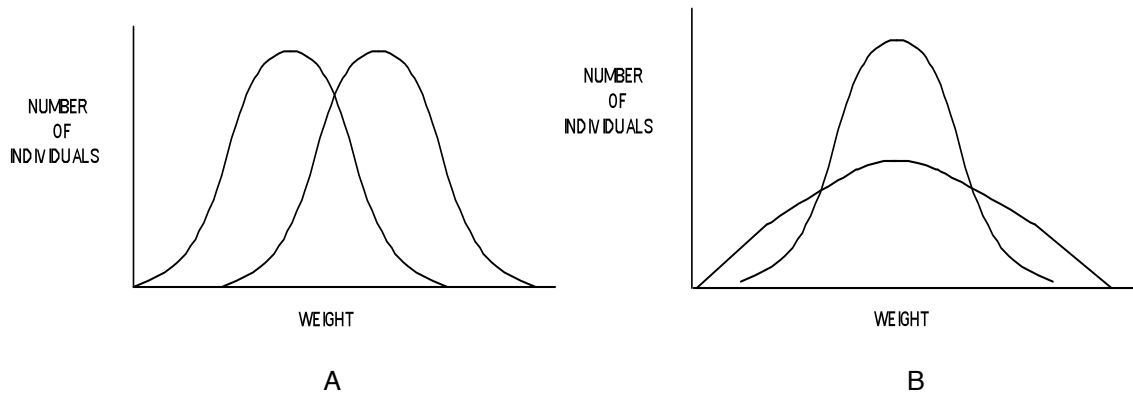
BIOLOGY 163 LABORATORY

PROBLEM SET: WORKING WITH STATISTICS

(Revised Fall 2008)

After reading the handout *Working with Statistics*, test your knowledge by answering the following questions. **Where applicable, report your answers using the appropriate number of significant figures!**

1. Examine the pair of frequency distributions show in A below. Are the means of these distributions equal? Are the variances of these distributions equal?

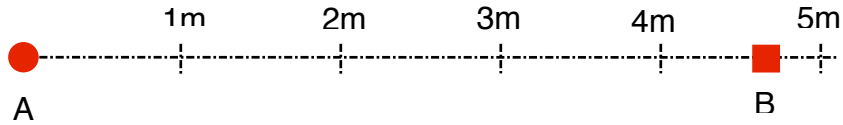


2. Examine the pair of frequency distributions show in B above. Are the means of these distributions equal? Are the variances of these distributions equal?
3. The lung capacity of ten subjects was measured to the nearest tenth of a liter and reported as follows:

3.4, 3.8, 4.6, 3.6, 2.9, 4.1, 3.9, 4.4, 3.8, 4.0

Statistically describe these data by calculating and reporting the mean, variance, standard deviation, and standard error.

4. Using a tape calibrated in meters, you discover the distance between two field positions (A and B) to be as shown in the diagram below. How would you report this distance in meters? Would it be appropriate to report this distance in centimeters? Why or why not?



5. Five plants are harvested and individually weighed, and their masses are reported as follows: 21.45g, 18.582g, 19g, 23.16g, and 19.9g. Calculate and report the *cumulative* mass of these plants.
6. The circumference of a tree is measured as 83 cm. Calculate and report the *diameter* of this tree. (diameter = circumference/ π)
7. Examine the three figures below. Note that the means do not differ from one figure to the next, but the standard errors do. For each figure, indicate (based on a comparison of standard error) which treatments differ significantly from the control. Would you draw the same conclusions (regarding the effect of the treatment) from all three figures? Explain.

