Introduction to Confidence Intervals (CI's)

CREDIT: The questions on this document were written by Erik Packard, PhD, Associate Professor of Mathematics at Colorado Mesa University.

- Problem 4

    - Biological measurements on the same species often follow a Normal distribution quite closely. The weights of seeds of a variety of winged bean are approximately Normal with a mean of 525 mg and a standard deviation of 110 mg. Assume the standard deviation is from the population.

        A) Assume that this mean of 525 mg came from a sample of size 120. Give a 95% confidence interval for the mean weights of all seeds.

        B) How large a sample is needed to ensure that a 95% confidence interval will have a margin of error of 10 mg?

- Problem 9

    - The table gives data on the adsorption into the blood taken on 20 healthy female subjects for a pair of drugs, one generic and the other reference name brand drug. Half were picked at random and received the generic drug first and the rest took the reference drug first. In all cases, a washout period separated the two drugs so that the first had disappeared before the subject took the second.

Subject:	A	B	C	D	E	F	G	H	I	J
Reference:	4110	2536	2769	3853	1832	2436	1999	1719	1829	2594
Generic:	1755	1148	1603	2254	1309	2120	1851	1878	1685	2643

Subject:	K	L	M	N	O	P	Q	R	S	T
Reference:	2354	1864	1022	2256	938	1339	1262	1438	1735	920
Generic:	2738	2202	1254	3051	1287	1930	1964	2549	3335	3044

    - Assume the standard deviation of the differences in the population is 1000.

        A) Give a 95% CI for the mean difference (Reference – Generic) for all people.

        B) How large a sample is needed to ensure the margin of error is 50 for a 95% CI of the difference?