Sampling Distributions

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

- Problem 3
    - Voter registration records show that 68% of all voters in Indianapolis are registered as Republicans. To test a random digit dialing device, you use the device to call 150 randomly chosen residential telephones in Indianapolis. Of the registered voters contacted 73% are registered Republicans. For each boldface number tell if it is a statistic or a parameter.

- Problem 5
    - Let's illustrate the idea of a sampling distribution in the case of a very small sample from a very small population. The population is the scores of 10 students on an exam:

Student:	0	1	2	3	4	5	6	7	8	9
Score:	82	62	80	58	72	73	65	66	74	62

A) Find the population mean. Also start anywhere you want in the table of random digits and pick 10 random samples of the appropriate size. Make a histogram of your 10 values with intervals 60-62, 62-64, etc. Do this for samples of size 4.

- Problem 9

    - 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.

        A) If one seed is picked at random, then what is the probability its weight will exceed 500 mg?

        B) If 11 seeds are picked at random, then what is the probability their average weight will exceed 500 mg?

        C) If 14 seeds are picked at random, then what is the probability their average weight will be below 510 mg?

        D) For all possible groups of 64 seeds, what range of average seed weights make up the middle 95%?

        E) What is the average weight for the heaviest 1% of groups of 64 seeds?

        F) What is the average weight for the lightest 20% of groups of 25 seeds?