

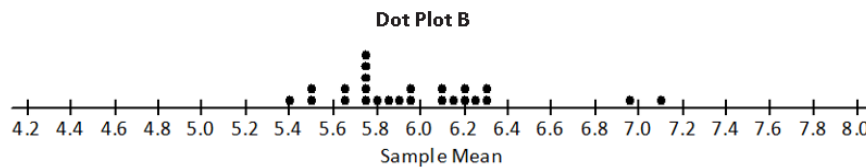
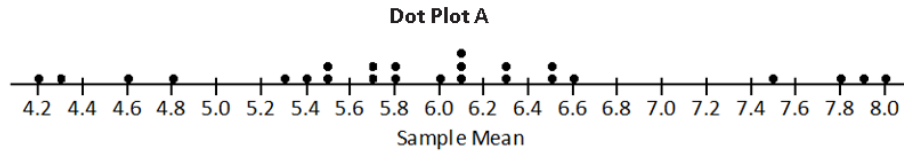
## Problem Set

1. The owner of a new coffee shop is keeping track of how much each customer spends (in dollars). One hundred of these amounts are shown in the table below. These amounts will form the *population* for this question.

	0	1	2	3	4	5	6	7	8	9
0	6.18	4.67	4.01	4.06	3.28	4.47	4.86	4.91	3.96	6.18
1	4.98	5.42	5.65	2.97	2.92	7.09	2.78	4.20	5.02	4.98
2	3.12	1.89	4.19	5.12	4.38	5.34	4.22	4.27	5.25	3.12
3	3.90	4.47	4.07	4.80	6.28	5.79	6.07	7.64	6.33	3.90
4	5.55	4.99	3.77	3.63	5.21	3.85	7.43	4.72	6.53	5.55
5	4.55	5.38	5.83	4.10	4.42	5.63	5.57	5.32	5.32	4.55
6	4.56	7.67	6.39	4.05	4.51	5.16	5.29	6.34	3.68	4.56
7	5.86	4.75	4.94	3.92	4.84	4.95	4.50	4.56	7.05	5.86
8	5.00	5.47	5.00	5.70	5.71	6.19	4.41	4.29	4.34	5.00
9	5.12	5.58	6.16	6.39	5.93	3.72	5.92	4.82	6.19	5.12

- a. Place the table of random digits in front of you. Select a starting point without looking at the page. Then, taking two digits at a time, select a random sample of size 10 from the population above. Write the 10 values in the space below. (For example, suppose you start at the third digit of row four of the random digit table. Taking two digits gives you 19. In the population above, go to the row labeled 1, and move across to the column labeled 9. This observation is 4.98, and that will be the first observation in your sample. Then, continue in the random digit table from the point you reached.)
- Calculate the mean for your sample, showing your work. Round your answer to the nearest thousandth.
- b. Using the same approach as in part (a), select a random sample of size 20 from the population. Calculate the mean for your sample of size 20. Round your answer to the nearest thousandth.
- c. Which of your sample means is likely to be the better estimate of the population mean? Explain your answer in terms of sampling variability.

2. Two dot plots are shown below. One of the dot plots shows the values of some sample means from random samples of size 10 from the population given in Problem 1. The other dot plot shows the values of some sample means from random samples of size 20 from the population given in Problem 1.



Which dot plot is for sample means from samples of size 10, and which dot plot is for sample means from samples of size 20? Explain your reasoning.

The sample means from samples of size 10 are shown in Dot Plot \_\_\_\_\_.

The sample means from samples of size 20 are shown in Dot Plot \_\_\_\_\_.

3. You are going to use a random sample to estimate the mean travel time for getting to school for all the students in your grade. You will select a random sample of students from your grade. Explain why you would like the sampling variability of the sample mean to be *small*.