

1. Sampling is often preferred to surveying a population because

- A. Surveying a population can be very expensive.
- B. It can be physically impossible to find all the items in a population.
- C. Sample estimates can be very accurate.
- D. All of the above.

2. In a simple random sample:

- A. Every  $k^{\text{th}}$  item is selected to be in the sample.
- B. Every item has a chance to be in the sample.
- C. Every item has the same chance to be in the sample
- D. Only 10 items are selected.

3. A random sample is best characterized as:

- A. N observations
- B. Randomly selected members of a population
- C. 30 or more observations
- D. Biased

4. Which of the following is a method of probability sampling?

- A. Simple random sampling
- B. Systematic sampling
- C. Stratified sampling
- D. All of the above

5. Which is the most expensive method to gather data?

- A. Sampling
- B. Collecting Published Data
- C. Survey
- D. Census

6. Sampling is often preferred to surveying a population because:

- A. Surveying a population can be very expensive.
- B. It can be physically impossible to find all the items in the population.
- C. Sample estimates can be very accurate.
- D. All of the above are reasons for sampling.

7. Name the Sampling method used in each:

Bank:

<b>(A) Simple Random,</b>	<b>(B) Systematic,</b>	<b>(C) Cluster,</b>	<b>(D) Stratified,</b>
<b>(E) Non-Random,</b>	<b>(F) Convenience,</b>	<b>(G) Census,</b>	<b>(H) Self-Selected ( aka Voluntary)</b>

a\_\_\_ A research chooses the 10 best students from a math class in each of 6 grade levels.

b\_\_\_ A researcher chooses 10 students randomly from a math classroom in each of 6 grade levels.

c\_\_\_ An announcement for a survey is mentioned at a movie theater. Anyone who chooses to participate can.

d\_\_\_ A phone company uses a computer to choose customers for a satisfaction survey. 5% of each region are chosen randomly.

e\_\_\_ Every fifth person to buy gasoline is asked about their automobile.

f\_\_\_ Every student in the NWU Advantage program is selected to fill out a survey on their thoughts about the program.

**Administrators of the fire department are concerned about the possibility of implementing a new property tax to raise money needed to replace old equipment. They decide to check on public opinion by having a random sample of the city's population. Several plans for choosing the sample are proposed. Match each with the name of the Strategy (use the same bank at the top).**

\_\_\_ g. The city has five property classifications: single family, apartments, condos, temporary housing (hotel/campground), and retail. Randomly select ten residents from each classification

\_\_\_ h. Each property owner has a 5-digit ID number. Use a random number table to choose 40.

\_\_\_ i. At the start of each week, survey every tenth person who arrives at the city park.

\_\_\_ j. Randomly select a housing classification and survey all people who live in that type.

\_\_\_ k. Have each firefighter survey 10 of his/her neighbors.

8. If we want to sample 8 people from a population of 64 and if we decide to use a systematic approach starting at the 7<sup>th</sup> person, then the final sample would contain

- A. 7, 8, 9, 10, 11, 12, 13, 14
- B. 7, 16, 23, 31, 39, 47, 55, 63
- C. 7, 15, 23, 31, 39, 47, 55, 63
- D. 8, 16, 24, 32, 40, 48, 56, 64

9. What type of survey is used to measure the entire target population?

- A. Random sample
- B. Census
- C. Non-probability sample
- D. None of the above

10. Suppose the state decides to randomly test high school wrestlers for steroid use. There are 16 teams in the league, and each team has 20 wrestlers. State investigators plan to test 32 of these athletes by randomly choosing two wrestlers from each team. Is this a SRS (simple random sample)?

- A) Yes, because the wrestlers were chosen at random.
- B) Yes, because each wrestler is equally likely to be chosen.
- C) Yes, because stratified samples are a type of SRS.
- D) No, because not all possible groups of 32 wrestlers could have been in the sample
- E) No, because a random sample of teams was not first chosen.

**TABLE 3 – RANDOM DIGITS**

37100	62492	63642	47638	13925	80113	88067	42575	44078	62703
53406	13855	38519	29500	62479	01036	87964	44498	07793	21599
55172	81556	18856	59043	64315	38270	25677	01965	21310	28115
40353	84807	47767	46890	16053	32415	60259	99788	55924	22077
18899	09612	77541	57675	70153	41179	97535	82889	27214	03482
68141	25340	92551	11326	60939	79355	41544	88926	09111	86431
51559	91159	81310	63251	91799	41215	87412	35317	74271	11603
92214	33386	73459	79359	65867	39269	57527	69551	17495	91456
15089	50557	33166	87094	52425	21211	41876	42525	36625	63964
96461	00604	11120	22254	16763	19206	67790	88362	01880	37911
28177	44111	15705	73835	69399	33602	13660	84342	97667	80847
66953	44737	81127	07493	07861	12666	85077	95972	96556	80108
19712	27263	84575	49820	19837	69985	34931	67935	71903	82560
68756	64757	19987	92222	11691	42502	00952	47981	97579	93408
75022	65332	98606	29451	57349	39219	08585	31502	96936	96356

11. **Given:** 2015 Daytona 500 Final Practice Speed data. **Use** the previous page with random numbers to “draw” a random sample of 5 drivers. Find the mean of the sample.

Clearly explain / show your work (process) in how you selected your random sample. Also show your work in getting the mean!

Use the space below to do your work:

Pos	Car	Driver	Time	Speed
1	11	Denny Hamlin	44.531	202.106
2	5	Kasey Kahne	44.549	202.025
3	16	Greg Biffle	44.587	201.853
4	9	Sam Hornish Jr.	44.595	201.816
5	34	David Ragan	44.618	201.712
6	6	Trevor Bayne	44.71	201.297
7	18	Kyle Busch	44.711	201.293
8	17	Ricky Stenhouse Jr.	44.755	201.095
9	95	Michael McDowell	44.771	201.023
10	43	Aric Almirola	44.776	201.001
11	14	Tony Stewart	44.841	200.709
12	19	Carl Edwards	44.877	200.548
13	24	Jeff Gordon	44.898	200.454
14	4	Kevin Harvick	44.958	200.187
15	42	Kyle Larson	45.06	199.734
16	15	Clint Bowyer	45.063	199.72
17	20	Matt Kenseth	45.093	199.588
18	78	Martin Truex Jr.	45.362	198.404
19	13	Casey Mears	45.37	198.369
20	33	Ty Dillon(i)	45.392	198.273
21	40	Landon Cassill	45.393	198.268
22	31	Ryan Newman	45.402	198.229
23	27	Paul Menard	45.403	198.225
24	46	Michael Annett	45.544	197.611
25	51	Justin Allgaier	45.801	196.502
26	88	Dale Earnhardt Jr.	46.027	195.537
27	38	David Gilliland	46.055	195.419
28	35	Cole Whitt	46.288	194.435
29	48	Jimmie Johnson	46.378	194.058
30	41	Regan Smith(i)	46.473	193.661
31	1	Jamie McMurray	46.725	192.616
32	3	Austin Dillon	46.727	192.608
33	32	Bobby Labonte	47.282	190.347
34	83	Johnny Sauter(i)	47.872	188.001
35	23	J.J. Yeley(i)	47.978	187.586

12. **Given:** 2015 Daytona 500 Final Practice Speed data. **Use** the page with random numbers to “draw” a random sample of 10 drivers. Find the mean of the sample.

Briefly explain / show your work (process) in how you selected your random sample. Also show your work in getting the mean!

13. Which mean, #12 or #13 “is likely” to be a better approximation of the population mean? Explain your reasoning.