

Objective

Collecting Random Samples

Warm-Up



Light It Up Light Bulb Company tests 36 of the bulbs they just produced and found that 3 of them were defective. Use proportions to predict how many light bulbs would be defective in shipments of each size.

1. 100 light bulbs

2. 400 light bulbs

3. 750 light bulbs



The standing desks improved student motivation, attendance, and achievement so much in Ms. Levi's class that the principal, Ms. Garrett, has decided to order standing work desks for every seventh grade class in the school.

The school has 450 seventh grade students, and Ms. Garrett would like to take a random sample of 20 seventh graders, determine their heights, and use their mean height for the initial set-up of the standing desks. However, Ms. Garrett does not want to write the 450 names on slips of paper.

There are other ways to select a random sample. One way to select a random sample is to use a random number table like you used previously to simulate events.

You can use a random number table to choose a number that has any number of digits in it. For example, if you are choosing 6 three-digit random numbers and begin with Line 7, the first 6 three-digit random numbers would be: 242, 166, 344, 421, 283, and 070.

Random Number Table										
Line 6	62490	99215	84987	28759	19177	14733	24550	28067	68894	38490
Line 7	24216	63444	21283	07044	92729	37284	13211	37485	10415	36457
Line 8	16975	95428	33226	55903	31605	43817	22250	03918	46999	98501
Line 9	59138	39542	71168	57609	91510	77904	74244	50940	31553	62562
Line 10	29478	59652	50414	31966	87912	87154	12944	49862	96566	48825

1. What number does "070" represent when choosing a three-digit random number? Why are the zeros in the number included? Explain your reasoning.

2. If selecting a three-digit random number, how would the number 5 be displayed in the table?

3. Begin on Line 10 and select 5 three-digit random numbers.

4. Explain how to assign numbers to the 450 seventh grade students so that Ms. Garrett can take a random sample.

5. Use Line 6 as a starting place to generate a random sample of 20 students.

a. What is the first number that appears?

b. What do you think Ms. Garrett should do with that number?

c. Continuing on Line 6, what are the 20 three-digit numbers to be used to select Ms. Garrett's sample?

d. What should you do if a three-digit number appears twice in the random number table?

e. Will choosing a line number affect whether Ms. Garrett's sample is random?

f. Will choosing a line number affect who will be chosen for the sample?

**Show You
KNOW**

Lunching with Ms. Garrett

Ms. Garrett wishes to randomly select 10 students for a lunch meeting to discuss ways to improve school spirit. There are 1500 students in the school.

1. What is the population for this problem?
2. What is the sample for this problem?
3. Ms. Garrett selects three to four student council members from each grade to participate. Does this sample represent all of the students in the school? Explain your answer.
4. Ms. Levi recommended that Ms. Garrett use a random number table to select her sample of 10 students. How would you recommend Ms. Garrett assign numbers and select her random sample?

Results from a Sample Class Survey			
Student	1. What is your approximate height?	2. Do you carry a cell phone with you?	3. About how many text messages do you send in one day?
1-Sue (F)	60 in.	Yes	75
2-Jorge (M)	68 in.	Yes	5
3-Alex (M)	63 in.	No	0
4-Maria (F)	65 in.	Yes	20
5-Tamika (F)	62 in.	Yes	50
6-Sarah (F)	68 in.	Yes	100
7-Beth (F)	56 in.	Yes	60
8-Sam (M)	70 in.	No	0
9-Eric (M)	69 in.	Yes	50
10-Marcus (M)	66 in.	Yes	100
11-Carla (F)	61 in.	Yes	0
12-Ben (M)	68 in.	Yes	60
13-Will (M)	64 in.	Yes	50
14-Yasmin (F)	66 in.	Yes	40
15-Paulos (M)	60 in.	Yes	90
16-Jon (M)	67 in.	Yes	10
17-Rose (F)	64 in.	Yes	0
18-Donna (F)	65 in.	Yes	25
19-Suzi (F)	63 in.	Yes	30
20-Kayla (F)	58 in.	Yes	80



LESSON 12.1b
We Want to Hear from You!



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Practice

1. Explain which sampling method is more representative of the population.
 - a. Katie and Cole live in Springfield, RI, and are interested in the average number of skateboarders who use their town's Smooth Skate Park in one week. Katie recorded the number of skateboarders who used the park in June. Cole recorded the number of skateboarders who used the park in January.

 - b. Fiona and Rachel want to determine the most popular lunch choice in the school cafeteria among seventh graders. They decide to collect data from a sample of seventh graders at school. Fiona surveys twenty seventh graders that are in line at the cafeteria. Rachel surveys twenty seventh graders whose student ID numbers end in 9.

2. The coach of the soccer team is asked to select 5 students to represent the team in the Homecoming Parade. The coach decides to randomly select the 5 students out of the 38 members of the team.
 - a. What is the population for this problem?

 - b. What is the sample for this problem?

 - c. Suggest a method for selecting the random sample of 5 students.

