LESSON MAKER PRO

Chance and Choice

Track who enters a study and who gets a treatment.

HIGH SCHOOL · A2S.DSP.E

A2S.DSP.E "The role of randomization is different in randomly selecting samples and in randomly assigning subjects to experimental treatment groups."

NAME _____ DATE _____

TWO JOBS FOR RANDOMNESS

Random selection gives people in a population a chance to enter a study. Random assignment gives participants a chance to receive a treatment. To find the chance of both, multiply the two chances.

WORKED EXAMPLE

Use the table. What is the chance that a named person in the population receives the treatment?

STUDY PLAN

Step	From	Chosen
Random selection	90 people	18 people
Random assignment to treatment	18 people	9 people

1. Chance of selection: 18/90 = 1/5.
2. Chance of treatment after selection: 9/18 = 1/2.
3. Chance of both: 1/5 × 1/2 = 1/10.

Answer: 1/10

PRACTICE 4 problems

1 A school randomly selects 20 of its 80 students for a survey. What is a named student's chance of being selected?

ANSWER _____

2 Researchers randomly assign 8 of 24 volunteers to use a study app. What is a named volunteer's chance of using it?

ANSWER _____

3 A school randomly selects 40 of 100 students, then randomly assigns 10 of those selected to hear music. For a named student, find the chance of selection and the chance of hearing music.

ANSWER _____

4 A survey randomly selects 16 of 64 students. A separate trial randomly assigns 8 of 32 volunteers to a program. Find a named person's chance in each case. Which chance concerns selection?

ANSWER _____

APPLY IT Show your work

1 A school tests whether a study playlist changes quiz scores. Use the table. What is the chance that a named student hears the playlist? What can comparing the groups help researchers find out?

PLAYLIST STUDY

Step	From	Chosen
Random selection	140 students	35 students
Random assignment to playlist	35 students	7 students

ANSWER _____

2 A gaming club recruits 48 volunteers to test a new controller. It randomly assigns 16 to use it and compares game scores. What is a named volunteer's chance of using it? Can the results represent all teens? Explain.

WORK SPACE

ANSWER _____

CHALLENGE One step up

One study randomly selects 50 of 200 students, then randomly assigns 20 of those selected to use an app. A second study recruits 20 volunteers from the same school and randomly assigns 8 to use the app. Find the chance of getting the app for a named student in the first study and a named volunteer in the second. Which study better supports a claim about all 200 students? Explain.

WORK SPACE AND ANSWER

Chance and Choice

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A school randomly selects 20 of its 80 students for a survey. What is a named student's chance of being selected?	**1/4**
2	Researchers randomly assign 8 of 24 volunteers to use a study app. What is a named volunteer's chance of using it?	**1/3**
3	A school randomly selects 40 of 100 students, then randomly assigns 10 of those selected to hear music. For a named student, find the chance of selection and the chance of hearing music.	**Chance of selection: 2/5. Chance of hearing music: 1/10.**
4	A survey randomly selects 16 of 64 students. A separate trial randomly assigns 8 of 32 volunteers to a program. Find a named person's chance in each case. Which chance concerns selection?	**Both chances are 1/4. The survey chance concerns selection.**

PART 2 · APPLY IT

1. **1/20; whether the playlist affects quiz scores.** Multiply 35/140 by 7/35 to get 7/140 = 1/20. Random assignment lets researchers compare quiz scores for students assigned to hear the playlist and those not assigned to hear it.
2. **1/3. No, the volunteers were not randomly selected from all teens.** The chance is 16/48 = 1/3. Random assignment supports a comparison of controllers, but recruiting volunteers does not make them a random sample of all teens.

CHALLENGE

First study: 20/200 = 1/10. Second study: 8/20 = 2/5. The first study better supports a claim about all 200 students because it randomly selected participants from that group.

Accept equivalent fractions. For explanations, look for the distinction between random selection for representing a population and random assignment for comparing treatments.