LESSON MAKER PRO

Who Gets Picked?

Two random steps, two different jobs

HIGH SCHOOL · S.DC.2.2

S.DC.2.2 "Understand the different roles of random selection and random assignment in study design."

NAME _____ DATE _____

THE BIG IDEA

Random selection chooses who enters a study and helps the sample represent the group it came from. Random assignment chooses which treatment participants get and helps make treatment groups comparable. To find the chance of passing through both steps, multiply the chances for the two steps.

WORKED EXAMPLE

A library randomly selects students for a test, then randomly assigns some of them a new checkout app. Use the table to find the chance that an eligible student gets the app.

LIBRARY APP TEST

Stage	Students
Eligible	30
Selected	6
Assigned the app	2

1. Chance of selection: 6/30 = 1/5.
2. Chance of getting the app if selected: 2/6 = 1/3.
3. Chance of both: 1/5 × 1/3 = 1/15.

Answer: 1/15

PRACTICE 4 problems

1 A club randomly selects 8 of its 40 members for a survey. What is each member's chance of selection?

ANSWER _____

2 A coach randomly assigns 9 of 36 volunteers to a new drill. What is each volunteer's chance of getting it?

ANSWER _____

3 Of 48 students, 12 are randomly selected. Then 3 of the 12 are randomly assigned a new app. What is an original student's chance of getting the app?

ANSWER _____

4 Fifteen volunteers join a study. Four are randomly assigned a new playlist. Find a volunteer's chance of getting it. Can the results represent all students at school?

ANSWER _____

APPLY IT Show your work

1 A school tests a game tutorial using the counts in the table. Students are randomly selected, then randomly assigned the new tutorial. Find an eligible student's chance of trying it. Which step helps the sample represent all eligible students?

GAME TUTORIAL TEST

Stage	Students
Eligible	180
Selected	36
Assigned new tutorial	9

ANSWER _____

2 A music club asks for volunteers to test a practice playlist. Of 45 volunteers, 18 are randomly assigned the new playlist. Find a volunteer's chance of getting it. Does random assignment support a fair comparison for volunteers? Can the results represent the whole school?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A school randomly selects 10 students from each grade in the table. It then randomly assigns 4 selected students from each grade to a new study group. Find an eligible student's chance of joining the new group for each grade. Explain why the chances differ.

STUDY GROUP

Grade	Eligible	Selected	Assigned new group
10th	50	10	4
11th	70	10	4

WORK SPACE AND ANSWER

ANSWER KEY

Who Gets Picked?

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A club randomly selects 8 of its 40 members for a survey. What is each member's chance of selection?	**8/40 = 1/5**
2	A coach randomly assigns 9 of 36 volunteers to a new drill. What is each volunteer's chance of getting it?	**9/36 = 1/4**
3	Of 48 students, 12 are randomly selected. Then 3 of the 12 are randomly assigned a new app. What is an original student's chance of getting the app?	**12/48 × 3/12 = 1/16**
4	Fifteen volunteers join a study. Four are randomly assigned a new playlist. Find a volunteer's chance of getting it. Can the results represent all students at school?	**4/15. No, the participants volunteered rather than being randomly selected from the school.**

PART 2 · APPLY IT

1. **1/20. Random selection helps the sample represent all eligible students.** Multiply 36/180 by 9/36 to get 9/180 = 1/20.
2. **18/45 = 2/5. Yes, random assignment supports a fair comparison for volunteers. No, the volunteers were not randomly selected from the whole school.** Divide 18 by 45. Random assignment makes the groups comparable, but volunteering limits whom the results can represent.

CHALLENGE

10th grade: 10/50 × 4/10 = 2/25. 11th grade: 10/70 × 4/10 = 2/35. Each grade has 4 places, but 11th grade has more eligible students, so each 11th grader has a lower chance.

Accept equivalent fractions. In the challenge, accept 4/50 and 4/70; the explanation must note the different numbers of eligible students.