

Task

8

Overview

List all possible combinations  
Solve a problem within given constraints.

# Seating Groups

## Short Task

### Task Description

This task asks students to find all the ways two boys and two girls can sit at four desks, given the constraints that a girl must sit next to a boy and a girl must sit opposite a boy. The important mathematical concept students work with in the task is combinatorics, or listing all possible combinations.

### Assumed Mathematical Background

Students should have had some experience making systematic lists of all possible combinations.

### Core Elements of Performance

- list all possible combinations
- solve a problem within given constraints

### Circumstances

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**Grouping:** Students work to complete an individual written response.

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**Materials:** No special materials are needed for this task.

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**Estimated time:** 15 minutes

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*Seating Groups*

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# Seating Groups

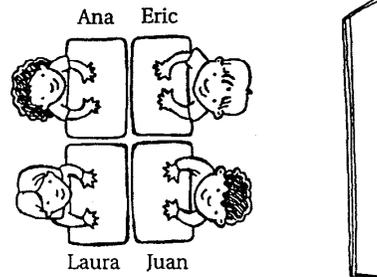
**This problem gives you the chance to**

- *show all the ways two boys and two girls can sit together at four tables if they have to obey certain rules for how they can arrange themselves*

Students sit in groups of four in Mrs. Cruz's class. To the right is part of a classroom map that shows Group 1.



The students in the class agree that they want to spread the boys and girls out evenly. The class made these rules:



1. Each group of four should have two boys and two girls.
2. If you are a girl, the person next to you should be a boy and the person straight across from you should be a boy.
3. If you are a boy, the person next to you should be a girl and the person straight across from you should be a girl.

Two girls, Laura and Ana, and two boys, Juan and Eric, want to be in Group 1. On a sheet of paper, show all the possible ways they can sit as a group. Remember to follow the rules created by the class.

# A Sample Solution



Laura  
Eric



Juan  
Ana



Laura  
Juan



Eric  
Ana



Ana  
Eric



Juan  
Laura



Ana  
Juan



Eric  
Laura



Juan  
Ana



Laura  
Eric



Juan  
Laura



Ana  
Eric



Eric  
Ana



Laura  
Juan



Eric  
Laura



Ana  
Juan



Seating Groups

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