



3-1 Problem-Solving Strategy: Eliminate Possibilities (Pages 118–122)

When you solve a problem, you may have several possible answers or solutions to choose from. You can use the problem-solving strategy of **eliminating possibilities** to solve these types of problems. Eliminating possibilities is also useful when you solve some logic problems. Using a chart to eliminate possibilities is called **matrix logic**.

EXAMPLE

Yolanda, Calvin, and Celina had breakfast together. Each chose a different item: a breakfast taco, cereal with milk, and a bowl of fruit. Use the information to match each person with his or her breakfast.

- ¥ Yolanda sat next to the person who ate the breakfast taco.
- ¥ Calvin does not like spicy foods and is allergic to dairy products.

	Yolanda	Calvin	Celina
Taco	X	X	O
Cereal	O	X	X
Fruit	X	O	X

To solve this problem, use a chart like the one above to organize the information you know. Then read the given information. With the first clue, you know that Yolanda did not eat the breakfast taco, so put an X in Yolanda's column next to taco. With the second clue, you know that Calvin did not eat the taco because he does not like spicy foods. You also know that he did not eat the cereal because he is allergic to dairy products, and cereal is served with milk. So, Calvin must have eaten the fruit. Put an X in Calvin's columns for taco and cereal, and an O for fruit. You can also put X's next to fruit for Yolanda and Celina because they did not eat fruit. Then look at your chart. Notice that two of the choices are Xed in Yolanda's column. She must have eaten cereal for breakfast. Then put an X in Celina's column for cereal, and you find that she must have eaten the breakfast taco.

PRACTICE

1. **Transportation** Jeff, Ann, Cheryl, and Bob each use a different type of transportation. Use the following matrix to find the matches.

	Jeff	Ann	Cheryl	Bob
Car				
Bus				
Bike				
Moped				

- Ann's vehicle can carry only 1 person.
- Jeff never has to buy gas.
- Bob does not have a driver's license.
- Cheryl uses her vehicle for recreation.



2. **Standardized Test Practice** If the product of a number and 3 is both less than 20 and divisible by 4, what is the number?

- A** 3 **B** 4 **C** 6 **D** 8

Answers: 1. Jeff—bike, Ann—moped, Cheryl—car, Bob—bus 2. B