

STUDENT BOOK **G**

# FOCUS **on**



RECOGNISING  
CAUSE AND EFFECT



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EDUCATION

NAME \_\_\_\_\_

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# Lesson

# Preview

Read this sample passage about how to win at the game of Nim. As you read, think about what happens and why. Look for clue words.

## WIN AT NIM!

Nim is a game that people have played for thousands of years and it is still enjoyed around the world. Because there are many different versions of Nim games, you need to understand the rules of your specific Nim game before you begin to play.

Here is how to play one version of Nim. In this game, the first player gets to decide what the object of the game is: whether the player who takes the last token wins or the player who takes the last token loses. To play this game, first set out 13 tokens. Two players take turns taking 1, 2 or 3 tokens in each turn until one player takes the last token(s). Sounds simple, doesn't it? There are actually more than 1700 different combinations of plays and the probability of winning is just about even – unless you know the secret of Nim.

The secret of the game is that the first player can win every time by using a simple strategy.

The first player gets to decide the object of the game and the object should be that the player who takes the last token(s) *wins*. Here's how the game goes: The first player takes 1 token. From that play on, that first player takes the number of tokens needed to make a sum of 4 with the second player's tokens for that round. So if the second player takes 3 tokens in the second round, the first player takes 1, for a sum of 4. If the second player takes 2 tokens, then so does the first player, for a total of 4. If the second player takes 1 token, then the first player takes 3. As long as the sum of the tokens taken is 4, then the first player can ultimately take the last 1, 2 or 3 tokens to end (and win) the game.



1. Why do you need to understand the rules of your specific Nim game before you begin to play?

- Ⓐ Nim is a game that has been played for thousands of years.
- Ⓑ There are many different versions of Nim games.
- Ⓒ The player to take the last token either wins or loses.
- Ⓓ Two players take turns.

2. If the first player knows the strategy for playing this version of Nim, then

- Ⓐ both players have the same chance of winning.
- Ⓑ the second player usually wins.
- Ⓒ the first player won't want to play.
- Ⓓ the first player can win every time.

*Look at the answer choices for each question.  
Read why each answer choice is correct or not correct.*

**1. Why do you need to understand the rules of your specific Nim game before you begin to play?**

- Ⓐ Nim is a game that has been played for thousands of years.

*This answer is not correct because the fact that the game has been played for thousands of years isn't a reason for understanding the specific rules of the game that you are going to play.*

- There are many different versions of Nim games.

*This answer is correct because the first paragraph states that there are many different versions of Nim games, so you need to understand the specific rules of the game that you are going to play before you begin playing.*

- Ⓒ The player to take the last token either wins or loses.

*This answer is not correct because this is something that is decided by the first player, after the game has begun. It is part of the rules; it doesn't explain why you have to understand the rules of your specific game.*

- Ⓓ Two players take turns.

*This answer is not correct because it tells one of the rules of the game that is described in the passage. It does not tell why it's important to know the specific rules of your game before you begin to play.*

**2. If the first player knows the strategy for playing this version of Nim, then**

- Ⓐ both players have the same chance of winning.

*This answer is not correct because the second paragraph says that the probability of winning is about the same for both unless one player knows the strategy, which implies that then the probability would not be the same for both.*

- Ⓑ the second player usually wins.

*This answer is not correct because if the first player knows the strategy, that player can play the game in a way that ensures a win every time, so the second player would probably usually lose.*

- Ⓒ the first player won't want to play.

*This answer is not correct because the passage doesn't say anything about the first player not wanting to play. And, if the first player knows the strategy, that player can usually win and would probably want to play.*

- the first player can win every time.

*This answer is correct because the third paragraph states that if the first player knows the strategy, that player can win every time.*