



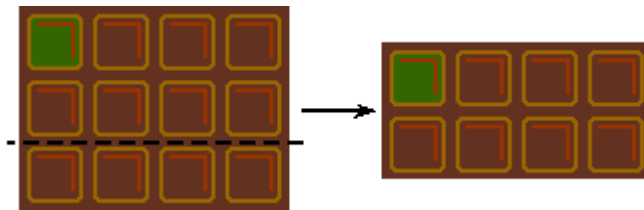
## YUCKY CHOCOLATE

### Launch:

What would you do if you had to divide a chocolate bar between two people, and one square was “yucky”? How would you divide it fairly?

**Supplies:** Students will need graph paper and pencils.

**Rules:** On each turn in the game of Yucky Chocolate, a player chooses to break the bar of chocolate along a horizontal or vertical line. These breaks must be between the rows of squares (figure 3). The rectangle that is broken off is "eaten" by that player. The game continues with the rectangle that includes the yucky square. Players take turns until one player, the loser, is left with just the yucky piece to eat.



### Play the game:

- Begin with a 4 by 6 board. Mark off the starting size of the chocolate bar on your graph paper, and then shade in eaten portions each turn.
- Look for game-winning strategies.
- Try a different size board and see if your strategies still work.

### Name your strategies:

- Is it better to go first or second?
- Are there any situations that always cause a player to lose?
- Explain why your strategies must work.

### Change the rules:

Develop a variation of the game.

- What characteristics can you change?
- Does the game remain interesting?
- Does it become more complicated?
- Do you have to change any rules to make it still make sense?
- Do the winning strategies change?