

Estimating Products

GOAL

Estimate to solve problems.



The 24 students in Ami's class are playing a Cree game of counting sticks in pairs.

One player in each pair divides 39 sticks into two bundles and holds one bundle in each hand. The other player guesses which hand holds an even number of sticks.



How many boxes of 150 sticks does the class need to play the game?



Owen's Strategy

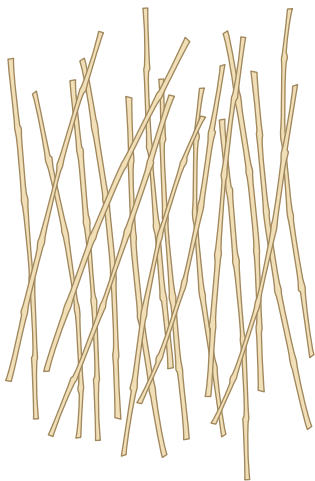
Each pair of students needs 39 sticks. The whole class needs enough sticks for 12 pairs of students.

Each box has 150 sticks. So, I can probably estimate 12×39 sticks to figure out the number of boxes.

- A.** How do you know that the number of sticks must be between 10×30 and 20×40 ?
- B.** Why can you predict that the number of sticks is close to 10×40 ?
- C.** Why can you predict that the number of sticks is about half of 25×40 ?
- D.** How many boxes of sticks does the class need? Explain your thinking.

Reflecting

- E.** Think about the estimation strategies in Parts A, B, and C. Which strategy would you choose to estimate the number of sticks? Why?
- F.** Why is it better to estimate high than to estimate low to solve this problem?

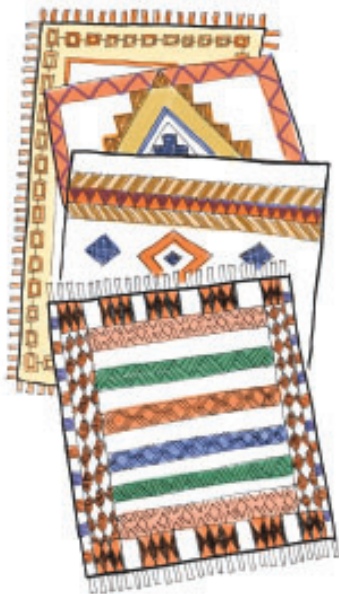


Checking

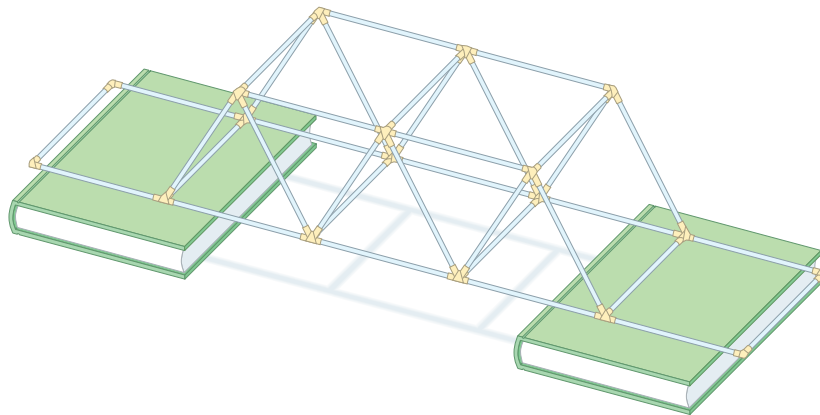
- 1.** Suppose that your class is going to play a version of the counting game with 19 sticks.
 - a)** Estimate the number of sticks that your class will need.
 - b)** Calculate the number of boxes of 150 sticks that your class will need.

Practising

- 2.** Estimate.
 - a)** 42×26
 - b)** 31×21
 - c)** 38×72
 - d)** 21×53
- 3.** Estimate to decide if each answer is reasonable. Describe your estimation strategy.
 - a)** $345 \times 6 = 2070$
 - b)** $434 \times 4 = 1736$
 - c)** $12 \times 18 = 316$
 - d)** $15 \times 18 = 320$
- 4.** Cara's mother is buying 4 blankets for \$84 each. Why does she estimate high by multiplying $4 \times \$90$?
- 5.** Make up a problem that you would solve by estimating high.
- 6.** To estimate 32×47 , Owen said that it is more than 1200 and less than 2000. How do you think he knew this?
- 7.** The 25 students in a school orchestra are going on a trip. Each student has paid \$65. Why is 20×70 a better estimate of how much money has been paid than either 20×60 or 30×70 ?



8. A class of 36 students is having a bridge-building contest. Each group of 4 students has 35 straws to make a bridge. The straws come in bags of 50. Estimate the number of bags needed for the class. Show your work.



9. Megan has 60 dimes and 58 nickels. She says that she has enough money to buy a book for \$10. Do you agree? Explain.
10. Each row in a theatre has 19 seats. There are 37 rows. About how many people can sit in the theatre?



11. Think about how you estimated in Questions 2, 3, and 9. Now describe a situation in which you might do each of the following.
- Estimate to predict an answer before you calculate.
 - Estimate to check your answer after you calculate.
 - Estimate to solve a problem without calculating.