Communicate the Ideas

1. **a)** Model $\frac{2}{3} \times \frac{1}{3}$ using manipulatives or diagrams.

b) Which method did you choose? Explain why you chose it.

2. Brendan calculated $\frac{3}{5} \times \frac{2}{5}$ as follows:

$\frac{3}{5} \times \frac{2}{5} = \frac{6}{5}$

a) What mistake did he make?

b) How could you use estimation to show Brendan that he made a mistake?

c) What is the correct product?

Check Your Understanding

Practise

For help with #3 and #4, refer to Examples 1 and 2 on pages 211–212.

3. Determine each product using paper folding or diagrams.

a) $\frac{5}{6} \times \frac{1}{2}$ **b)** $\frac{3}{4} \times \frac{5}{6}$

4. Use paper folding or diagrams to determine each product.

a) $\frac{1}{4} \times \frac{2}{3}$ **b)** $\frac{7}{10} \times \frac{1}{2}$

For help with #5 and #6, refer to Example 3 on page 213.

5. Estimate and calculate each product. Express your answer in lowest terms.

a) $\frac{3}{8} \times \frac{2}{3}$ **b)** $\frac{3}{7} \times \frac{1}{6}$ **c)** $\frac{3}{4} \times \frac{3}{4}$

6. Estimate and calculate each product. Express your answer in lowest terms.

a) $\frac{2}{5} \times \frac{4}{5}$ **b)** $\frac{7}{8} \times \frac{4}{5}$ **c)** $\frac{3}{4} \times \frac{4}{9}$

Apply

7. Tamar had $\frac{1}{2}$ of an apple pie in her refrigerator. She ate $\frac{1}{4}$ of this piece of pie. What fraction of a whole pie did she eat?

8. Marius spends $\frac{1}{3}$ of his time sleeping. While he is asleep, he dreams for $\frac{1}{4}$ of the time.

a) For what fraction of his time is Marius dreaming?

b) For how many hours a day is Marius dreaming?

9. About $\frac{1}{20}$ of the people in the world live in Canada or the United States. Of the people who live in Canada or the United States, about $\frac{1}{10}$ live in Canada. What fraction of the people in the world live in Canada?

10. At the age of four, the average person is about $\frac{3}{5}$ as tall as they will be as an adult. At birth, the average person is about $\frac{1}{2}$ as tall as they will be at the age of four. For the average person, what fraction is their height at birth of their height as an adult?

11. When the Summer Olympic and Paralympic Games were held in Athens, Greece, paralympic athletes won $\frac{6}{7}$ of Canada's total medals. Of the medals that Canadian paralympic athletes won, $\frac{7}{18}$ were gold medals.

a) What fraction of Canada's total medals were gold medals won by paralympic athletes?

b) Canada won a total of 84 medals. How many gold medals did Canadian paralympic athletes win?

12. Write a word problem that you can solve using the expression $\frac{3}{4} \times \frac{1}{2}$.

Extend

13. For a standard deck of 52 playing cards, the probability of randomly drawing a red card is $\frac{1}{2}$. The probability of randomly drawing a face card (jack, queen, or king) is $\frac{12}{52}$. What is the probability of randomly drawing a face card that is red?

14. Calculate. Express the product in lowest terms.

a) $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$

b) $\frac{2}{3} \times \frac{1}{4} \times \frac{2}{5}$

c) $\frac{3}{4} \times \frac{3}{4} \times \frac{2}{9}$

d) $\frac{5}{6} \times \frac{3}{8} \times \frac{7}{10}$

15. Copy each equation. Complete it using a fraction in lowest terms.

a) $\frac{\blacksquare}{\blacksquare} \times \frac{1}{2} = \frac{5}{16}$

b) $\frac{\blacksquare}{\blacksquare} \times \frac{3}{7} = \frac{1}{3}$

c) $\frac{2}{3} \times \frac{\blacksquare}{\blacksquare} = \frac{1}{2}$

d) $\frac{3}{4} \times \frac{\blacksquare}{\blacksquare} = \frac{5}{8}$

16. Use the sum and the product of two fractions to identify the fractions.

a) sum $\frac{1}{2}$; product $\frac{1}{16}$

b) sum $\frac{5}{6}$; product $\frac{1}{6}$

c) sum $\frac{2}{3}$; product $\frac{1}{12}$

MATH LINK

The area of British Columbia is about $\frac{1}{10}$ of the area of Canada. The Pacific Maritime ecozone covers about $\frac{1}{5}$ of the area of British Columbia. What fraction of the area of Canada does the Pacific Maritime ecozone cover?