Unit 3, Lesson 9

Apply Fraction Multiplication

Let's solve problems about flags.

Warm-up

Number Talk: Fraction Multiplication

Find the value of each expression mentally.

- $\frac{1}{3} \times \frac{3}{5}$
- $\frac{2}{3} \times \frac{3}{5}$
- $\frac{5}{3} \times \frac{3}{5}$
- $\frac{2}{3} \times \frac{13}{5}$

Activity 1

Flags

Jada has a small replica of the flag of Thailand.

It is 5 inches wide and $7\frac{1}{2}$ inches long.



1. What is the area of the flag? Explain or show your reasoning.

2. Each red stripe is $\frac{5}{6}$ inches wide. What is the area of each red stripe? Explain or show your reasoning.

3. The blue stripe is $\frac{10}{6}$ inches wide. What is the area of the blue stripe? Explain or show your reasoning.

Activity 2

More Flags



Han has a replica of the flag of Colombia.

It is $3\frac{1}{2}$ inches wide and $5\frac{1}{4}$ inches long. The yellow stripe is $\frac{1}{2}$ of the width of the flag. The blue and red stripes are each $\frac{1}{4}$ of the width.

1. $\frac{1}{4} \times 3\frac{1}{2} = \frac{7}{8}$. The answer is $\frac{7}{8}$ inch. What is the question?

2. $\frac{1}{2} \times 3\frac{1}{2} = \frac{7}{4}$ and $\frac{7}{4} \times \frac{21}{4} = \frac{147}{16}$. The answer is $\frac{147}{16}$ square inches. What is the question?

Section A Summary

We learned how to multiply different kinds of fractions.

First, we learned how to multiply a unit fraction by a unit fraction.

Example: **A**

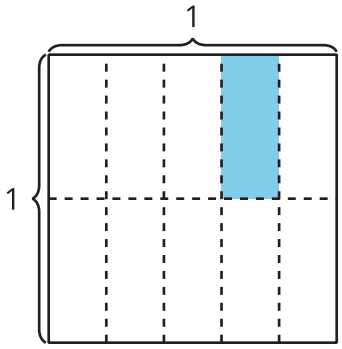

Diagram A shows $\frac{1}{5}$ of $\frac{1}{2}$ of a square is the same size as $\frac{1}{10}$ of the whole square. So, $\frac{1}{5} \times \frac{1}{2} = \frac{1}{10}$.

Next, we learned how to multiply a unit fraction by a non-unit fraction.

Example: **B**

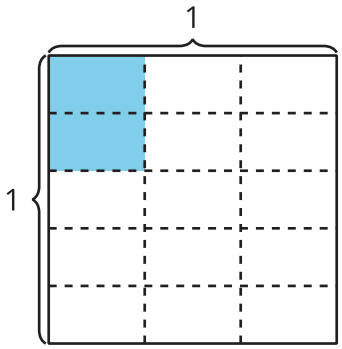

Diagram B shows $\frac{2}{5}$ of $\frac{1}{3}$ of a square is the same size as $\frac{2}{15}$ of the whole square. So, $\frac{2}{5} \times \frac{1}{3} = \frac{2}{15}$.

Finally, we learned how to multiply a non-unit fraction by a non-unit fraction.

Example: **C**

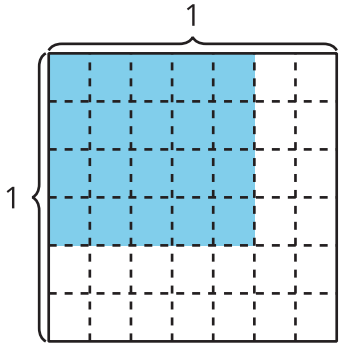

Diagram C shows 4×5 or 20 pieces shaded with 6×7 or 42 pieces in the whole square.

We can use multiplication to represent the relationship.

- Find the numerator, $4 \times 5 = 20$
- Find the denominator, $6 \times 7 = 42$
- Represent the relationship with an equation: $\frac{4}{6} \times \frac{5}{7} = \frac{20}{42}$