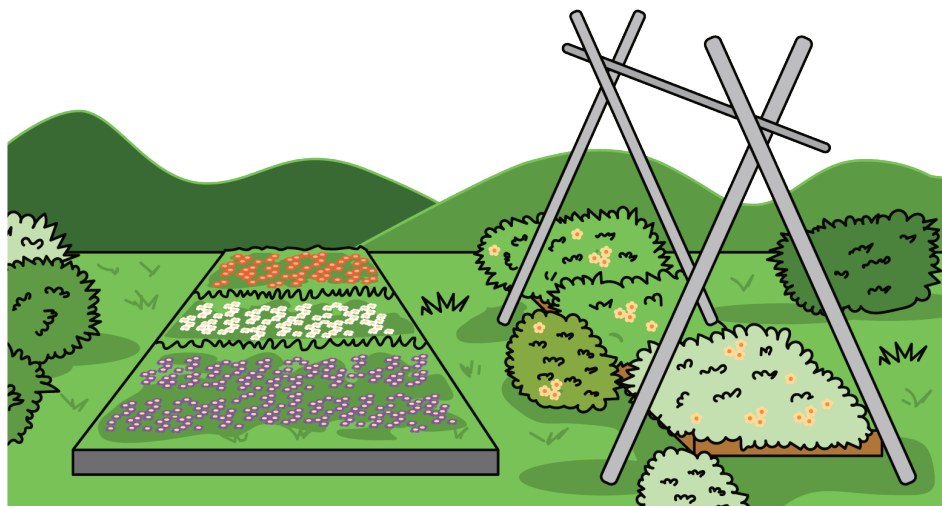# Lesson 16: Estimate Products
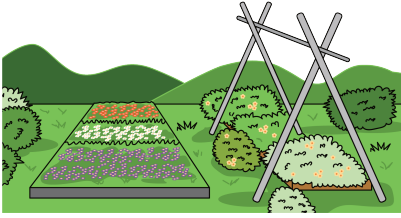
- Let's estimate products of a whole number and a fraction.

Warm-up: Notice and Wonder: Garden Size

What do you notice? What do you wonder?

16.1: Priya's Garden

Priya has enough materials to build a garden that is 36 square feet.

Choose **all** the side lengths that are reasonable for her garden. Be prepared to explain your thinking to your partner.

1. 9 feet by $4\frac{2}{3}$ feet

2. 9 feet by $3\frac{8}{9}$ feet

3. 12 feet by $2\frac{11}{12}$ feet

4. 9 feet by $2\frac{2}{3}$ feet

16.2: Too High, Too Low, Just About Right

1. Write a whole number product that is slightly less than, slightly greater than, or about equal to the value of $7 \times 12\frac{8}{9}$.

   a. slightly less:

   b. slightly greater:

   c. just right:

2. Write a whole number product that is slightly less than, slightly greater than, or about equal to the value of $9 \times 4\frac{2}{29}$.

   a. slightly less:

   b. slightly greater:

   c. just right:

3. Without calculating, use the numbers 2, 3, 5, 6, and 7, to complete the expression with a value close to 20.

$$ \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \frac{\boxed{}}{\boxed{}} $$

4. Explain how you know your expression represents a value close to 20.

   _____

   _____

Section Summary

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In this section, we learned how to find the area of a rectangle with a fractional side length. The shaded region has an area of $4 \times \frac{2}{3}$ because there are 4 groups of $\frac{2}{3}$ of a square unit shaded. The area is $\frac{8}{3}$ or $2\frac{2}{3}$ because there are 8 shaded parts and each one is $\frac{1}{3}$ of a square unit.
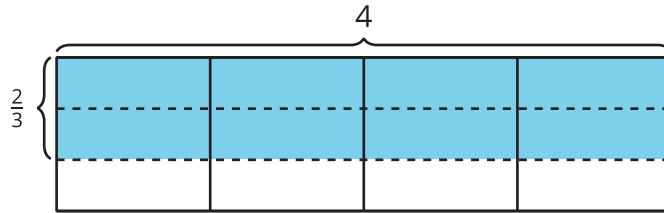
We also learned to multiply a mixed number by a whole number. We used area diagrams and expressions to see why our strategies work. For example, to solve $3\frac{3}{4} \times 2$, we can use the expression $(3 \times 2) + (\frac{3}{4} \times 2)$. We can see both of these expressions in the diagram.