Just In Time Quick Check
Standard of Learning (SOL) 5.6b

Strand: Computation and Estimation

Standard of Learning (SOL) 5.6b *The student will solve single-step practical problems involving multiplication of a whole number, limited to 12 or less, and a proper fraction, with models.*

Grade Level Skills:

- Solve single-step practical problems involving multiplication of a whole numbers, limited to 12 or less, and a proper fraction (e.g., $6 \times \frac{1}{3}$, $\frac{1}{4} \times 8$, $9 \times \frac{2}{3}$), with models. The denominator will be a factor of the whole number and answers should be expressed in simplest form.
- Apply the inverse property of multiplication in models. (For example, use a visual fraction model to represent $\frac{4}{4}$ or 1 as the product of $4 \times \frac{1}{4}$.

## Just in Time Quick Check

Just in Time Quick Check Teacher Notes

Supporting Resources:

- VDOE Mathematics Instructional Plans (MIPS)
  - 5.6ab – Enough Room: Adding and Subtracting Fractions (Word)/PDF Version
  - 5.6b – Multiplying Fractions and Whole Number (Word)/PDF Version
  - 5.6b – Multiplying Fractions with Proper Fractions (Word)/PDF Version
- VDOE Co-Teaching Mathematics Instruction Plans (MIPS)
  - 5.6b – Multiplying Fractions by Whole Number (Word)/PDF Version
- VDOE Algebra Readiness Formative Assessments
  - SOL 5.6b (Word)/PDF Version
- VDOE Algebra Readiness Remediation Plans
  - Problem Solving – Strategies for Finding the Hidden Question (Word)/PDF Version
- VDOE Word Wall Cards: Grade 5 (Word) | (PDF)
  - Unit Fraction Multiplication
- Desmos Resource
  - Multiplying Fractions - In this activity, students explore contexts and models that build an understanding of fraction multiplication (whole number multiplied by a proper fraction).

Supporting and Prerequisite SOL: 5.4, 5.6a, 4.5a, 4.5b, 4.5c, 3.5

SOL 5.6b - Just in Time Quick Check

1. Sally walked two-thirds of a mile for 9 days in a row. Use the model below to determine how far she walked in 9 days?
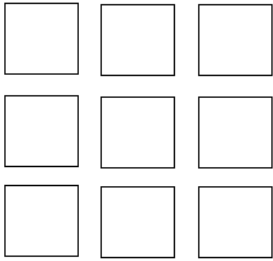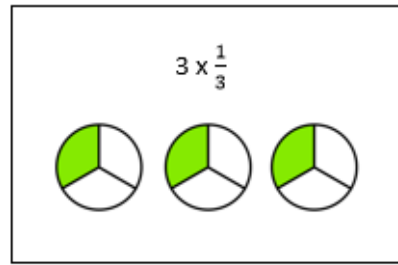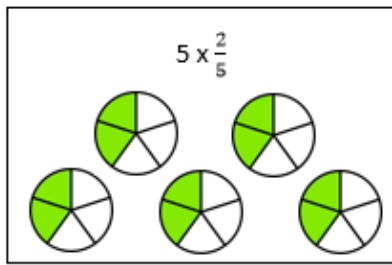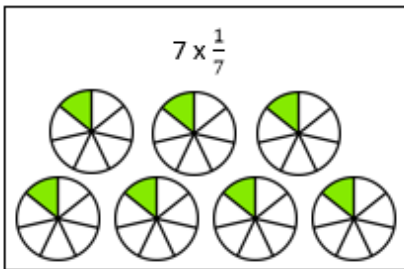

2. Each morning the dog eats $\frac{3}{4}$ a can of dog food for breakfast. This model represents how much the dog eats each morning.

   How many cans of dog food are needed in order to have enough food to feed the dog for 8 days?
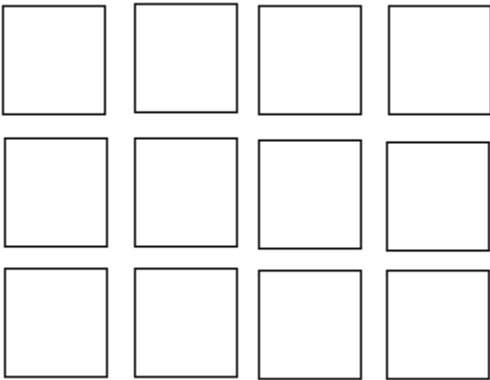
3. Which of the following problems has a product of exactly 1? Circle all correct answers.

$7 \times \frac{1}{7}$

$5 \times \frac{2}{5}$

$3 \times \frac{1}{3}$

4. A container of popcorn was purchased for a party. The container held exactly 12 cups of popcorn. The model below represents one cup of popcorn.
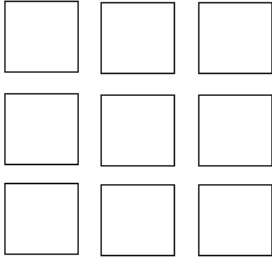

If the children at the party ate exactly $\frac{3}{4}$ of the total amount of popcorn, how many cups of popcorn did the children eat?

# SOL 5.6b - Just in Time Quick Check Teacher Notes

1. Sally walked two-thirds of a mile for 9 days in a row. Use the model below to determine how far she walked in 9 days.

One common misconception when multiplying a fraction by a whole number is that students may multiply both the numerator and denominator by the whole number or add the denominators through repeated addition. If students get an answer of $\frac{18}{27}$, then these students will need additional support representing multiplication of fractions through models such as fraction strips, pattern blocks, repeated addition, or area models. Refer to the Grade 5 Curriculum Framework for additional models when representing multiplication of fractions.

There are several different strategies to use when solving this problem. Some students may use the given model to solve the problem by circling $\frac{2}{3}$ of the nine circles. Other students may use repeated addition to solve this problem. Through class discussions the strategies should be connected in order for students to apply this skill when multiplying fractions. Students should identify that when multiplying a fraction by a whole number, they are finding a part of the whole and the product will be smaller than the whole number.

2. Each morning the dog eats $\frac{3}{4}$ a can of dog food for breakfast. This model represents how much the dog eats each morning.
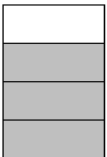
How many cans of dog food are needed in order to have enough food to feed the dog for 8 days?

Some students may answer that 8 cans of dog food are needed. This misconception may indicate that the student may have difficulty multiplying the fraction by 8. When multiplying a whole number by a fraction, it is important for students to recognize that it is the same as multiplication of whole numbers. Just like 8 x 4 can be thought of as 8 groups of 4, $8 \times \frac{3}{4}$ is the same as 8 groups of $\frac{3}{4}$.

3. Which of the following problems has a product of exactly 1? Circle all correct answers.
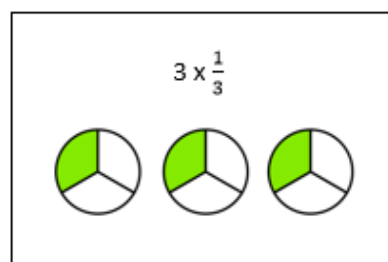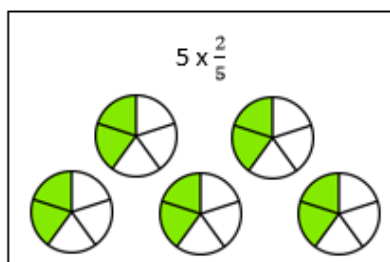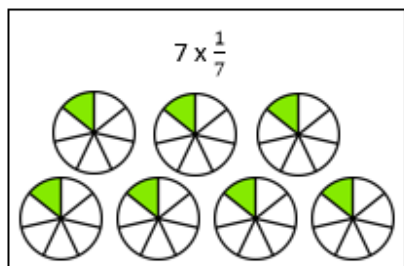

Students should be able to apply the inverse property of multiplication by recognizing that every number has a multiplicative inverse and the product of the number and its multiplicative inverse is 1. If students are unable to identify the two problems that have a product of 1, then these students will need additional practice modeling multiplication of fractions with a focus on applying the inverse property of multiplication. An activity to help develop a greater understanding is to explore models such as fraction strips or fractions circles, identifying the number of unit fractions needed to equal a whole, and then connecting this model to a number sentence.

4. A container of popcorn was purchased for a party. The container held exactly 12 cups of popcorn. The model below represents one cup of popcorn.

If the children at the party ate exactly $\frac{3}{4}$ of the total amount of popcorn, how many cups of popcorn did the children eat?
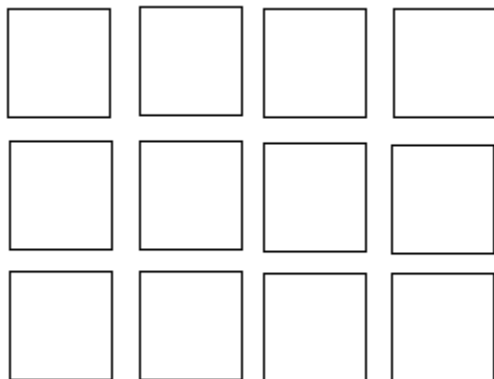
Some students have a difficult time identifying groups of a unit fraction using a set model. If students are unable to identify $\frac{1}{4}$ of 12, then they will have a difficult time applying this concept to identify the product of three groups of $\frac{1}{4}$ x 12. Exploring and using models to multiply a unit fraction by a whole number will be necessary in order to connect this concept to other fractions of the same denominator.

There are several different strategies that students can use when solving this problem. Did the students recognize the problem as $\frac{3}{4}$ of 12 or 12 groups of $\frac{3}{4}$? Discussing the commutative property of multiplication will be beneficial when discussing the strategies used to solve this problem. It is important to first identify the strategies and the number sentence students used to determine the nature of the error or misconception.