Lesson Notes 6.5
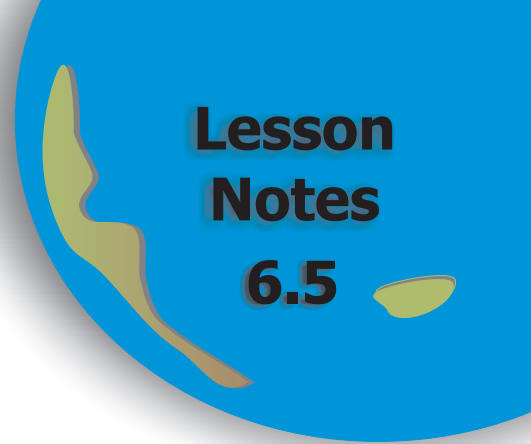
Module 6   Computational Fluency of Fractions
Lesson 5   Multiplying Fractions

Lesson Objectives

- Model multiplication of fractions, including mixed numbers, using diagrams and/or illustrations of manipulatives.
- Develop and use algorithms for multiplying fractions.

Subtopic 1   Multiplying Fractions with and Without Models

Multiplying Fractions
- Multiply the **numerators**.
- Multiply the **denominators**.
- Write the product in **simplest form**.

1 $\dfrac{5}{7}$ of John's video games are sports games. $\dfrac{14}{15}$ of these sports games are basketball games. What fraction of John's video games are basketball games? If John has 42 video games, how many are basketball games?

$$\frac{5}{7} \times \frac{14}{15} = \frac{70}{105} = \frac{70 \div 35}{105 \div 35} = \frac{2}{3}$$

$\dfrac{2}{3}$ **of John's video games are basketball games.**

$$\frac{2}{3} \times \frac{42}{1} = \frac{84}{3} = 28$$

John has 28 basketball video games.

2   Kody walks $\dfrac{3}{4}$ of a mile every day. How many miles does he walk in 12 days?

$$\frac{3}{4} \times \frac{12}{1} = \frac{36}{4} = \frac{9}{1} = 9$$

Kody walks nine miles.

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Subtopic 2   **Simplifying Fractions Before Multiplying**

Simplifying Fractions Before Multiplying
- Simplify **fractions** by dividing out common factors.
- Multiply the **numerators**.
- Multiply the **denominators**.
- The **product** will be in simplest form.

3 $\dfrac{9}{20}$ of the students at Stellar Elementary School eat breakfast. $\dfrac{8}{27}$ of these students eat breakfast at school. What fraction of all students at Stellar Elementary School eat breakfast at school? If the school has 540 students, find the total number of students who eat breakfast at school.

$$\frac{9}{20}\times\frac{8}{27}$$

$$\frac{\cancel{9}^{\,1}}{\cancel{20}_{\,5}}\times\frac{\cancel{8}^{\,2}}{\cancel{27}_{\,3}}=\frac{1}{5}\times\frac{2}{3}=\frac{2}{15}$$

$\dfrac{2}{15}$ **of the students eat breakfast at school.**

$$\frac{2}{15}\times\frac{540}{1}=\frac{1080}{15}=72$$

Seventy-two students eat breakfast at school.

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4 $\frac{8}{9}$ of the students stay after school for extracurricular activities, and $\frac{12}{13}$ of these students play sports. What fraction of the students stays after school to play sports? If the total number of students in the school is 2,808, how many students play sports?

$$\frac{8}{9} \times \frac{12}{13}$$

$$\frac{8}{\cancel{9}_3} \times \frac{\cancel{12}^4}{13} = \frac{8}{3} \times \frac{4}{13} = \frac{32}{39}$$

$\frac{32}{39}$ of the students stay after school to play sports.

$$\frac{2808}{1} \times \frac{32}{39} = \frac{89,856}{39} = 2304$$

There are 2304 students who play sports.

Subtopic 3   **Multiplying with Mixed Numbers**

5 If Stacey rides a school bus $4\frac{8}{9}$ miles every week, how many miles will she ride in three weeks?

$$4\frac{8}{9} \times 3 = \frac{44}{\cancel{9}_3} \times \frac{\cancel{3}^1}{1} = \frac{44}{3} = 14\frac{2}{3}$$

Stacy will ride $14\frac{2}{3}$ miles in three weeks.