



Topic C

Multiplication of a Whole Number by a Fraction

5.NF.4a

Focus Standard:	5.NF.4a	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product of $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.)
Instructional Days:	4	
Coherence -Links from:	G4–M5	Fraction Equivalence, Ordering, and Operations
-Links to:	G6–M2	Arithmetic Operations Including Division of Fractions

In Topic C, students interpret finding a fraction of a set ($\frac{3}{4}$ of 24) as multiplication of a whole number by a fraction ($\frac{3}{4} \times 24$) and use tape diagrams to support their understandings (**5.NF.4a**). This, in turn, leads students to see division by a whole number as being equivalent to multiplication by its reciprocal. That is, division by 2, for example, is the same as multiplication by $\frac{1}{2}$.

Students also use the commutative property to relate fraction of a set to the Grade 4 repeated addition interpretation of multiplication by a fraction. This offers opportunities for students to reason about various strategies for multiplying fractions and whole numbers. Students apply their knowledge of fraction of a set and previous conversion experiences (with scaffolding from a conversion chart, if necessary) to find a fraction of a measurement, thus converting a larger unit to an equivalent smaller unit (e.g., $\frac{1}{3}$ min = 20 seconds and $2\frac{1}{4}$ feet = 27 inches).

A Teaching Sequence Toward Mastery of Multiplication of a Whole Number by a Fraction

Objective 1: Relate fractions as division to fraction of a set.
(Lesson 6)

Objective 2: Multiply any whole number by a fraction using tape diagrams.
(Lesson 7)

Objective 3: Relate a fraction of a set to the repeated addition interpretation of fraction multiplication.
(Lesson 8)

Objective 4: Find a fraction of a measurement, and solve word problems.
(Lesson 9)