Topic D

Fraction Expressions and Word Problems

**5.OA.1, 5.OA.2, 5.NF.4a, 5.NF.6**

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| Focus Standard: | 5.OA.1 | Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. |
| 5.OA.2 | Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation “add 8 and 7, then multiply by 2” as 2 × (8 +7). Recognize that 3 × (18932 + 921) is three times as large as 18932* *+ 921, without having to calculate the indicated sum or product.* |
| 5.NF.4a | Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.1. Interpret the product of *(a/b) × q* as *a* parts of a partition of *q* into *b* equal parts; equivalently, as the result of a sequence of operations *a* × *q* ÷ *b. For example, use a visual fraction model to show (2/3 × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)*
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| 5.NF.6 | Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. |
| Instructional Days: | 3 |   |
| Coherence -Links from: | G4–M2 | Unit Conversions and Problem Solving with Metric Measurement |
|  -Links to: | G6–M2 | Arithmetic Operations Including Division of Fractions |

Interpreting numerical expressions opens Topic D as students learn to evaluate expressions with parentheses, such as 3 × ($\frac{2}{3}-\frac{1}{5}$ ) or $\frac{2}{3}$ × (7 + 9) (**5.OA.1**). They then learn to interpret numerical expressions, such as *3 times the difference between* $\frac{2}{3}$ *and* $\frac{1}{5}$or *two thirds the sum of 7 and 9* (**5.OA.2**).Students generate word problems that lead to the same calculation (**5.NF.4a**)such as, “Kelly combined 7 ounces of carrot juice and 5 ounces of orange juice in a glass. Jack drank $\frac{2}{3}$ of the mixture. How much did Jack drink?” Solving word problems (**5.NF.6**)allows students to apply new knowledge of fraction multiplication in context, and tape diagrams are used to model multi-step problems requiring the use of addition, subtraction, and multiplication of fractions.

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| A Teaching Sequence Toward Mastery of Fraction Expressions and Word Problems |
| Objective 1: Compare and evaluate expressions with parentheses.  (Lesson 10) |
| Objective 2: Solve and create fraction word problems involving addition, subtraction, and multiplication.(Lessons 11–12) |