Just In Time Quick Check

Standard of Learning (SOL) 3.4d

Strand: Computation and Estimation

Standard of Learning (SOL) 3.4d

The student will solve single-step practical problems involving multiplication of whole numbers, where one factor is 99 or less and the second factor is 5 or less.

Grade Level Skills:

- Solve single-step practical problems involving multiplication of whole numbers, where one factor is 99 or less and the second factor is 5 or less.
- Apply strategies, including place value and the properties of multiplication and/or addition when multiplying and dividing whole numbers.

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Just in Time Quick Check Teacher Notes

Supporting Resources:

- VDOE Co-teaching Mathematics Instructional Plans
  - 3.4 - Multiplication and Division (Word) / PDF Version
- VDOE Word Wall Cards: Grade 3 (Word) | (PDF)
  - Multiply: Product
  - Multiplication: Set Model
  - Multiplication: Array Model
  - Multiplication: Area (array) Model
  - Multiplication: Number Line Model
  - Divide: Quotient
  - Division: Number Line and Array Models
  - Related Facts: Addition/Subtraction
  - Related Facts: Multiplication/Division

Supporting and Prerequisite SOL: 3.3b, 3.4a, 3.4b, 3.4c, 2.6a, 2.6b, 2.6c, 1.6

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SOL 3.4d - Just in Time Quick Check

Show how you solve each problem using pictures or words and a number sentence.

1. There are 36 pieces in one bag of candy. Jose has 4 of these bags of candy. How many pieces of candy does Jose have altogether?

2. Kim has 2 boxes of cards. Each box has 85 cards. What is the total number of cards in these 2 boxes?

3. Alex has 17 toy cars. Keisha has 3 times as many toy cars as Alex. How many toy cars does Keisha have?

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Common Errors/Misconceptions and their Possible Indications

Show how you solve each problem using pictures or words and a number sentence.

1. There are 36 pieces in one bag of candy. Jose has 4 of these bags of candy. How many pieces of candy does Jose have altogether?

   Students who rely on a "key word" strategy may see the word "altogether," add 36 and 4, and get the answer of 40. These students would benefit from experiences that focus on making sense of the context in a practical problem and solving a variety of problem types as described in the Grade 3 Curriculum Framework.

   Students who decompose 36 into 30 + 6 and multiply each part by 4 may have difficulty combining the partial products. Using concrete materials that are proportional (e.g., trains of ten, base-ten blocks, etc.) to create groups or an array that they can link to repeated addition may be helpful as students determine and record their solutions.

   Students who use the traditional algorithm may arrive at 162 (when recording the product of 4 and 6, students write 2 in the ones place and "carry" the 4) or 282 (when recording the product of 4 and 6, students write 2 in the ones place, "carry" the 4, add the 4 that was carried to the 3 in 36 and then multiply that sum by 4). These errors may indicate students have memorized a procedure that is not connected to place value understanding. These students would benefit from additional experiences using concrete manipulatives that model the base-ten system as they determine the answer to two-digit by one-digit problems. Opportunities for students to hear classmates' strategies and representations for solving multi-digit multiplication problems, then trying those strategies and representations with new problem situations, may help students develop flexible strategies for problem solving.

2. Kim has 2 boxes of cards. Each box has 85 cards. What is the total number of cards in these 2 boxes?

   Students who struggle with understanding the operational context of the problem may add the numbers together and find the total number of cards to be 89 (2 + 85 + 2 = 89). This error might also indicate that students are relying on a "key word" (total) rather than the full context of the practical problem. These students would benefit from more problem solving practice with a variety of problem types for both multiplication and addition, as described in the Grade 3 Curriculum Framework. Having students use concrete materials to represent and solve problems that use the same numbers, in which some problems represent an additive situation and others represent a multiplicative situation, can help students develop conceptual understanding for these operations.

3. Alex has 21 toy cars. Keisha has 3 times as many toy cars as Alex. How many toy cars does Keisha have?

   Students who are struggling with understanding the operational context of the problem may incorrectly represent the equation as 21 + 3 = 24 or 21 – 3 = 18. Students may use their knowledge of basic facts and divide, solving 21 ÷ 3 instead of 21 x 3. In both instances, students should be provided additional opportunities to develop and use strategies for solving a variety of practical multiplication problems. Using concrete materials to create groups or arrays that represent practical problems and determine solutions will help students to develop meaning for the operations. Experiences that allow time for students to consider other students' strategies and representations shared during number talks and classroom problem-solving discussions may also be helpful.