Just In Time Quick Check

Standard of Learning 3.4c

Strand: Computation and Estimation

Standard of Learning (SOL) 3.4c

The student will demonstrate fluency with multiplication facts of 0, 1, 2, 5, and 10.

Grade Level Skills:

- Demonstrate fluency with multiplication facts of 0, 1, 2, 5, and 10.
- Apply strategies, including place value and the properties of multiplication and/or addition when multiplying and dividing whole numbers.

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Supporting Resources:

- VDOE Mathematics Instructional Plans (MIPS)
  - 3.4c - Multiplication Baseball (Word) / PDF Version
- 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: 3.4a, 2.2a, 1.1d, 1.7a, 1.7b

SOL 3.4c - Just in Time Quick Check

Solve the following problems and explain your reasoning for each row of problems.

1. 0 x 5 = 3 x 0 = 0 x 7 =

2. 8 x 1 = 1 x 4 = 6 x 1 =

3. 7 x 5 = 5 x 7 =

4. 4 x 10 = 6 x 10 = 8 x 10 =

5. 9 x 2 = 2 x 9 =

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Common Errors/Misconceptions and their Possible Indications

1. 0 x 5 = 3 x 0 = 0 x 7 =

Students who answer anything other than zero for the problems in #1 are likely applying their knowledge of addition or subtraction with a zero. They are not yet able to demonstrate an understanding of the multiplication property of zero, that the product of any number and zero is zero. Students who make this error would benefit from opportunities to explore and make sense of multiplying by zero groups or by groups of zero.

2. 8 x 1 = 1 x 4 = 6 x 1 =

Students who answer 9, 5, or 7 for these problems have added and would benefit from practice using manipulatives, diagrams, and symbols to develop a better understanding of the identify property of multiplication, a number does not change when it is multiplied by 1. Solving pairs of practical problems that represent multiplication and addition (e.g., a problem that can be represented by 8 x 1 = 8 paired with a problem that can be represented by 8 + 1 = 9) and using pictures and words to determine and represent the solution may help students build conceptual understanding.

3. 7 x 5 = 5 x 7 =

Some students may use repeated addition and count by 7's but miscount. These students may benefit from more experience with related facts to develop an understanding of the commutative property of multiplication. More experience with representations of related facts may help students conceptualize the commutative property. For example, an array model made up of 7 rows and 5 columns can be rotated to show 5 rows and 7 columns. (Note that either of these arrays can be used to represent 7 x 5.) Similarly, experiences modeling equal-sized jumps on a number line (7 jumps of 5 and 5 jumps of 7) reinforce the relationship among these related facts. Considering multiple representations for related facts will help students develop flexible strategies for multiplication and an understanding of the commutative property of multiplication.

4. 4 x 10 = 6 x 10 = 8 x 10 =

Students may add 4 and 10, 6 and 10, or even 8 and 10. These students would benefit from more experiences with a variety of practical multiplication problems and opportunities to determine the solution using manipulatives, diagrams, and symbols. For problems involving a factor of 10, students may also benefit from the use of a hundred chart when determining and modeling the solution.

More opportunities to hear peers explain their representations and solutions to practical multiplication problems may help students develop conceptual understanding of multiplication and can provide alternative efficient strategies for problem solving. Using basic facts in the variety of problem types described in the Grade 3 Curriculum Framework helps students build understanding while developing fluency.

4. 9 x 2 = 2 x 9 =

Students who use repeated addition may miscount as they add 9 + 9, or they may lose track as they add 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2. These students would benefit from the use of concrete materials, a number line, or a hundred chart to determine a solution.

For this problem, students may also see the relation to "doubles" in addition. Opportunities to hear classmates share their strategies and models and for discussions around the commutative property may expose students to alternative strategies they can try in new situations, building confidence and flexibility in problem solving.