

Collecting diagnostic assessment/clinical interview data to individualize targeted mathematics instruction

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**Role Play: Diagnostic assessment
Guided Practice
Grade 3 - 5**

Steps as you begin a diagnostic assessment

1. Choose your probe
2. Research misconceptions aligned with the Common Core State Standard
3. Read the problem to the student (to ensure reading the problem isn't interfering with math skills)
4. Observe
5. Ask probing questions
6. Have manipulatives on hand

Steps	Notes
Choose 1 assessment probe from the approved sources: Multiplication and Division Number Sentences (Tobey & Fagan, 2014, p. 9, 35 -40)	Alex went for a walk and saw four nests, each with three eggs. What number sentence can be used to find the total number of eggs? Min is making gift bags for her friends. If she puts 3 pencils in each bag and she has 12 pencils in all, how many gift bags can she make? What number sentence can be used to find the number of gift bags?
Determine the correct and incorrect choices (a, b, c, or d)	A $4 + 3 = ?$ B $4 + 4 + 4 + 4 = ?$ C $4 \times 3 = ?$ D $3 \times 3 \times 3 \times 3 = ?$ A $12 \times 3 = ?$ B $12 + 3 = ?$ C $12 \div 3 = ?$ D $3 \div 12 = ?$
Find aligning Common Core State Standard	3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, (e.g. by using drawings and equations with a symbol for the unknown number to represent the problem. Refer to shaded section of Table 2 for specific situation types.

<p>Research misconceptions on the assessment probe concept from the Kansas Flipbooks or the MN STEM Teacher Center</p>	<p>The difficulties students may have with this task (misconceptions):</p> <p>Students can overgeneralize the commutative property and think that $3 \div 15 = 5$ and $15 \div 3 = 5$ are the same equations. The use of models is essential in helping students eliminate this misunderstanding. Students often believe a symbol to represent a number once will represent the same quantity in the following problem. Presenting students with multiple situations in which they select a symbol and explain what it represents and then use the same symbol in another context will counter this misconception.</p> <p>Source: Kansas Flipbooks – p. 22</p> <p>Source: MN STEM Teacher Center</p> <p>Students may think... they should add when seeing the multiplication symbol. additively rather than multiplicatively. They may not see problems in terms of the number of groups and the number in each group. the commutative property of multiplication applies to division multiplication functions the same way as addition. For example, multiplying by 0 means nothing changes and multiplying by 1 means getting 1 more 2×7 and 7×2 are two separate facts and need to be learned independently. They are unable to apply the commutative property of multiplication when learning basic facts.</p>
<p>Anticipate why a student may choose an incorrect response / what might their reasoning be?</p>	<p>A $4 + 3 = ?$ B $4 + 4 + 4 + 4 = ?$ D $3 \times 3 \times 3 \times 3 = ?$</p> <p>C $4 \times 3 = ?$</p> <p>A $12 \times 3 = ?$ B $12 + 3 = ?$ D $3 \div 12 = ?$</p> <p>C $12 \div 3 = ?$</p>

Why did you choose this particular probe? What difficulties have you seen in your practice?	
What manipulatives you want to have available for the student to explain their reasoning? Math Learning Center Toy Theater Didax	
List one probing question you want to ask the student.	
Name one characteristic of a good diagnostic interviewer you want to be sure to use during this assessment.	
Interpreting the data What did you notice about the student's performance? Consider reasoning strategies, use of manipulatives, language, self-esteem, etc.	

Tobey, C. R., & Fagan, E. (2014). Uncovering student thinking about mathematics of the common core: Grades 3 – 5: 20 formative assessment probes. Thousand Oaks, CA: Corwin.

[Preview on Google Books](#)

1. Alex went for a walk and saw 4 nests each with 3 eggs.



What number sentence can be used to find the total number of eggs?

Circle one: Explain why you chose that number sentence:

A. $4 + 3 = ?$
 B. $4 + 4 + 4 + 4 = ?$
 C. $4 \times 3 = ?$
 D. $3 \times 3 \times 3 \times 3 = ?$

2. Min is making gift bags for her friends. If she puts 3 pencils in each bag and she has 12 pencils in all, how many gift bags can she make?



What number sentence can be used to find the number of gift bags?

Circle one: Explain why you chose that number sentence:

A. $12 \times 3 = ?$
 B. $12 + 3 = ?$
 C. $12 \div 3 = ?$
 D. $3 \div 12 = ?$