

MAT.04.ER.3.00NBT.E.037 Claim 3

Sample Item ID:	MAT.04.ER.3.00NBT.E.037
Grade:	04
Primary Claim:	Claim 3: Communicating Reasoning Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.
Secondary Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Primary Content Domain:	Numbers and Operations in Base Ten
Secondary Content Domain(s):	
Assessment Target(s):	3 E: Distinguish correct logic or reasoning from that which is flawed, and, if there is a flaw in the argument, explain what it is. 1 E: Use place-value understanding and properties of operations to perform multi-digit arithmetic.
Standard(s):	4.NBT.5
Mathematical Practice(s):	1, 2, 3, 4, 5
DOK:	3
Item Type:	ER
Score Points:	2
Difficulty:	H
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-specific attributes (e.g., accessibility issues):	
Notes:	Part of a PT item set

Pablo solved a multiplication problem using two different methods. He made a mistake in either Method W or Method Z.

Method W	Method Z													
23×49 $\begin{array}{r} 20 \times 9 = 180 \\ 3 \times 9 = 27 \\ 20 \times 4 = 80 \\ 3 \times 4 = + 12 \\ \hline 299 \end{array}$	23×49 <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center; border: none;">Area Model</th> <th style="text-align: center; border: none;">Rectangle Sections</th> </tr> </thead> <tbody> <tr> <td style="border: none;"></td> <td style="text-align: center; border: none;">40</td> <td style="text-align: center; border: none;">+ 9</td> </tr> <tr> <td style="border: none; vertical-align: middle;">20</td> <td style="border: 1px solid black; text-align: center; width: 150px; height: 100px;">800</td> <td style="border: 1px solid black; text-align: center; width: 50px; height: 100px;">180</td> </tr> <tr> <td style="border: none; vertical-align: middle;">+ 3</td> <td style="border: 1px solid black; text-align: center;">120</td> <td style="border: 1px solid black; text-align: center;">27</td> </tr> </tbody> </table> $\begin{array}{r} 1 \\ 800 \\ 120 \\ 180 \\ + 27 \\ \hline 1,127 \end{array}$		Area Model		Rectangle Sections		40	+ 9	20	800	180	+ 3	120	27
Area Model		Rectangle Sections												
	40	+ 9												
20	800	180												
+ 3	120	27												

Identify the method where Pablo made a mistake and explain what he should do to correct it.

Sample Top-Score Response:

Pablo made a mistake when using Method W. He should have multiplied 20 and 3 by 40 instead of by 4. He made a place-value error. Multiplying by 40 instead of by 4 would have resulted in the same answer as when he used Method Z (1,127).

Scoring Rubric:

Responses to this item will receive 0-2 points, based on the following:

- 2 points:** The student has a thorough understanding of how to multiply multi-digit whole numbers using more than one strategy to verify answers. The student indicates the place-value error in Method W and explains how to correct the error.
- 1 point:** The student has a partial understanding of how to multiply multi-digit whole numbers using more than one strategy to verify answers. The student indicates the place-value error in Method W, but does not fully explain how to correct the error.
- 0 points:** The student has little or no understanding of how to multiply multi-digit whole numbers using more than one strategy to verify answers. The student indicates that the error occurred in Method W, but does not identify the error correctly and includes an explanation that does not make sense mathematically. **OR** The student indicates an error in Method Z that does not exist.