core advocates

Don't Make Every Math Strategy a Separate Lesson: Developing Understanding and Skill with K-4 Operations

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Standard	Grade K	Grade 1	Grade 2	Grade 3	Grade 4
OA. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 - 4 = 13 - 3 - 1 = 10 - 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 - 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).					
NBT. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.					
OA. For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.					
NBT Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.					
NBT. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.					
NBT. Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.					
NBT. Fluently add and subtract multi-digit whole numbers using the standard algorithm.					
OA. Fluently add and subtract within 5.					
OA Apply properties of operations as strategies to add and subtract.[2] *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)*					
NBT. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.					
OA. Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.					
NBT. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.					

Computation Methods Students Learn to Use

Methods used for solving single-digit addition and subtraction problems

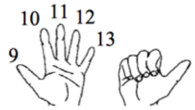
Level 1. Direct Modeling by Counting All or Taking Away. Represent situation or numerical problem with groups of objects, a drawing, or fingers. Model the situation by composing two addend groups or decomposing a total group. Count the resulting total or addend.

Level 2. Counting On. Embed an addend within the total (the addend is perceived simultaneously as an addend and as part of the total). Count this total but abbreviate the counting by omitting the count of this addend; instead, begin with the number word of this addend. Some method of keeping track (fingers, objects, mentally imaged objects, body motions, other count words) is used to monitor the count.

For addition, the count is stopped when the amount of the remaining addend has been counted. The last number word is the total. For subtraction, the count is stopped when the total occurs in the count. The tracking method indicates the difference (seen as an unknown addend).

Level 3. Convert to an Easier Problem. Decompose an addend and compose a part with another addend.

Methods Used for Solving Single-Digit Addition and Subtraction Problems

Levels	**8 + 6 = 14**	**14 – 8 = 6**
Level 1: Count all	Count All a 1 2 3 4 5 6 7 8 b 1 2 3 4 5 6 1 2 3 4 5 6 7 8 9 10 11 12 13 14 c	Take Away a 1 2 3 4 5 6 7 8 9 10 11 12 13 14 1 2 3 4 5 6 7 8 1 2 3 4 5 6 b c
Level 2: Count on	Count On 8 8 9 10 11 12 13 14	To solve 14 – 8 I count on 8 + ? = 14 I took away 8  9 10 11 12 13 14 8 to 14 is 6 so 14 – 8 = 6
Level 3: Recompose Make a ten (general): one addend breaks apart to make 10 with the other addend Make a ten (from 5's within each addend)	Recompose: Make a Ten 10 + 4 10 + 4	14 – 8: I make a ten for 8 + ? = 14 8 + 2 + 4 6 8 + 6 = 14
Doubles ± n	6 + 8 = 6 + 6 + 2 = 12 + 2 = 14	

Common Core Standards Writing Team. (2013, March 1). Progressions for the Common Core State Standards in Mathematics (draft). Front matter, preface, introduction. Counting and Cardinality/Operations and Algebraic Thinking. Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

link:https://commoncoretools.files.wordpress.com/2011/05/ccss_progression_cc_oa_k5_2011_05_302.pdf

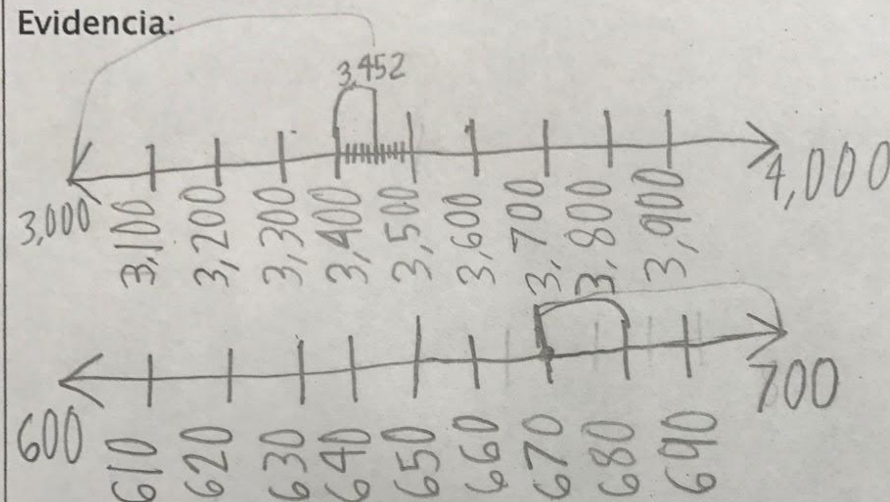
Note Taker for 1.OA.C.6 Student Interview Video

	Does the student know the problem from memory?	**If not, what strategy did the student use?** *Level 1: Counting All* *Level 2: Counting On* *Level 3: Recompose*
8 + 7 = ___	**Yes No**	
5 + 2 = ___	**Yes No**	
3 + 5 = ___	**Yes No**	
4 + 10 = ___	**Yes No**	
4 + ___= 8	**Yes No**	
___ + 5 = 9	**Yes No**	

4.NBT.1 Problema del día #1

El mes pasado, Tula Market vendió 3,452 tacos y 670 tortas. ¿Cuántos tacos y tortas vendieron en total el mes pasado? Usa modelos para mostrar tu evidencia.

Evidencia:



3,400 + 680 = 4

Declaración: ______________________________.

Jacob

4.NBT.1 Problema del día #1

El mes pasado, Tula Market vendió 3,452 tacos y 670 tortas. ¿Cuántos tacos y tortas vendieron en total el mes pasado? Usa modelos para mostrar tu evidencia.

Evidencia:

	m	c	d	u
	3,	4	5	2
+		6	7	0

4,122

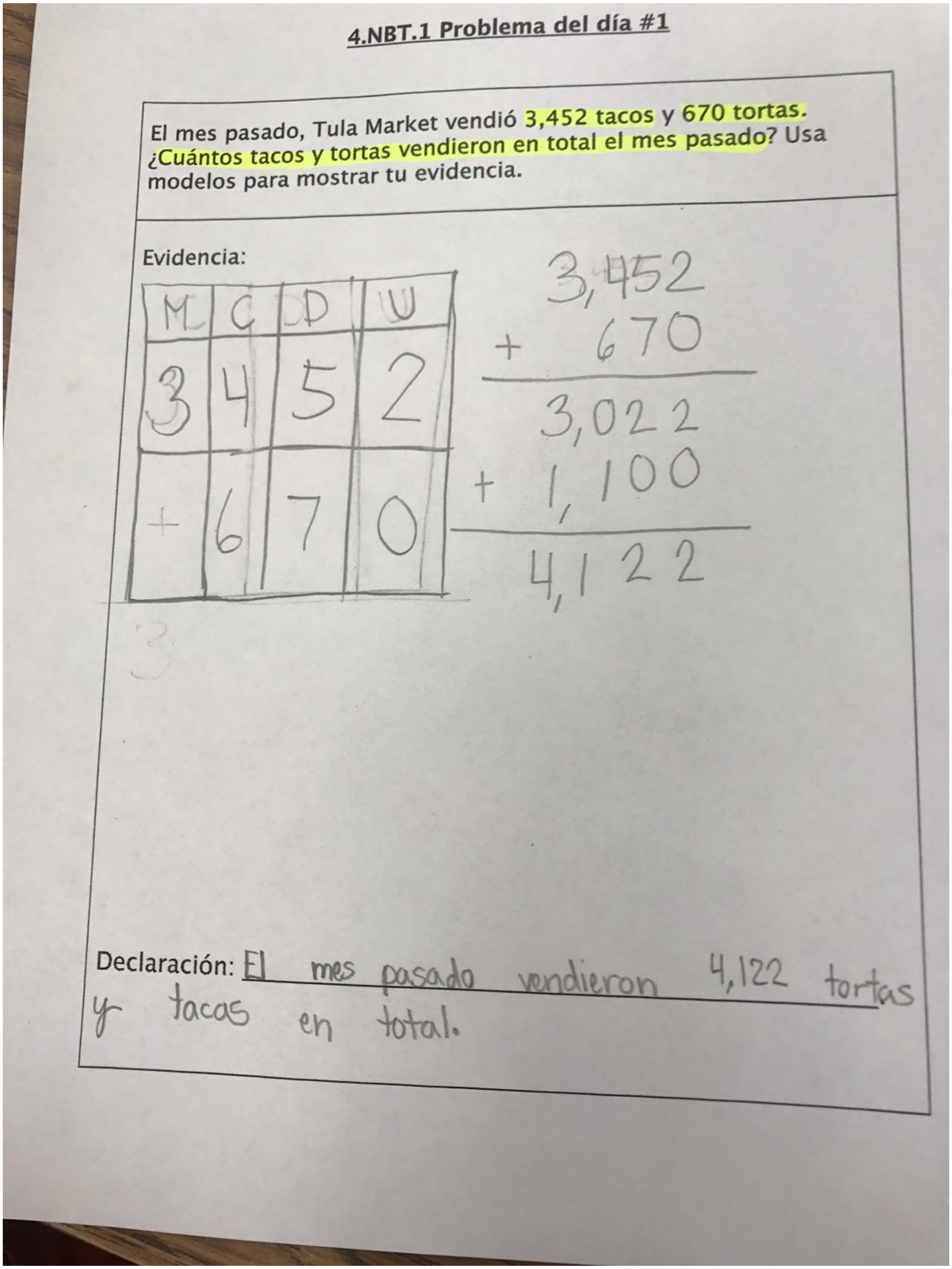
3,452 = 3,000 + 400 + 50 + 2

+ 670 = 600 + 70 + 0

4,122

Declaración: la tola market vindo 4,122 tacos y tortas

Lillian



4.NBT.1 Problema del día #1

El mes pasado, Tula Market vendió 3,452 tacos y 670 tortas. ¿Cuántos tacos y tortas vendieron en total el mes pasado? Usa modelos para mostrar tu evidencia.

Evidencia:

M	C	D	U
3	4	5	2
+	6	7	0

$$\begin{array}{r} 3{,}452 \\ +\ 670 \\ \hline 3{,}022 \\ +\ 1{,}100 \\ \hline 4{,}122 \end{array}$$

3

Declaración: El mes pasado vendieron 4,122 tortas y tacas en total.

Jake

4.NBT.1 Problema del día #1

El mes pasado, Tula Market vendió 3,452 tacos y 670 tortas. ¿Cuántos tacos y tortas vendieron en total el mes pasado? Usa modelos para mostrar tu evidencia.

Evidencia:

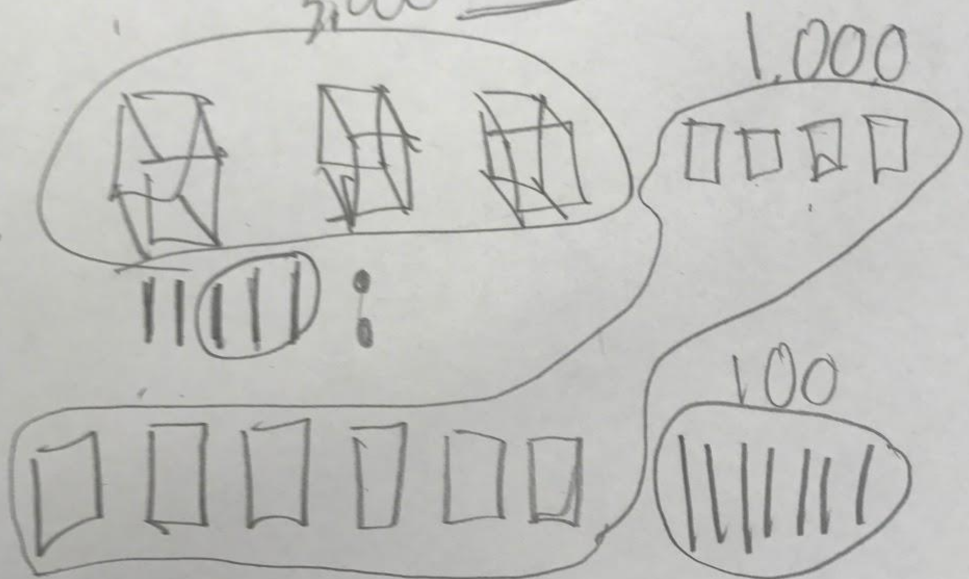
$$\begin{array}{r} 3{,}452 \\ +\ \ 670 \\ \hline 4{,}122 \end{array}$$

3,000 + 1,000 = 4,000

+100 + 20 + 2 = 127

$$\begin{array}{r} 4{,}000 \\ +\ \ 127 \\ \hline 4{,}122 \end{array}$$

3,000



Declaración: Tula Market tiene 4,127 tacos y tortas en total.

Ashley

4.NBT.1 Problema del día #1

El mes pasado, Tula Market vendió 3,452 tacos y 670 tortas. ¿Cuántos tacos y tortas vendieron en total el mes pasado? Usa modelos para mostrar tu evidencia.

Evidencia:

$$\begin{array}{r} {}^{1}3\overset{1}{4}52 \\ +\ \ 670 \\ \hline 4{,}122 \end{array}$$

Declaración: Tula Market vendió 4,122 tacos y tortas