ACHIEVE THE CORE

Addition and Subtraction within 20

2.OA.B.2 Fluency Mini-Assessment by Student Achievement Partners

OVERVIEW

This mini-assessment is designed to illustrate the important standard 2.OA.B.2, which sets an expectation for fluently adding and subtracting within 20 and—by the end of the grade—knowing single-digit sums from memory. This mini-assessment is designed for teachers to use either in the classroom, for self-learning, or in professional development settings to:

- Gain a better understanding of assessing fluency with, and memory of, single-digit sums and related differences;
- Use in professional development as an illustration of CCSS-aligned assessment problems; and,
- Evaluate students' understanding of 2.OA.B.2 in order to prepare to teach this material or to check fluency and memory near the end of the grade.

MAKING THE SHIFTS

This mini-assessment attends to focus as it addresses addition and subtraction, which are at the heart of the Grade 2 standards and the greatest part of the major work of the grade.[1] In terms of coherence, standard 2.OA.B.2 builds on content and skills introduced in earlier grades, for example in standards 1.OA.C.6 and 1.OA.D.8. Standard 2.OA.B.2 and this mini-assessment target *procedural skill and fluency* (in this case fluency and memory), one of the three elements of rigor.

2.OA.B.2
Fluently add and subtract within 20 using mental strategies. By end of grade 2, know from memory all sums of two one-digit numbers.

A CLOSER LOOK

Standard 2.OA.B.2 is a prime example of how "[t]he Standards are not written at uniform grain size" (K–8 Publishers' Criteria Spring 2013, p. 18). One cannot address this standard in a single day, lesson, or unit. It will take significant classroom time throughout the entire K–2 grade band for students to leave second grade meeting the standard.

The standard has two sentences. The first sentence sets an expectation of fluent (accurate and reasonably fast) computation with single-digit sums and related differences, using mental strategies. Standard 1.OA.C.6 lists mental strategies students should be using: counting on, making ten, using the relationship between addition and subtraction, and creating equivalent but easier or known sums. Students in Grade 1 used these strategies to build their understanding and gain fluency in addition and subtraction within 10. Now, in Grade 2, students continue this work, extending their fluency to all single-digit sums and related differences.

Using the relationship between addition and subtraction:
Answer 16 – 9 by knowing 7 + 9 = 16.

Making 10:
8 + 6
=8 + 2 + 4
=10 + 4
=14.

The second sentence of standard 2.OA.B.2 sets an expectation that students know single-digit sums from memory. This is a prerequisite for fluent multi-digit computation (see standards 2.NBT.B.5, 3.NBT.A.2, and 4.NBT.B.4). Students leaving grade 2 without having met standard 2.OA.B.2 in its entirety will be at a severe disadvantage during the remainder of their study of operations in grades 3–7.

[1] For more on the Major Work of the grade, see achievethecore.org/emphases.

Name:_____ Date:_____

$9 + 3 = \square$	$12 - 7 = \square$	$8 + 6 = \square$
$8 + \square = 12$	$16 - 8 = \square$	$\square - 7 = 8$
$\square + 5 = 14$	$4 + 7 = \square$	$15 - 6 = \square$
$8 + 3 = \square$	$14 - \square = 7$	$2 + 9 = \square$
$13 - \square = 4$	$5 + 6 = \square$	$9 + 7 = \square$
$18 - 9 = \square$	$6 + 6 = \square$	$13 - 5 = \square$
$7 + 6 = \square$	$17 - \square = 8$	

Name:_____ Date: _____

9 + 3 = 12	12 – 7 = 5	8 + 6 = 14
8 + 4 = 12	16 – 8 = 8	15 – 7 = 8
9 + 5 = 14	4 + 7 = 11	15 – 6 = 9
8 + 3 = 11	14 – 7 = 7	2 + 9 = 11
13 – 9 = 4	5 + 6 = 11	9 + 7 = 16
18 – 9 = 9	6 + 6 = 12	13 – 5 = 8
7 + 6 = 13	17 – 9 = 8	