ACHIEVE THE CORE

Multiplication and Division within 100

3.OA.C.7 Fluency Mini-Assessment by Student Achievement Partners

OVERVIEW

This mini-assessment is designed to illustrate the important standard 3.OA.C.7, which sets an expectation for fluently multiplying and dividing within 100 and—by the end of the grade—knowing single-digit products 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 products and related quotients;
- Use in professional development as an illustration of CCSS-aligned assessment problems; and,
- Evaluate students' progress toward 3.OA.C.7 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 multiplication and division, which are at the heart of the Grade 3 standards and the greatest part of the major work of the grade.[1] In terms of **coherence**, multiplying one-digit numbers sets the stage for multiplying multi-digit whole numbers and decimals, working with fractions, ratios, proportional relationships and algebra. Standard 3.OA.C.7 and this mini-assessment target *procedural skill and fluency* (in this case fluency and memory), one of the three elements of **rigor**.

3.OA.C.7

Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

A CLOSER LOOK

Standard 3.OA.C.7 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 grade 3 for students to leave grade 3 meeting the standard.

The standard has two sentences. The first sentence sets an expectation of fluent (accurate and reasonably fast) computation with single-digit products and related quotients. The standard lists mental strategies students should be using. The second sentence of the standard sets an expectation that students know single-digit products from memory. Students leaving grade 3 without having met standard 3.OA.C.7 in its entirety will be at a severe disadvantage during the remainder of their study of operations in grades 3–7 as well as in their work with fractions, ratios, proportional relationships, and algebra.

Using the relationship between multiplication and division:

Answer 42 ÷ 6 by knowing 7 × 6 = 42.

Using the distributive property:

$$\begin{aligned} & 8 \times 7 \\ = & 8 \times (5 + 2) \\ = & 8 \times 5 + 8 \times 2 \\ = & 40 + 16 \\ = & 56. \end{aligned}$$

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

Name: _____ Date: _____

9 × 2 = ___	___ × 7 = 56
24 ÷ 6 = ___	5 × 8 = ___
7 × 6 = ___	27 ÷ 3 = ___
35 ÷ 5 = ___	64 ÷ 8 = ___
9 × ___ = 36	___ × 7 = 21
2 × 4 = ___	45 ÷ 5 = ___
3 × 3 = ___	14 ÷ 7 = ___
36 ÷ 6 = ___	8 × ___ = 32
7 × 7 = ___	5 × ___ = 25
___ × 2 = 12	28 ÷ 4 = ___

Name: _____ Date: _____

Number facts are used only once to ensure the breadth of the standard is addressed.

9 × 2 = 18	8 × 7 = 56
24 ÷ 6 = 4	5 × 8 = 40
7 × 6 = 42	27 ÷ 3 = 9
35 ÷ 5 = 7	64 ÷ 8 = 8
9 × 4 = 36	3 × 7 = 21
2 × 4 = 8	45 ÷ 5 = 9
3 × 3 = 9	14 ÷ 7 = 2
36 ÷ 6 = 6	8 × 4 = 32
7 × 7 = 49	5 × 5 = 25
6 × 2 = 12	28 ÷ 4 = 7

Unknowns are intentionally placed in all positions to emphasize the relationship between multiplication and division.