1:9 Fluency within Ten

Teacher Notes

Central math concepts

During grade 1, repeated experiences with adding and subtracting will help students know the partner that makes 10 for any number and know all decompositions for any number less than 10. This work is a continuation of kindergarten problem solving (CCSS K.OA.A.4, K.OA.A.3). Knowing all the partners of 10 and the decompositions of all the numbers less than 10 supports extending addition and subtraction to larger problems within 20; see the Teacher Notes for task **1:11 Using Properties and Relationships** and the section on "Using Level 2 and Level 3 strategies to extend addition and subtraction problem solving beyond 10, to problems within 20" in the relevant *Progression* document,[†] pp. 14–17.

Grade 1 students solve problems in addition and subtraction within 20. Building on the kindergarten fluencies (CCSS K.OA.A.5), the grade 1 fluency goal is addition and subtraction within 10: that is, fluently finding or remembering[‡] sums of two addends with total 10 or less, and fluently finding the related differences, sometimes by remembering the relevant decomposition (CCSS 1.OA.C.6). Task 1:9 is keyed to this fluency goal: the task involves two sums of two addends with total 10 or less (4 + 5 and 2 + 6), two differences related to sums of two addends with total 10 or less (10 - 8 and 7 - 4), and two cases of partners of 10 (the unknown addend problems 4 + ☐ = 10 and 7 + ☐ = 10).

Relevant prior knowledge

The following mathematics knowledge may be activated, extended, and deepened while students work on the task: counting on; finding partners of 10 and partners of smaller numbers; and using the relationship between addition and subtraction.

Extending the task

How might students drive the conversation further?

- For each equation in task 1:9, students could write the rest of the equations in the fact family. For example, 7 - 4 = 3 ⇨ 7 - 3 = 4, 3 + 4 = 7, 4 + 3 = 7.

1:9 Write the missing numbers.

4 + 5 = ____	7 − 4 = ____
10 − 8 = ____	2 + 6 = ____
4 + ____ = 10	7 + ____ = 10

Answer

Left column: 9, 2, 6. *Right column*: 3, 8, 3.

Click here for a student-facing version of the task.

Refer to the Standards

1.OA.C.6; MP.6. Standards codes refer to www.corestandards.org. One purpose of the codes is that they may allow a task to shed light on the Standards cited for that task. Conversely, reading the cited Standards may suggest opportunities to extend a task or draw out its implications. Finally, Standards codes may also assist with locating relevant sections in curriculum materials, including materials aligned to comparable standards.

Aspect(s) of rigor

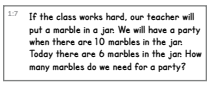
Procedural skill and fluency

Additional notes on the design of the task

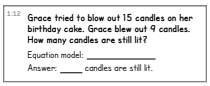
The task does not include a direction to "Tell how you got the answers" because the focus of the task is procedural skill and fluency.

Related Math Milestones tasks

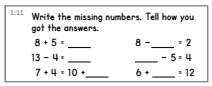
1:7



1:12

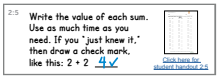


1:11

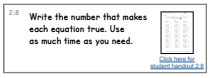


Task **1:7 Class Marble Jar** involves finding a partner of 10 in context. Solving task **1:12 Blowing Out Candles** involves finding the difference 8 - 3. Task **1:11 Using Properties and Relationships** includes sums and differences involving totals greater than 10, as well as equations of the form $C - \square = B$ and $\square - A = B$.

2:5

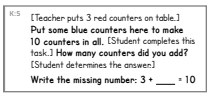


2:8

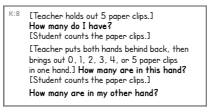


In later grades, tasks **2:5 Sums of Single-Digit Numbers** and **2:8 Fluency within the Addition Table** represent the culminating fluency and remembering goals for addition and subtraction within 20 (CCSS 2.OA.B.2).

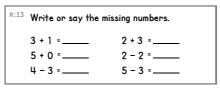
K:5



K:8



K:13



In earlier grades, task **K:5 Adding to Make a Group of Ten** involves finding a partner of 10, and task **K:8 Five Behind the Back** involves decompositions of 5. Task **K:13 Fluency within Five** concentrates on problems within the kindergarten fluency goal (CCSS K.OA.A.5).

Curriculum connection

1. In which unit of your curriculum would you expect to find tasks like 1:9? Locate 2-3 similar tasks in that unit. How are the tasks you found similar to each other, and to 1:9? In what specific ways do they differ from 1:9?
2. Thinking about the curriculum unit you identified, at what point in the unit might a task like 1:9 help students converge toward grade-level thinking about the important mathematics in the task? What factors would you consider in choosing when to use such a task in the unit?*

† Common Core Standards Writing Team. (2011, May 29). *Progressions for the Common Core State Standards in Mathematics (draft): K, Counting and Cardinality; K–5, Operations and Algebraic Thinking.* Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

‡ Although some or many grade 1 students will gain enough experiences during the year to know a few, or more than a few, single-digit sums from memory by the end of the year, remembering all the single-digit sums isn't a grade 1 expectation (CCSS 2.OA.B.2)

* Math Milestones™ tasks are not designed for summative assessment. Used formatively, the tasks can reveal and promote student thinking.

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Teacher Notes

Anticipating and responding to student thinking about the task

Imagine how students might think about the task, and what you might see and hear while they work.

On this page, you can write your thoughts on the following questions.

Solution Paths

- What solution paths might you expect to see?
- What representations might you see? What correspondences between those representations might be noticed by students (or be worth pointing out to students) and discussed by them?
- What misconceptions or partial understandings might be revealed as students work on the task? How could you respond to these positively and productively?

Language

- What might you expect to hear from students engaged with the task? What does that language reveal about their mathematical thinking, and how might you respond to different ways of thinking?
- If students are using early English or using multiple languages in an integrated communication system, how might you help their classmates see those mathematical ideas as valuable?
- Even when using nascent language, students are thinking and communicating their thinking. What might it look like to respond positively and productively to the mathematics in their thinking before giving feedback on the language used?

Identity, Agency, and Belonging

- How can you engage students' interests, experiences, or funds of knowledge?
- How can you build students' self-confidence as learners, thinkers, and doers of mathematics?
- What choices are there for a student to make in the task? How can you build students' agency to the point where they notice and make these choices to solve problems?
- How might one use feedback to build student agency? Where might there be opportunities to build students' self-confidence?