

## The Value of Sprints in *Eureka Math*<sup>®</sup>

**Myth:** The purpose of Sprints is to help students learn how to solve math problems quickly.

**Reality:** **Sprints offer concentrated fluency practice on specific skills and concepts.**

A well-managed and carefully timed routine is used in a Sprint to create an environment where students are fully engaged and focused on the activity<sup>7</sup>. Students are not expected to complete all of the problems and should not be assessed on their speed. Instead, Sprints are intentionally designed to provide students with opportunities to strive for and measure their improvement from one Sprint to the next within an engaging and motivating environment.

**Myth:** Sprints require students to rely on rote memorization or rote procedure.

**Reality:** **Sprints build understanding and flexible problem solving.**

Sprints support procedural fluency, a critical component of mathematical proficiency<sup>8</sup>, by fostering conceptual understanding and flexible problem solving. The problems in each Sprint are carefully selected and sequenced to help students recognize patterns and structures to solve subsequent, more complex problems.

$$12 = 4 \times \underline{\quad}$$

$$12 = 2 \times 2 \times \underline{\quad}$$

$$12 = 3 \times 2 \times \underline{\quad}$$

For example, consider the sequence of problems shown. The first problem contains an unknown factor. The second problem intentionally decomposes the known factor in the first problem, 4, into  $2 \times 2$ . The third problem is a variation of the second problem with one given factor changed. This type of sequence allows students to solve the problems by flexibly using factual recall, pattern recognition, and numeracy strategies.

**Myth:** Sprints introduce new learning in a lesson.

**Reality:** **Sprints distribute practice over time.**

Sprints distribute practice over time, which leads to better retention of learning<sup>9</sup>. The mathematics in the Sprint may be related to the lesson but it is not used to introduce new learning.

**Myth:** Sprints use problems that aren't appropriate for some students.

**Reality:** **Sprints let all students practice at the level appropriate for them.**

Sprints allow students to focus on their own growth and to strive for their personal best. The problems are intentionally designed to progress in difficulty from simple to complex, and students are not expected to complete all of the problems. Instead, each student does their personal best based on their current automaticity with a given concept or skill.

<sup>7</sup> Sagher, Yoram and M. Vali Siadat. "Building Study Skills in a College Mathematics Classroom." Research report, Richard J. Daley College, 1997. Education Resources Information Center (ED449834). <https://eric.ed.gov/?id=ED449834>.

<sup>8</sup> National Council of Teachers of Mathematics (NCTM). "Procedural Fluency in Mathematics: A Position of the National Council of Teachers of Mathematics." Accessed April 8, 2021. <https://www.nctm.org/Standards-and-Positions/Position-Statements/Procedural-Fluency-in-Mathematics/>. 2014.

<sup>9</sup> Brown, Peter, Henry L. Roediger III, and Mark A. McDaniel. *Make It Stick: The Science of Successful Learning*. Cambridge, MA: Harvard University Press. 2014.

Myth: Sprints should be a graded activity.

Reality: **Sprints are practice and formative assessments.**

Sprints are practice. They are not summative assessments. Sprints allow students to see their improvement from one Sprint to the next and provide teachers with a sense of each student's automaticity with a particular concept or skill. We strongly discourage grading Sprints.

## Suggested Methods of Instructional Delivery

### Directions for Administration of Sprints

Sprints are designed to develop fluency. They should be fun, adrenaline-rich activities that intentionally build energy and excitement. A fast pace is essential. During Sprint administration, teachers assume the role of athletic coaches. A rousing routine fuels students' motivation to do their personal best. Student recognition of increasing success is critical, and so every improvement is celebrated.

One Sprint has two parts with closely related problems on each. Students complete the two parts of the Sprint in quick succession with the goal of improving on the second part, even if only by one more.

With practice, the following routine takes about 9 minutes.

#### Sprint A

Pass Sprint A out quickly, face down on student desks with instructions to not look at the problems until the signal is given. (Some Sprints include words. If necessary, prior to starting the Sprint, quickly review the words so that reading difficulty does not slow students down.)

T: You will have 60 seconds to do as many problems as you can. I do not expect you to finish all of them. Just do as many as you can, your personal best. (If some students are likely to finish before time is up, assign a number to count by on the back.)

T: Take your mark! Get set! THINK!

Students immediately turn papers over and work furiously to finish as many problems as they can in 60 seconds. Time precisely.

T: Stop! Circle the last problem you did. I will read just the answers. If you got it right, call out "Yes!" If you made a mistake, circle it. Ready?

T: (Energetically, rapid-fire call the first answer.)

S: Yes!

T: (Energetically, rapid-fire call the second answer.)

S: Yes!

Repeat to the end of Sprint A or until no student has a correct answer. If needed, read the count-by answers in the same way the Sprint answers were read. Each number counted-by on the back is considered a correct answer.

- T: Fantastic! Now, write the number you got correct at the top of your page. This is your personal goal for Sprint B.
- T: How many of you got one right? (All hands should go up.)
- T: Keep your hand up until I say the number that is one more than the number you got correct. So, if you got 14 correct, when I say 15, your hand goes down. Ready?
- T: (Continue quickly.) How many got two correct? Three? Four? Five? (Continue until all hands are down.)

If the class needs more practice with Sprint A, continue with the optional routine presented below.

- T: I'll give you one minute to do more problems on this half of the Sprint. If you finish, stand behind your chair.

As students work, the student who scored highest on Sprint A might pass out Sprint B.

- T: Stop! I will read just the answers. If you got it right, call out "Yes!" If you made a mistake, circle it. Ready? (Read the answers to the first half again as students stand.)

### Movement

To keep the energy and fun going, always do a stretch or a movement game in between Sprints A and B. For example, the class might do jumping jacks while skip-counting by 5 for about 1 minute. Feeling invigorated, students take their seats for Sprint B, ready to make every effort to complete more problems this time.

### Sprint B

Pass Sprint B out quickly, face down on student desks with instructions not to look at the problems until the signal is given. (Repeat the procedure for Sprint A up through the show of hands for how many right.)

- T: Stand up if you got more correct on the second Sprint than on the first.
- S: (Stand.)
- T: Keep standing until I say the number that tells how many more you got right on Sprint B. If you got three more right on Sprint B than you did on Sprint A, when I say *three*, you sit down. Ready? (Call out numbers starting with one. Students sit as the number by which they improved is called. Celebrate the students who improved most with a cheer.)
- T: Well done! Now, take a moment to go back and correct your mistakes. Think about what patterns you noticed in today's Sprint.
- T: How did the patterns help you get better at solving the problems?
- T: Rally Robin your thinking with your partner for 1 minute. Go!

Rally Robin is a style of sharing in which partners trade information back and forth, one statement at a time per person, for about 1 minute. This is an especially valuable part of the routine for students who benefit from their friends' support to identify patterns and try new strategies.

Students may take Sprints home.