

# Grade 1

## The big ideas in Grade 1 include

- **understanding addition, subtraction, and strategies for addition and subtraction within 20;**
- **understanding whole number relationships and place value;**
- **understanding linear measurement.**

This course blueprint could start with either of the the two units that have no prerequisites: [1.1 Length and Number Lines](#) and [1.5 Polygons and Circles](#). We have chosen the first of these so that the number line is available right away.

Students begin the year developing the concepts of length and the number line. Even though the standards don't explicitly call for first graders to work with the number line, it can still be used as an instructional tool in first grade.

Next, students begin their work on addition and subtraction, returning to and extending the work they did in Kindergarten. Students' work with addition and subtraction throughout the year balances conceptual understanding, procedural fluency, and applications. By the end of first grade, students should be fluent with adding and subtracting within 10. Since fluency develops over time, work towards fluency starts at the beginning of the year. Students use drawings, number lines, and equations to connect concrete representations with more abstract mathematical symbols.

The units are structured so that students build their understanding of place value in order to add and subtract larger numbers. Students begin by focusing on "making a ten." They build on that idea by adding ones to a ten in order to compose the numbers 11–19. Students also work on counting, making progress towards counting to 120, and reading and writing numerals. Once students have a solid understanding of 10 as a bundle of ten ones, they focus on addition and subtraction within 20.

Students' work in geometry in Grade 1 is relatively modest. The placement of the geometry unit (1.E) in this course blueprint is intended to provide an interlude in the major work of the grade, allowing students to process the work they did in the first four units. However, this unit can come at any time, as it has no prerequisites. Much of the work in geometry that students do in Grade 1 foreshadows important ideas that come to fruition in later grades, such as the notion of a defining attribute and the implications of composing and decomposing geometric figures and how this relates to geometric measurement. Students' Grade 1 work in geometry is selected to support their understanding of numbers and operations.

As students' understanding of and skill with addition and subtraction deepens, they begin to work with two-digit numbers. They find the sum of a two-digit number and a one-digit number, and of a two-digit number and a multiple of 10. Students' work in Grade 1 culminates in a unit where they can put all of their acquired knowledge and skill to use, capitalizing on their fluency with adding and subtracting within 10.

Note that this course blueprint is only one of many possible ways of arranging a sequence of topics designed to achieve the standards. It is a continually evolving document and we welcome your comments [here](#).

## 1.1 Length and the Number Line

### In this unit students

- **measure lengths by iterating length units;**
- **use an understanding of length to introduce the number line.**

Students compare the lengths of two objects (shorter vs. longer) and order three objects by length. They lay multiple copies of a shorter object (the length unit) end to end without gaps or overlaps to develop an understanding of measuring length. Objects that represent length units should be long and skinny and as similar to a line segment as possible (e.g. toothpicks, popsicle sticks, cuisenaire rods, unsharpened pencils etc.) so there is no confusion about which dimension of the three possible dimensions of the 3-D object is being used as the length unit.

Students begin their work with standard units as well. A good transitional activity would be using a 12-inch ruler to measure the side-lengths of a train of 1-inch tiles; this makes the connection between iterating length units (the tiles) and the structure of the ruler clearer. This also sets up the introduction of number lines. Students need to see the subtle connection between points on the number line and the length of the segment between 0 and that point. Students practice counting and reading and writing numerals within the context of measuring and representing lengths and number lines.

Comment on this unit [here](#).

### 1.1.1 Test

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Comment on this unit [here](#).

### **Tasks**

[2.OA A Pencil and a Sticker](#)

## 1.2 Adding and Subtracting within 10

**In this unit students build on their work in Kindergarten on addition and subtraction within 10 to include new types of addition and subtraction contexts.**

Students focus on the important work of adding and subtracting, building on what they learned in Kindergarten. Their work with addition and subtraction throughout the year balances developing conceptual understanding, procedural fluency, and applications. By the end of Grade 1, students should be fluent with adding and subtracting within 10. Since fluency develops over time, work towards fluency begins in this unit.

Students solve word problems using drawings and number lines. They represent these problems with equations, using a symbol for the unknown number. They begin to explore properties of operations to help develop flexibility with written and mental computation. They work toward developing a repertoire of strategies for addition and subtraction and work to make those strategies explicit. Working with drawings, number lines, and equations helps students connect concrete representations to more abstract mathematical symbols.

Comment on this unit [here](#).

## 1.3 Making Ten

### In this unit students

- **find all decompositions of 10 and write them using equations;**
- **represent a number between 11 and 19 as a bundle of ten and some ones;**
- **take a first pass at adding one-digit numbers whose sum is greater than 10.**

The units are structured so students build their understanding of place value in order to add and subtract larger numbers. This unit focuses on making ten, a foundational idea for the understanding of place value. Students learn that 10 ones bundle to become a “ten.” They find all decompositions of 10 and represent them with equations. They build on that idea by adding ones to a ten in order to compose the numbers 11–19. Knowing that each digit in a two-digit number represents a value that is not the same even if the numeral is the same is important foundational work for developing a strong number sense. Students also work on counting (making progress towards counting to 120) and reading and writing numerals. This work supports students developing fluency with adding and subtracting within 10. They answer questions like “How many more to make 10?” and physically bundle objects in groups of 10. The number line supports all of this work.

Comment on this unit [here](#).

## 1.4 Adding and Subtracting within 20

### In this unit students

- **solve problems in all adding and subtracting contexts within 20;**
- **make adding and subtracting strategies within 20 explicit.**

Once students have a solid understanding of 10 as a bundle of 10 ones, they focus on addition and subtraction within 20. In this unit they solve problems in all adding and subtracting contexts within 20 and work to make their strategies for adding and subtracting explicit. One key strategy, making a ten, plays a prominent role in this work, as does the number line.

Comment on this unit [here](#).

## 1.5 Polygons and Circles

### In this unit students

- **build and draw shapes based on attributes;**
- **create composite shapes from two- and three-dimensional shapes;**
- **partition circles and rectangles into equal shares.**

This unit has no prerequisites, so could potentially be taught at a different place in the year. We have chosen its placement here to provide an interlude in the major work of the grade, allowing students to process what they have learned in the first four units.

Students learn about attributes that define shapes and ones that do not. For example, triangles are defined as being closed shapes with three straight sides, while color, size, and orientation do not define any shape. Building and drawing shapes based on defining attributes helps students develop abstract representations for everyday objects they encounter in the world. Constructing figures for themselves also helps students to internalize the defining attributes of geometric figures.

Students compose and decompose two- and three-dimensional shapes in preparation for later work in geometric measurement (area and volume). They also partition circles and rectangles into two and four equal shares and develop the mathematical vocabulary that goes with those partitions (halves, fourths, quarters) and begin to understand that partitioning a figure (a whole) into more equal pieces creates smaller pieces. This work lays the foundation for work students will do with telling time in analog clocks in [Unit 1.8](#) and begins to lay the foundation for later work with fractions in grades 3–5.

Comment on this unit [here](#).

## 1.6 Multiples of ten

### In this unit students

- **count by tens;**
- **represent multiples of ten on the number line;**
- **count on by ones from any multiple of ten;**
- **count on and back by tens from any multiple of ten;**
- **compare two-digit numbers;**
- **count forward and backward by ones and tens starting from a number that is not a multiple of ten.**

In this unit students work with multiples of ten. Here students count forward and backward by tens from any multiple of ten, find ten more or ten less than a given number mentally, and count on by ones from any multiple of ten. They also count forward and backward by ones and tens from numbers that are not multiples of ten. Students can use tools like an empty number line to support this work. Based on the values of tens and ones, students compare numbers using pictures, number lines, and symbols ( $<$ ,  $>$ ,  $=$ ).

Comment on this unit [here](#).

## 1.7 Adding and Subtracting within 100

### In this unit students

- **add and subtract multiples of ten;**
- **add and subtract a two-digit number and a one-digit number, or a two-digit number and multiple of ten;**
- **make adding and subtracting strategies explicit;**
- **write addition and subtraction equations.**

In this unit students use their understanding of addition and subtraction contexts and place value to add and subtract within 100. They add two-digit numbers with one-digit numbers, and two-digit numbers with multiples of ten. They subtract multiples of ten using pictorial representations and number lines. They continue to develop strategies for adding and subtracting based on place value, the properties of operations, and the relationship between addition and subtraction. They get further practice with writing addition and subtraction equations, as well as more practice towards fluency with adding and subtracting within 10. Students organize, represent, and interpret data and answer addition and subtraction questions related to the data as way of providing further practice with adding and subtracting within 100.

## 1.8 Telling Time

**In this unit students tell and write time in hours and half-hours.**

In this short unit students build on their work with partitioning circles into halves and quarters. They learn to tell and write time in hours and half-hours, using both digital and analog clocks. Telling time is foundational for work students will do in future grades determining elapsed time.

An alternative to this unit is to integrate expectations on telling time into other units.

Comment on this unit [here](#).

## 1.9 Putting it All Together

**In this unit students use fluent addition and subtraction within 10 and understanding of adding and subtracting within 100 to represent, solve, and communicate about problems involving addition and subtraction.**

In this unit students put it all together. They use their fluency adding and subtracting within 10 and their well-developed skills within 20, and they continue to develop strategies within 100. They represent and solve word problems that involve adding and subtracting, including addition problems with three whole numbers. They use strategies flexibly, for example, when adding  $6 + 7$ , students first “make 10” by adding  $6 + 4$ , and then add the remaining 3, to get 13. Or they might think of  $6 + 7$  as a double plus one ( $6 + 6 + 1 = 13$ ). Data sets are used to support the work with addition and subtraction, as students work to answer “how many more” and “how many less” questions about the data. This unit serves to bring all of the learning around addition and subtraction together into one coherent set of lessons. It is essential for students to communicate their understanding of these operations in this unit.

Comment on this unit [here](#).



[Course Blueprint: Grade 1](#)

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