Why

Shapes and Time with Fraction Concepts

Why is geometry positioned between modules 2 and 4?

A major emphasis of grade 2 work is addition and subtraction concepts, strategies, and problem solving. Module 2 focuses on operations within 200, and module 4 extends this work to operations within 1,000. Geometry is intentionally positioned to give students a cognitive diversion from the heavy number work in modules 2 and 4.

While students are immersed in geometric thinking in module 3, they maintain number skills through each lesson's Fluency segment. Some fluency routines include adding or subtracting within 20, adding up to four numbers by using place value strategies, identifying how many more to make the next ten, and writing and solving equations to represent situations involving length.

Why is a trapezoid defined as a quadrilateral with at least 1 pair of parallel sides instead of a quadrilateral with exactly 1 pair of parallel sides?

The term *trapezoid* can have two different meanings:

- Exclusive definition: A trapezoid is a quadrilateral with **exactly** 1 pair of parallel sides.
- Inclusive definition: A trapezoid is a quadrilateral with **at least** 1 pair of parallel sides.

Both definitions are acceptable and, at grade 2, there is not a significant advantage to either. The inclusive definition is chosen primarily for the transition it provides at later grades and for consistency with most college-bound geometry textbooks. One nice consequence of using the inclusive definition is that trapezoids and parallelograms have a similar relationship to the relationship between rectangles and squares. For example, parallelograms are always trapezoids, and squares are always rectangles.

Why do students write fractions in unit form in grade 2?

Grade 2 students intentionally read and write fractions in unit form. Students recognize that, just as they can work with measurement and place value units (1 centimeter or 1 ten), they can also work with fractional units (1 fourth). Naming the fractional unit and the particular number of that unit builds toward the understanding that a fraction represents a single quantity. When students prematurely write fractions in fraction form, they may gain a misconception that fractions are made up of two unrelated numbers: one number "over" another number. Students will advance their understanding of fractional units and begin to write numbers in fractional form in grade 3, when the Numbers and Operations—Fractions standards begin.

Unit Form

1 centimeter

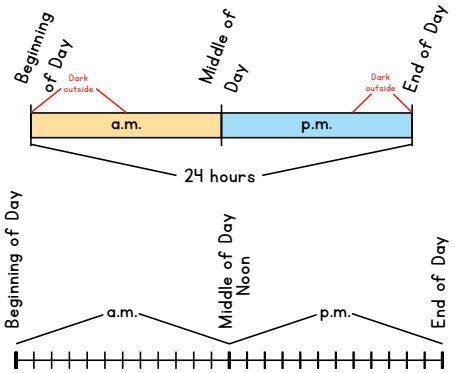
1 ten

1 hundred

1 fourth

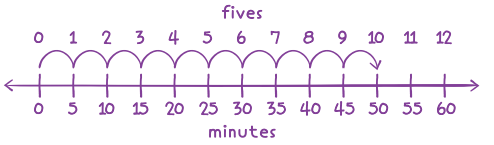
Why is a timeline used to distinguish between a.m. and p.m.?

While we often use timelines to plot significant moments in an individual's life or a series of historic events, timelines can be used to show different periods of time—be it a lifetime, a day, or even a minute. In topic D, students begin with a timeline that resembles the familiar tape diagram. They apply fraction understanding to concepts about time when they notice that a whole day, 24 hours, can be partitioned into 2 equal halves, labeled a.m. and p.m. The proportionality of the timeline helps students understand that each part of the day lasts 12 hours. Students increase their understanding of a.m. and p.m. as they plot daily events on a timeline.



How is the analog clock related to the number line?

Students identify a relationship between the analog clock and the number line by counting units of five. As they skip-count by fives in unit form (1 five, 2 fives, 3 fives, ... , 12 fives), students relate the number of fives to the number of minutes that have passed (5, 10, 15, ... , 60). For example, when the minute hand is pointing to the 2 on the analog clock, a student may say, "2 fives have gone by, so 10 minutes have passed."



This grade 2 understanding of time intervals on a horizontal number line is applied to work in grade 3, when students solve elapsed time word problems.