

Mathematics Instructional Focus for Grade 4 Marking Period 4

What is the instructional focus for this marking period?

In marking period 3 week 9, students described and identified points, lines, and line segments, including parallel and perpendicular lines. Students identified these geometric features as well as lines of symmetry in 2-dimensional figures. In weeks 1–3 of marking period 4, students continue to develop their understanding of geometry and geometric measurement. In week 1, students are introduced to angles as geometric shapes and recognize an angle that turns through $\frac{1}{360}$ of a circle as a one-degree angle. Students extend understandings about composing whole numbers by combining ones and composing fractions by combining unit fractions to understand that angle measure is additive and angles are composed of one-degree angles; these understandings are used to solve addition and subtraction problems involving unknown angle measures. Students are responsible for the following terms and concepts involving lines, points, and angles: *point, endpoint, vertex, line, line segment, parallel, perpendicular, ray, angle, degree, intersecting, acute angle, right angle, obtuse angle, and straight angle*. Students should be familiar with angles between 180° and 360° , but are not responsible for the term *reflex angle*. In weeks 2–3, students classify 2-dimensional shapes by properties of their lines and angles; the focus of week 3 is classifying triangles. Grade 4 students are responsible for the term and category *right triangle*. Although students are not responsible for the following terms and categories of triangles based on angles and side lengths, students are exposed to examples of each: *acute triangle, obtuse triangle, equiangular triangle, equilateral triangle, scalene triangle, isosceles triangle*.

In weeks 4–5, students extend understandings about fractions to represent decimals to hundredths. Students use visual models to help them express a fraction with denominator 10 as an equivalent fraction with denominator 100 and use the strategy to add two fractions with denominators 10 and 100 as well as to add decimals to hundredths. Students compare decimals to hundredths by reasoning about their size; students use number lines and visual models to explain and justify comparisons.

In week 6–7, students apply and extend strategies for multiplying up to a 4-digit number by a 1-digit number from marking period 2 to problems involving products of two 2-digit numbers. Students are expected to flexibly apply and explain their strategies based on understandings of place value, properties of operations, and the relationship between multiplication and division. Grade 4 students are not responsible for the standard algorithms for multiplication and division. The standard algorithm for multi-digit whole number multiplication is an expectation in Grade 5, and the standard algorithm for division with multi-digit numbers is an expectation in Grade 6.

In Grade 4 marking period 4 week 8, students revisit the yearlong goal for fluency with the standard algorithms for addition and subtraction. Students who are fluent demonstrate accuracy, efficiency, and flexibility with the operations; fluent students choose from a collection of efficient methods, including the standard algorithms, depending on the demands of a particular problem. Students who are fluent can solve problems with unknowns in every position.

Students apply their computational fluency to solve a variety of word problems. Students assess the reasonableness of answers using mental computation and estimation strategies including rounding. In week 4, measurement word problems involve distances, liquid volumes, and intervals of time and include problems involving addition and subtraction of simple decimals. In week 8, students use the four operations to solve multi-step word problems.

In week 9, students reason about number and shape patterns, connecting a rule for a given pattern with its sequence of numbers or shapes. Students generate and extend a pattern from a given rule and identify features of the pattern that are not explicit in the rule itself.

Why will students learn this?

Enduring Understandings and Essential Questions

Flexible methods of computation involve understanding place value concepts and properties of operations.

- What are efficient strategies for adding and subtracting multi-digit whole numbers?
- How can knowledge of place value help with multiplication and division of multi-digit whole numbers?

Patterns and relationships can be analyzed.

- How can you generate and analyze a number or shape pattern?

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There are relationships among the four operations.

- What are the relationships among factors, products, and quotients?
- How is multiplicative comparison different from additive comparison?
- How can you model, represent, and interpret addition, subtraction, multiplication, and division situations?

Fractions and decimals allow us to solve problems that are not possible with just whole numbers.

- How can you represent, interpret, and solve problem situations involving fractions and decimals?

Just as every whole number is obtained by combining ones, every fraction can be obtained by combining unit fractions.

- How can you apply understandings of operations on whole numbers to operations on fractions?

The size of a fractional part is relative to the size of the whole.

- What strategies can be used to represent and compare two decimals?
- How can you apply understandings of operations on whole numbers to operations on fractions?

Relationships exist among larger and smaller measurement units within a system.

- How are units of measure within one system related?

Angles are geometric shapes that can be measured.

- How are circles and rays used to measure angles?
- What strategies and tools can you use to determine angle measure?

Objects can be described and compared using geometric properties.

- How are points, lines, line segments, rays, and angles related?
- What properties define categories and sub-categories of two-dimensional figures?