Unit 1: 6th Grade Math Readiness
6th Grade Mathematics

19 Class Meetings

Revised October 2025

Essential Questions

- Why is it important to understand the procedures for working with different kinds of numbers and operations?
- How can you model patterns that occur in our number system?

Enduring Understandings with Unit Goals

EU1: Numbers have relative value, determined by a base 10 number system. Flexible methods of computation involve grouping numbers in strategic ways.

- Place value allows us to compare numbers.
- Order of operations is a way to simplify problems and enable us to solve them.
- Fluently multiply multi-digit whole numbers using the standard algorithm.

EU 2: Drawings and models can help us in operating with fractions. Addition and subtraction of fractions requires common denominators.

- Understand and explain in models that fractions are division of whole numbers.
- Simplify fractions; change mixed numbers to improper fractions and improper fractions to mixed numbers.
- Find common denominators in order to add and subtract fractions with unlike denominators.

EU 3: Standard units of measure enable people to interpret results or data. Measurement describes the attributes of objects and events.

- Convert like measurement units within a given measurement system.
- Metric and customary units of measurement can be converted using multiplication and division.

EU 4: Objects can be described, compared, and classified by geometric properties. Standard units provide a common language for communicating measurement.

- Objects can be measured and compared by their attributes.
- Attributes of two-dimensional shapes have a hierarchy
- Understand that volume can be measured by finding the total number of same sized of volume required to fill the space without gaps.
- Apply the formula for volume to rectangular prisms.

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Standards

Common Core State Standards:

- **5.OA.A.1:** Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- **5.OA.A.2**: Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.
- **5.NBT.A.1:** Recognize that in a multi-digit number, a digit in the one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
- **5.NBT.A.2:** Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
- **5.NBT.A.3:** Read, write, and compare decimals to thousandths.
- **5.NBT.A.4:** Use place value understanding to round decimals to any place.
- **5.NBT.B.5:** Fluently multiply multi-digit whole numbers using the standard algorithm.
- **5.NF.A.1:** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.
- **5.NF.A.2:** Solve word problems involving addition and subtractions of fractions referring to the same whole, including cases of unlike denominators, e.g. by using visual fraction models or equations to represent the problem. Use the benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.
- **5.NF.B.4:** Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- **5.NF.B.6:** Solve real world problems involving multiplication of fractions and mixed numbers, e.g, by using visual fraction models or equations to represent the problem.
- **5.MD.A.1:** Convert among different sized standard measurement units within a given measurement system (e.g. convert 5cm to 0.05m), and use these conversions in solving multi-step real world problems.
- **5.MD.C.3:** Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
- **5.MD.C.4:** Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft and improvised units.
- **5.MD.C.5:** Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
- **5.G.A.1:** Use a pair of perpendicular number lines called axes, to define a coordinate system, with intersection of the lines (the origin) arranged to coincide with the 0 on each line and given a point in the plane located by using an ordered pair of numbers called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the directions of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g. x-axis and x-coordinate; y-axis and y-coordinate).
- **5.G.A.2:** Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.
- **5.G.B.3:** Understand that attributes belonging to a category of two-dimensional figures also belongs to all subcategories of that category.

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- **5.G.B.4:** Classify two-dimensional figures in a hierarchy based on properties.

ISAAC Vision of the Graduate Competencies

Competency 1: Write effectively for a variety of purposes.
Competency 2: Speak to diverse audiences in an accountable manner.
Competency 3: Develop the behaviors needed to interact and contribute with others on a team.
Competency 4: Analyze and solve problems independently and collaboratively.
Competency 5: Be responsible, creative, and empathetic members of the community.

Unit Content Overview

1. **Building a Math Community**
   - Identify where we see math in everyday life.
   - Name the features of productive group work
   - Define the 8 Math Practices

2. **Number and Operations in Base Ten**
   - Solve problems and equations that employ the order of operations.
   - Fluently multiply multi-digit whole numbers.
   - Compare the value of digits based on their placement in a given number.
   - Explore multiplication of whole numbers and decimal numbers by powers of 10.
   - Read and write decimals to the thousandths place value.
   - Use place value understanding and number line models to round decimal numbers to a given place.
   - Vocabulary- sum, difference, product, quotient, parentheses, brackets, power, exponent, base-ten, place value, round, value, models

3. **Number and Operations - Fractions**
   - Create a model to show how improper fractions are equivalent to mixed numbers.
   - Apply understanding of equivalent fractions to change given fractions in addition or subtraction problems to fractions with like denominators.
   - Look for patterns when multiplying fractions by solving a variety of word problems using models pictures, words, and numbers.
   - Apply the patterns to determine a procedure for multiplying fractions.
   - Vocabulary-fraction, numerator, denominator, mixed number, improper fractions, simplify, common denominator, equivalent fraction,

4. **Measurement and Data**
   - Use vocabulary associated with the metric and customary measurements systems and

conversions.
- Convert different sized standard measurement units within the same measurement system.
- Understand that volume can be measured by finding the total number of same sized units of volume required to fill the space without gaps.
- Apply the formula $V = l \times w \times h$ to find the volume of rectangular prisms.
- Vocabulary- measurement system, metric system, customary system, convert, unit, volume, unit cube, formula, rectangular prism, product, length, width, height, solid figure

5. Geometry
- Locate coordinates on a coordinate grid by using an ordered pair of numbers.
- Correctly use ordered pairs.
- Investigate properties of shapes.
- Sort and classify two-dimensional figures based on properties.
- Vocabulary- coordinate system, x-axis, y-axis, ordered pair, origin, coordinate, polygon, two-dimensional, attribute, properties, parallel, perpendicular

Interdisciplinary Connection:
- Language Arts – Reading strategies for solving Word Problems; vocabulary.
- Humanities:
  - Unit 1: Many Faces, Many Places
- Science:
  - Unit 1: Weather Patterns
  - Unit 2: Earth and Universe
  - Unit 3: Inside the Earth

Daily Learning Objectives with *TWPS*

Students will be able to…
- Identify where they see math in everyday life.
  - *TWPS: Where might you see math in your everyday life and how is it used?*
- Define the 8 mathematical practices and tell what they look like in the math classroom.
  - *TWPS: What do good mathematicians do to help them solve problems?*
- Explain the features of good group work in the math classroom.
  - *TWPS: What makes group work in math good and bad? Why?*
- Evaluate numerical expressions with parenthesis and brackets.
  - *TWPS: Would you rather (Piggy Bank) receive a gift of $1.50 for every month of your life or a nickel for every day of your life?*
- Demonstrate that in a multi-digit number, a digit in any place is 10 times the place to its right and 1/10 the place to its left.**
  - *TWPS: Would you rather (Chocolates) have a box of chocolates with 5 row and 14 columns or 7 rows and 9 columns?*
  - *TWPS: Place Value SBAC Question*

- *TWPS: Place Value 2 Truths, 1 Lie*

- Identify patterns to show that the number of zeros in a product is equal to the whole number exponent.
  - *TWPS: Would you rather (Read Books) read 12 pages every night in a chapter book with 144 pages or read 50 pages 3 times a week in a chapter book with 132 pages?*
- Compare and contrast decimals to the thousandths place.
  - *TWPS: Using your understanding of place value, what is similar or different about the following numbers .1,983 2,964 3,952 13,910*
- Round decimals to the thousandth place.
  - *TWPS: Determine which two statements are true and which one is a lie. Use mathematical reasoning to explain your thinking. (equivalent expressions and substitution for multiplication)*
- Multiply multi-digit whole numbers using the standard algorithm.**
  - *TWPS: SBAC practice place value*
  - *TWPS: There were16 schools at the regional swim meet. An average of 14 swimmers were on each school team. How many swimmers were at the swim meet? Explain your mathematical thinking.*
- Change mixed numbers to improper fractions and improper fractions to mixed numbers.
  - *TWPS: Would you rather have 1 ½ slices of pizza or 3/2 slices of pizza. Explain your mathematical thinking using models.*
- Add and subtract fractions with unlike denominators.
  - *TWPS: Shannon says you cannot add 3 fractions together. Is there a way to prove Shannon wrong?(draw a picture to help) ½ + ½ + ¾*
- Multiply a fraction or whole number by a fraction.
  - *TWPS: A cake recipe calls for a ¼ of a cup of sugar. Nicole says that to make 5 cakes she needs 5/20 of a cup of sugar. Is Nicole correct? Below is the work Nicole did to solve her problem ¼ x 5 = 5/20*
- Solve real world problems involving multiplication of fractions.
  - *TWPS: Jax is making a cake. The recipe calls for 3/5 of a cup of sugar. If Jax needs to double the recipe, how much sugar will Jax need for his cake?*
- Convert among different-sized standard measurement units within the metric measurement system.
  - *TWPS: Ivan walked 14.6 miles Saturday morning. Kat walked 32 feet on Sunday. Sophia walked 10,000 centimeters on Friday. Who walked the furthest and how do you know? Who walked the least distance? Explain using Claim, Evidence and Reason.*
- Convert among different sized standard measurement units within the US Customary measurement system.
  - *TWPS: Do Now: Convert the following measurements.*
    12 cm = ____ mm 5.3 m = _____ cm
    310.15 km =_____ m 2.6 cm = _____ mm
    12 inches = _____feet 3 feet = _____ inches
- Solve real world volume problems.
  - *TWPS: Solving volume of an irregular figure.*
- Classify two-dimensional figures in a hierarchy based on properties.
  - *TWPS: Inquiry about two-dimensional shapes parallelogram, rectangle, rhombus, square, trapezoid, triangle*

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Instructional Strategies/Differentiated Instruction

- Whole group instruction
- Guided notes
- Student-led instruction/discussions
- Independent problem-solving
- Collaborative problem-solving
- Graphic Organizer
- Cross-curricular problem solving (independent and collaborative)
- Accountable Talk
- Homework
- Word walls with visuals
- Small group instruction
- Manipulatives
- Interactive Notebook
- Highlighted directions
- TWPS
- CRE (Claim, Reason, Evidence)

EL DIFFERENTIATED INSTRUCTION:

- Word Walls with visuals
- TWPS (Think, Write, Pair, Share)
- Pre-reading strategies
- Culturally responsive teaching
- Explicit Modeling
- Key Vocabulary
- Graphic Organizers
- Strategic Grouping
- Non-verbal Assessments
- Modified classwork and homework
- Word Banks

Assessments

FORMATIVE ASSESSMENTS:

- Warm-ups
- TWPS
- Whiteboards
- Mid-class check-ins (Fist of 5; Thumbs up/mid/down)
- Exit Slips
- Accountable Talk Discussions
- Student-led instruction
- Classwork
- Homework

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SUMMATIVE ASSESSMENTS:

- Pear Assessment Quiz - EU 1
- Pear Assessment Quiz – EU 2
- Pear Assessment Quiz – EU 3
- Pear Assessment Unit 1A Summative Assessment
- Unit 1A Performance Task

Unit Task

Unit Task Name: Clay Pottery (SBAC-5th Grade PT)

Description: Students will work through a series of problems about creating clay pots. They will need to add, subtract, and multiply fractions to find how much clay is needed to make the pots. (EU2) Students will need to use multiplication of multi-digit numbers to determine a plan to create a specific amount. (EU1)

Evaluation: Unit 1A Summative Assessment Rubric

Unit Resources

- Pear Assessment
- Engageny
- Math In Focus
- Math Antics
- State Common Core Standards Transition Tasks
- Match Fishtank
- Worksheets
- Individual White boards
- Interactive notebook
- Laptops
- SBAC Prep Online
- 2 Truths & One Lie
- Your Mathematics Standards Companion (grades 3-5)
- Jeopardy Labs