

MATH WORKSHOP

Ignite
School | مدرسة
اجناتيت

Math Overview

The **Math Program Curriculum** is aligned to the New York Standards, incorporating the Common Core. Based on this adoption of the Common Core, there are three major instructional shifts. The shifts include greater focus, coherence and rigor. To read about these key math standard shifts, go to www.CoreStandards.org.

All students will:

- Build computational skills
- Develop mathematical reasoning and problem-solving abilities
- Deepen conceptual understanding, number sense and numeracy
- Demonstrate understanding in a variety of assessment formats
- Learn to work collaboratively
- Engage in conversation and math talks

KG1

Frogstreet

KG2

Envision

G1-G5

MyMath

G6-G8

IntoMath

Standards for Student Mathematical Practice

1 **Make sense of problems and persevere in solving them.**

Keep on going!

2 **Reason abstractly and quantitatively.**

Write a story for the mathematical equation

$$\frac{1}{2} \times 4$$

DeJuan exercises $\frac{1}{2}$ hour a day for 4 days. How many total hours does he exercise?

Think what makes sense.

3 **Construct viable arguments and critique the reasoning of others.**

$\frac{2}{4} = \frac{1}{2}$ I agree.

Talk and explain.

4 **Model with mathematics.**

Hours 0 $\frac{1}{2}$ 1 $\frac{1}{2}$ 2

$$\frac{1}{2} \times 4 = 2 \quad \text{or} \quad 4 \times \frac{1}{2} = 2$$

Show your thinking.

5 **Use appropriate tools strategically.**

$3 \times 2 = 6$

Use the right tools.

6 **Attend to precision.**

symbol; equals (the same as)

$$120 \text{ minutes} = 2 \text{ hours}$$

units of measure

Check your work.

7 **Look for and make use of structure.**

$$8 + 4 = 12$$

See the pattern or connection.

8 **Look for and express regularity in repeated reasoning.**

See the pattern or connection.

Standards for Student Mathematical Practice

All K-8 students are expected to develop appropriate expertise in the Standards for Student Mathematical Practice. These practices are longstanding important processes and proficiencies in mathematics education.

Summary of Standard for Mathematical Practice	Questions to Develop Mathematical Thinking
<ul style="list-style-type: none"> ● Make sense of problem and persevere in solving them ● Interpret and make meaning of the problem looking for starting points. Analyze what is given to explain to themselves the meaning of the problem. ● Plan a solution pathway instead of jumping to a solution ● Monitor the progress and change the approach if necessary ● See relationships between various representations ● Relate current situations to concepts or skills previously learned and connect mathematical ideas to one another. ● Students ask themselves, “Does this make sense?” and understand various approaches to solutions 	<ul style="list-style-type: none"> ● How would you describe the problem in your own words? ● How would you describe what you are trying to find? ● What do you notice about..? ● What information is given in the problem? ● Describe the relationship between qualities. ● Describe what you have already tried. What might change? ● Talk me through the steps you’ve used to this point. ● What steps in the process are you most confident about? ● What are other strategies you might try? ● What are some other problems that are similar to this one? ● How might you use one of your previous problems to help you begin? ● How else might you organize..present..show?

Standards for Mathematical Content

KINDERGARTEN

- Know number names and the count sequences
- Count to tell the number of objects
- Compare numbers
- Understand addition as putting together and adding to, and subtraction as taking apart and taking from
- Work with numbers 11-19 to gain foundations for place value

FIRST GRADE

- Represent and solve problems involving addition and subtraction
- Understand and apply the properties of operations and the relationship between addition and subtraction
- Add and subtract within 20
- Work with addition and subtraction equations
- Extend the counting sequence
- Understand place value
- Use place value understanding and properties to add and subtract
- Measure lengths indirectly and by iterating length units

SECOND GRADE

- Represent and solve problems involving addition and subtraction
- Add and subtract within 20
- Understand place value
- Use place value understanding and properties of operations to add and subtract
- Measure and estimate lengths in standard units
- Relate addition and subtraction to length

Students use the Standards for Mathematical Content, which are designated by grade level, in conjunction with the Standards for Mathematical Practices.

Standards for Mathematical Content Cont.

THIRD GRADE

- Represent and solve problems involving multiplication and division
- Understand properties of multiplication and the relationship between multiplication and division
- Multiply and divide within 100
- Solve problems involving the four operations, and identify and explain patterns arithmetically
- Develop understanding of fractions as numbers
- Solve problems involving measurement and estimation of intervals of time, liquid volumes and masses of objects
- Understand concepts of area and relate area to multiplication and addition

FOURTH GRADE

- Use the four operations with whole numbers to solve problems
- Generalize place value understanding for multi-digit whole numbers
- Use place value understanding and properties of operations to perform multi-digit arithmetic
- Extend understanding of fraction equivalence and ordering
- Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers
- Understand decimal notation for fractions and compare decimal fractions

FIFTH GRADE

- Understand the place value system
- Perform operations with multi-digit whole numbers and decimals to hundredths
- Use equivalent fractions as a strategy to add and subtract fractions
- Apply and extend previous understandings of multiplication and division to multiply and divide fractions
- Understand concepts of volume and relate volume to multiplication and addition

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Standards for Mathematical Content Cont.

SIXTH GRADE

- Understand ratio concepts and use ratio reasoning to solve problems
- Apply and extend previous understandings of multiplication and division to divide fractions by fractions
- Apply and extend previous understandings of numbers to the system of rational numbers
- Apply and extend previous understandings of arithmetic to algebraic expressions
- Reason about and solve one-variable equations and inequalities
- Represent and analyze quantitative relationships between dependent and independent variables

SEVENTH GRADE

- Analyze proportional relationships and use them to solve real-world and mathematical problems
- Apply and extend previous understandings of operations with fractions to add, subtract, multiply and divide rational numbers
- Use properties of operations to generate equivalent expressions
- Solve real-life and mathematical problems using numerical and algebraic expressions and equations

EIGHTH GRADE

- Work with radicals and integer exponents
- Understand the connections between proportional relationships, lines, and linear equations
- Analyze and solve linear equations and pairs of simultaneous linear equations
- Define, evaluate, and compare functions
- Use functions to model relationships between quantities
- Understand congruence and similarity using physical models or geometry software
- Understand and apply the Pythagorean Theorem

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- [Virtual Manipulatives - Resources](#)
- [Kids Guide to Money and Finances](#)
- [Addictive Math Puzzles](#)
- [Youcubed](#)
- [XtraMath](#)

Math Resources