

Sixth - Eighth Grade Mathematics Milestones

Students in these grades are making the transition to applying the principles of addition, subtraction, multiplication, and division to algebra.

Sixth Grade

- Develop an understanding of rate (e.g., If it took 8 hours to mow 4 lawns, then 1 lawn can be mowed in 2 hours).
- Write equations to solve word problems.
- Reason about statistics.
- Use positive and negative numbers to represent quantities in real-world contexts.
- Understand negative numbers as numbers on the number line.
- Determine area, surface area, and volume of various shapes.

Seventh Grade

- Use proportional reasoning to solve problems.
- Solve two-step equations.
- Use statistics to make decisions.
- Solve percent problems (e.g., tax, tips, markup, and markdown).
- Create a drawing that accurately shows an object with actual sizes reduced or enlarged.

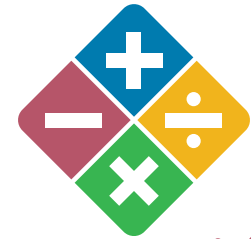
Eighth Grade

- Compare and order real numbers, including irrational numbers.
- Develop an understanding of functions.
- Use statistics to make predictions.
- Work with positive and negative exponents, square root and cube root symbols, and scientific notation.
- Solve multi-step equations.
- Develop an understanding of congruence and similarity.

Family Engagement

How to help your student succeed in mathematics:

- Make mathematics a part of your student's daily routine by:
 - » Computing gas mileage
 - » Calculating discounts and sales tax on purchases
 - » Interpreting charts and graphs found in news media
 - » Mixing solutions such as paint or juice
- Talk with the teacher about the problem-solving strategies and content your student is learning and practice those strategies at home.
- Visit the *math4life* website at: <https://wvde.us/math4life/> for information about:
 - » Resources for families
 - » Fostering success in mathematics
 - » Information about what your student should master in each grade level
 - » Activities to help with mathematics fluency and understanding
 - » Links to the best apps and sites for practice and assistance in mathematics



West Virginia
math4life

*What Students
will Learn*

6TH GRADE - 8TH GRADE



#math4lifeWV

Mathematical Habits of Mind Thinking Skills for Life

MHM1: Make sense of problems and persevere to solve them.

Identify what the problem is asking and work until a solution is found.

MHM2: Reason abstractly and quantitatively.

Use reasoning to examine numbers and ideas.

MHM3: Construct viable arguments and critique the reasoning of others.

Use clear and precise language in discussions with others and to explain one's own reasoning.

MHM4: Model with Mathematics.

Represent problems in multiple ways using drawings, objects, charts, and equations.

MHM5: Use appropriate tools strategically.

Use math tools that will help solve a problem such as rulers, protractors, and drawings.

MHM6: Attend to precision.

Make sure the answer makes sense in the context of the problem.

MHM7: Look for and make use of structure.

Look for patterns and structure to gain understanding and speed in problem solving.
Ex. $4 + 7$ and $7 + 4$ both equal 11.

MHM8: Look for and express regularity in repeated reasoning.

Look for repeated patterns in calculations.

For additional information about Mathematical Habits of Mind go to <https://wvde.us/math4life>

Sample Problems for Sixth - Eighth Grade

Sixth Grade: Represent and analyze quantitative relationships between dependent and independent variables

Students recorded the number of objects present at the beginning and during each round of a game.

Round	Number of Objects
0	?
1	5
2	7
3	?
4	11

- Find the missing terms in the pattern.
Student says, "In round 0, there would be 3 objects and in Round 3, there would be 9."
- How do you know? Student says, "Because the numbers increase by 2 each round. So, I subtracted 2 from the 5 in Round 1 to get 3 for Round 0 and added 2 to the 7 in Round 2 to get 9 in Round 3."
- What is the pattern? Student says, "Start with 3 and add 2 each round."

Seventh Grade: Solve mathematical problems using algebraic equations

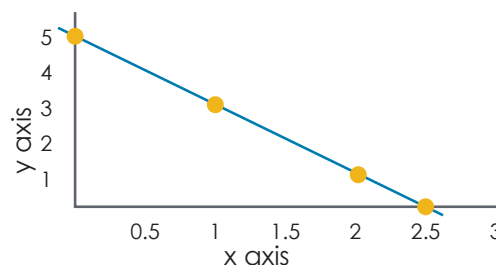
Students are given a table of information and are asked questions.

Round (x)	Number of Objects (y)
0	3
1	5
2	7
3	9
4	11

- Generate an equation to illustrate this pattern. Student writes, " $y = 2x + 3$."
- How many objects would there be after 75 rounds. Student says, "153."
- What does the coefficient 2 mean in this equation? Student says, "The 2 is the increase in the number of objects from one round to the next."

Eighth Grade: Understand the connections between proportional relationships, lines and linear equations

Students are given a graph of a line and are asked questions.



- What is the y intercept of this line? Student responds, "5." How do you know? Student says, "Because the line crosses the y axis at 5."
- What is the slope of the line? Student says, "Negative 2." How did you determine that? Student says, "Slope is rise over run and the line goes down 2 every time it moves one space to the right. It is negative because it goes down."
- Write the equation for this line. Student writes, " $y = -2x + 5$."