

Mathematical Practices for the Math Classroom

Problem solve independently

Make sense of problems and persevere in solving them.

- Open-ended problems—multiple ways to begin and solve, students collaborate, teachers facilitate and help students summarize and eliminate errors.

Critical thinking and use of logic

Reason abstractly and quantitatively.

- Ability to interpret the content of the problem
 - Take problems and draw pictures.
 - Apply information in the problem to the picture.
- Interpret mathematically
 - Determine what the unknown variable will represent.
 - Focus on mathematical details. (i.e. symbols, units, vocabulary)

Model with mathematics.

- Incorporate real world problems.
- Guide students in selecting the correct model. (i.e. graphs, tables, equations, formulas)
- Allow time for students to reflect and interpret their results.

Look for and make use of structure.

- Help the student relate back to a simpler problem. (i.e. find a common denominator for higher math functions relating back to a basic math problem)
- Help students recognize patterns to develop a formula or method to solve the problem. (i.e. find a pattern in real world data that represents either a linear, quadratic, etc function)
- Ask appropriate questions that will allow students to apply the results to make additional predictions.

Collaboration with students and resources to aid learning

Create an environment where students can collaborate.

- Paired constructive work among students.
- Allow time for students to analyze other students' work.

Math content mastery

Use appropriate tools strategically.

- Provide guidance for choosing appropriate tools. (i.e. calculators, pencil / paper, computer models)

Attend to precision.

- Stress appropriate vocabulary. (i.e. discuss the meaning of new words as they appear in directions or problems)
- Stress the importance of proper notation.
- Stress the importance of the correct units of measure. (i.e. working with a word problem that deals with money, make sure your answer is in dollars and cents)
- Guide the analysis of the directions for the problems.