

A Guide to the Standards for Mathematical Practice (What should they look like and sound like?)

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

Students: Are actively engaged in solving problems.

Teacher: Provides time for and facilitates the discussion of problem solutions.

- What problem are you asked to solve?
- Have you solved similar problems before?
- What is your plan for solving the problem?
- Did you use a different method to check your answer?

2. Reason abstractly and quantitatively.

Students: Use varied representations and approaches when solving problems.

Teacher: Provides a range of representations of mathematical ideas and problem situations and encourages varied solution paths.

- Can you think of a number sentence (equation) to match the story (situation)?
- What do the numbers in the number sentence mean?
- How are the facts in the problem related to one another?

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

Students: Understand and use prior learning in constructing arguments.

Teacher: Provides opportunities for students to listen to or read the conclusions and arguments of others.

- What does your answer mean?
- How can you be sure that your answer is correct?

4. Model with mathematics.

Students: Apply mathematics learned to problems they solve and reflect on results.

Teacher: Provides a variety of contexts for students to apply the mathematics learned.

- What number sentence (equation) describes this problem?
- What numbers will you use to solve the problem?
- How are the numbers in the problem connected?
- Is your answer reasonable?
- What does your solution represent?

5. Use appropriate tools strategically?

Students: Use technological tools to deepen understanding.

Teacher: Uses appropriate tools (e.g. manipulatives) instructionally to strengthen the development of mathematical understanding.

- What tools can help you solve this problem?
- Which tool is the most useful for this problem? Why is that your choice?
- Did you begin by estimating the solution?

6. Attend to precision.

Students: Based on a problem's expectation, students calculate with accuracy and efficiency.

Teacher: Emphasizes the importance of mathematical vocabulary and models precise communication.

- What do the symbols that you used mean?
- What units of measure are you using?
- Explain what [term for the lesson] means?

7. Look for and make use of structure.

Students: Look for, develop, and generalize arithmetic expressions.

Teacher: Provides time for applying and discussing properties.

- What do you notice about the solutions you've just completed?

8. Look for and express regularity in repeated reasoning.

Students: Use repeated applications to generalize properties.

Teacher: Models and encourages students to look for and discuss regularity in reasoning.

- Are there shortcuts for solving similar problems?