

Common Core Standards for Mathematical Practice Unpacked

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

Mathematically proficient students:

- ✓ Explain the meaning of a problem and restate it in their words.
- ✓ Analyze given information to develop possible strategies for solving the problem.
- ✓ Identify and execute appropriate strategies to solve the problem.
- ✓ Evaluate progress toward the solution and make revisions if necessary.
- ✓ Check their answers using a different method, and continually ask “Does this make sense?”

2. Reason abstractly and quantitatively.

Mathematically proficient students:

- ✓ Make sense of quantities and their relationships in problem situations.
- ✓ Use varied representations and approaches when solving problems.
- ✓ Know and flexibly use different properties of operations and objects.
- ✓ Change perspectives, generate alternatives and consider different options.

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

Mathematically proficient students:

- ✓ Understand and use prior learning in constructing arguments.
- ✓ Habitually ask “why” and seek an answer to that question.
- ✓ Question and problem-pose.
- ✓ Develop questioning strategies to generate information.
- ✓ Seek to understand alternative approaches suggested by others and, as a result, to adopt better approaches.
- ✓ Justify their conclusions, communicate them to others, and respond to the arguments of others.
- ✓ Compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is.

4. Model with mathematics.

Mathematically proficient students:

- ✓ Apply the mathematics they know to solve problems arising in everyday life, society, and the workplace.
- ✓ Make assumptions and approximations to simplify a complicated situation, realizing that these may need revision later.
- ✓ Identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas.
- ✓ Analyze mathematical relationships to draw conclusions.

5. Use appropriate tools strategically.

Mathematically proficient students:

- ✓ Use tools when solving a mathematical problem and to deepen their understanding of concepts (e.g., pencil and paper, physical models, geometric construction and measurement devices, graph paper, calculators, computer-based algebra or geometry systems.)
- ✓ Make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. They detect possible errors by strategically using estimation and other mathematical knowledge.

6. Attend to precision.

Mathematically proficient students:

- ✓ Communicate their understanding of mathematics to others.
- ✓ Use clear definitions and state the meaning of the symbols they choose, including using the equal sign consistently and appropriately.
- ✓ Specify units of measure and use label parts of graphs and charts
- ✓ Strive for accuracy.

7. Look for and make use of structure.

Mathematically proficient students:

- ✓ Look for, develop, generalize and describe a pattern orally, symbolically, graphically and in written form.
- ✓ Apply and discuss properties.

8. Look for and express regularity in repeated reasoning.

Mathematically proficient students:

- ✓ Look for mathematically sound shortcuts.
- ✓ Use repeated applications to generalize properties.