

Standards of Mathematical Practice

SMP 1

Make sense of problems and persevere in solving them

Mathematically proficient students:

- explain to themselves the meaning of a problem and looking for entry points to its solution.
- make conjectures about the form and meaning of the solution attempt.
- explain correspondences between equations, verbal descriptions, tables, and graphs.
- use concrete objects or pictures to help conceptualize and solve a problem.
- ask themselves, “Does this make sense?”

SMP 2

Reason abstractly and quantitatively

Mathematically proficient students:

- make sense of quantities and their relationships in problem situations.
 - decontextualize (abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents)
 - contextualize (pause as needed during the manipulation process in order to probe into the referents for the symbols involved)
- use quantitative reasoning that entails creating a coherent representation of quantities, not just how to compute them
- know and flexibly use different properties of operations and objects.

SMP 3

Construct viable arguments and critique the reasoning of others

Mathematically proficient students:

- understand and use stated assumptions, definitions, and previously established results in constructing arguments.
- make conjectures and build a logical progression of statements to explore the truth of their conjectures.
- justify their conclusions, communicate them to others, and respond to the arguments of others. reason inductively about data, making plausible arguments that take into account the context
- listen or read the arguments of others, decide whether they make sense, and ask useful questions

**SMP
4****Model with mathematics**

Mathematically proficient students:

- apply the mathematics they know to solve problems arising in everyday life, society, and the workplace.
- interpret their mathematical results in the context of the situation
- reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

**SMP
5****Use appropriate tools strategically**

Mathematically proficient students:

- consider available tools when solving a mathematical problem.
- are familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools
- detect possible errors by using estimations and other mathematical knowledge.
- know that technology can enable them to visualize the results of varying assumptions, and explore consequences.

**SMP
6****Attend to precision**

Mathematically proficient students:

- try to communicate precisely to others.
- use clear definitions in discussion with others and in their own reasoning.
- state the meaning of the symbols they choose, including using the equal sign consistently and appropriately.
- specify units of measure and label axes to clarify the correspondence with quantities in a problem. calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the context

**SMP
7**

Look for and make use of structure

Mathematically proficient students:

- look closely to discern a pattern or structure.
- step back for an overview and can shift perspective.
- see complicated things, such as some algebraic expressions, as single objects or composed of several objects.

**SMP
8**

Look for and express regularity in repeated reasoning

Mathematically proficient students:

- notice if calculations are repeated
- look both for general methods and for shortcuts.
- maintain oversight of the process, while attending to the details.
- continually evaluate the reasonableness of intermediate results.