

STANDARD FOR MATHEMATICAL PRACTICE

#1

MAKE SENSE OF PROBLEMS AND PERSEVERE IN SOLVING THEM

I'M USING THIS SMP WHEN...

- ✓ I plan how to solve a problem instead of rushing to an answer.
- ✓ I think about what is mathematically important. I use objects, pictures, diagrams, tables, and/or equations to make sense of the problem.
- ✓ When appropriate, I consider a simpler version of the problem.
- ✓ I ask myself "Does this make sense?" while I work and consider if my final answer is reasonable.
- ✓ I explore other ways to solve problems and make changes as needed.
- ✓ I try to understand different ways people solve the same problem and learn from their thinking.
- ✓ I think about what I have learned and how I can apply my learning to new problems.

TEACHING ACTIONS TO ENGAGE STUDENTS IN THIS PRACTICE

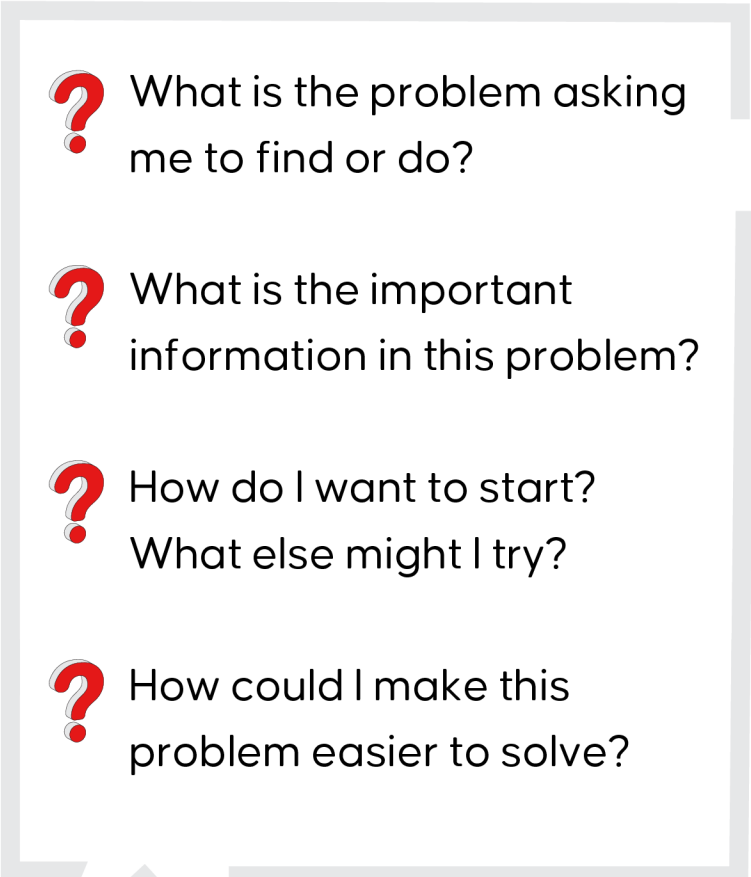
- Provide rich problems aligned to the Kentucky Academic Standards.
- Provide opportunities for students to solve problems that have multiple solutions and/or solution pathways.
- Allow students time to initiate a plan; continually asks students if their plans and solutions make sense.
- Provide appropriate time for students to engage in the productive struggle of problem solving.
- Question students to see connections to previous solution attempts and/or tasks to make sense of the current problem.
- Consistently ask students to defend and justify their solution by comparing solution pathways.



SMP 1: Make sense of problems and persevere in solving them

Mathematically proficient students start by explaining the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway, rather than simply jumping into a solution attempt. They consider analogous problems and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course, if necessary. . . . Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs, or draw diagrams of important features and relationships, graph data and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method and they continually ask themselves, "Does this make sense?" They can understand other approaches to solving complex problems and identify correspondences between different approaches.

Kentucky Department of Education (2019, p. 12)

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- ? What is the problem asking me to find or do?
 - ? What is the important information in this problem?
 - ? How do I want to start?
What else might I try?
 - ? How could I make this problem easier to solve?

STUDENT ASK-YOURSELF QUESTIONS

SMP #1