

Standards for Mathematical Practice Overview Transcript

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The topic of our webcast is Iowa Core Mathematics, Standards for Mathematical Practice. My name is Judith Spitzli and I am a Mathematics Consultant at the Iowa Department of Education.

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With me today is Barbara Dougherty, Director of the Center for Excellence in Science, Mathematics and Engineering Education at Iowa State University. While this webcast will introduce the Mathematical Practice standards, additional webcasts will focus on each of the standards.

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Our learning goals are that participants will

- Understand the purpose of the Standards for Mathematical Practice.
- Understand how the practices relate to each other.

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The Iowa Core Mathematics includes two types of standards: Standards for Mathematical Content and Standards for Mathematical Practice. This presentation deals specifically with the Standards for Mathematical Practice.

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There are 8 standards for mathematical practice. The first 3 standards focus on problem solving, reasoning and sense making. Students who are proficient in these 3 practices can solve problems using a variety of strategies and they are flexible in the way in which they represent the problem.

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It is also expected that students will generalize solutions and processes to develop conjectures. As part of the generalization, they justify and support their generalizations with arguments or explanations. Additionally, students would affirm or reject others' arguments.

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The 4th and 5th standards are linked to using mathematics as a way of representing a mathematical or real-world context. Proficient students can select the appropriate tools to deal with the mathematics as well as describe the context with an appropriate representation. In some cases the modeling could be an equation or symbolic representation while in other situations it could be decisions about what process to use to solve a problem. The modeling may also include the use of specific tools, like picking a software application or a manipulative like a calculator or base-ten blocks, for example.

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The 6th practice attends to the accuracy of not only the solutions but the vocabulary used in mathematical conversations and discussions. It is important that students determine whether an estimate or an exact answer is appropriate for the problem context. Proficient students will also select the correct units to use in reporting solutions, such as square feet versus cubic feet.

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The 7th and 8th mathematical practices emphasize the need to generalize and to recognize patterns within and across topics and problems. Generalizations are necessary if students are to be able to determine the regularity or predictability of certain solution processes. In addition, students may also notice that certain problem structures or features can help to select appropriate solution methods.

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The important part to remember about the standards for mathematical practice is that these are characteristics that students should demonstrate in their work. They are not teaching practices or instructional strategies. However, if students are to be able to demonstrate the practices, they must have opportunities to practice these skills consistently in lessons. Tasks like the one shown helps to support the development of proficiency of the mathematical practices.

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Because the standards for mathematical practice are critical to developing strong student understanding, subsequent webcasts will be presented on the individual practices to provide examples of what might be representative of proficient student work.

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Barbara, thank you for sharing this information. This concludes the Standards for Mathematical Practice Iowa Core Mathematics webcast. If you have questions or concerns, please contact one or both of us. Thank you for taking the time to listen to this webcast.