

Mathematical Practices Learning Community Templates

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Mathematical Practices Learning Community Templates

The following pages include nine templates for use in professional learning situations in which educators are seeking to understand the Common Core State Standards for Mathematical Practice. The intent is that each template be used for study of a different mathematical practice, but also that templates could be used interchangeably for any of the practices. Facilitators should feel free to mix and match templates as they wish.

To use a template, decide on one Standard for Mathematical Practice and communicate the standard to the participants. In each meeting, all conversation should center on a single Standard for Mathematical Practice.

Sharing the Reason

Read one of the mathematical practices and the paragraph that describes it. Discuss each of the following questions.

1. Why is this practice important?
2. What does this practice look like when students are doing it?
3. How can a teacher model this practice?
4. What could a teacher do within a lesson to encourage students in this practice?
5. How can you assess proficiency in this practice?

Sharing Student Work

Each teacher will bring an example of student work to the learning community which s/he believes demonstrates a particular mathematical practice. For each example of work, discuss the following.

1. How does this example of student work show the student's use of a particular mathematical practice?
2. How could the teacher modify this task to illuminate further the student's use of a particular mathematical practice?
3. What questions could the teacher ask to help the student be more aware of his/her own employment of a particular mathematical practice?
4. How could the teacher extend the task to further deepen student use of a particular mathematical practice?

Connecting Mathematical Practices to Process Standards and Intended Learning Outcomes

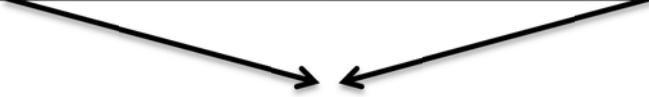
Bring copies of NCTM's Principles and Standards for School Mathematics and the Utah 2007 Core Curriculum for Mathematics. Discuss the following.

1. Which NCTM Process Standard(s) suggests the same processes and proficiencies as the Common Core Standard for Mathematical Practice?
2. How is the NCTM Process Standard different from the Common Core Standard for Mathematical Practice?
3. Which Utah Intended Learning Outcome suggests the same processes and proficiencies as the Common Core Standard for Mathematical Practice?
4. How is the Utah ILO different from the Common Core Standard for Mathematical Practice?
5. How will you promote student use of this Mathematics Practice more thoroughly than you might have promoted use of the matching process standard or ILO?

Connecting Mathematical Practices to Strands of Proficiency

Use the National Research Council's Strands of Proficiency (adaptive reasoning, strategic competence, conceptual understanding, procedural fluency, and productive disposition) from *Adding it Up!* to explore the Mathematics Practice Standard.

Which strand of proficiency most closely mirrors the practice standard?

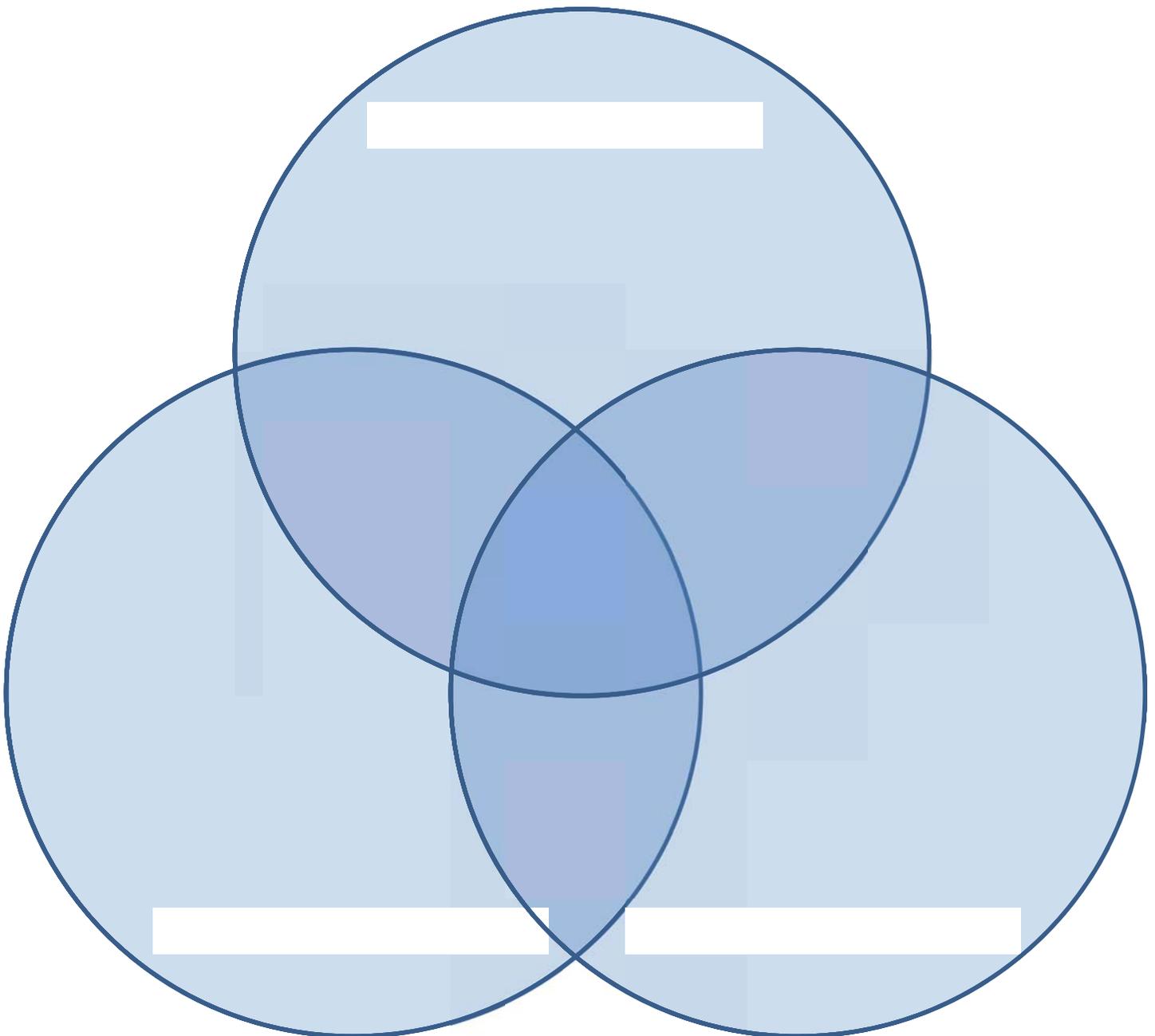
| Practice Standard | Proficiency Strand |
|--|--------------------|
|  | |

How are they alike?

How are they different?

Connecting Mathematical Practices to Process Standards and Intended Learning Outcomes: Version 2

Bring copies of NCTM's Principles and Standards for School Mathematics and the Utah 2007 Core Curriculum for Mathematics. Use key words from each document to fill in the Venn diagram.



What Is a Mathematically Proficient Student?

Read the paragraph describing a Standard for Mathematical Practice and highlight key words. Use the highlighted words to fill in the table. Discuss what a mathematically proficient student looks like based on your table.

| Mathematically Proficient Students Use | Mathematically Proficient Students Think About | Mathematically Proficient Students Do |
|---|---|--|
| | | |

Frayer Model

Choose a word that describes the Mathematical Practice Standard. Then fill out the Frayer Model and discuss.

| DEFINITION | CHARACTERISTICS |
|--------------------|------------------------|
| | |
| | |
| CLASSROOM EXAMPLES | CLASSROOM NON-EXAMPLES |
| | |
| | |

Word

Gaining Proficiency with the Practice Standards

As students develop proficiency with mathematical content, so they also develop proficiency with mathematical practice. For the Mathematical Practice being studied, describe what each level of proficiency would look like in terms of student attributes.

Non-proficient

Developing proficiency

Proficient

Exceptionally proficient

What instructional strategies can you use to move students from each level of proficiency to the next?

What student actions or statements might lead you to believe the student is moving up the proficiency ladder?

What Does Instruction for Mathematical Practice Look Like?

Watch a 5-10 minute video clip of a teacher interacting with his/her students in a mathematics lesson. Identify instances in which teacher moves either increase access to mathematical practices or decrease likelihood that students will personally engage in mathematical practices. Discuss the following.

1. What evidence was there of intentional attention by the teacher to a Mathematical Practice Standard? Did the teacher model the behavior or elicit it from his/her students?
2. Did the teacher unintentionally promote or prohibit student engagement with mathematical practices? How might these unintentional moves be used for more intentional development of mathematical practice?
3. What did you observe students doing that exhibited their use of a Mathematical Practice? How might the teacher encourage further or deeper use of this Mathematical Practice?