

Mississippi Succeeds: A Focus on Equity

Improving Math Instruction for All Through the
Effective Implementation of the SMPs

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1

Mississippi Department of Education

VISION

To create a world-class educational system that gives students the knowledge and skills to be successful in college and the workforce, and to flourish as parents and citizens

MISSION

To provide leadership through the development of policy and accountability systems so that all students are prepared to compete in the global community



2

2



3

Agenda

- Overview of the Standards for Mathematical Practice (SMPs)
 - Activity #1: Select a SMP (Close Read)
 - Activity #2: SMP Placemat (Student Evidence vs Teacher Evidence)
- Strategies for implementation at home, in the classroom, and in the school building
 - Activity #3: SMPs on the Fridge (Parent-Friendly SMPs to Support Homework)
 - Activity #4: Frayer Mat (Meeting the Needs of Younger Learners and Diverse Needs)
 - Activity #5: State Test Time (Creating the SMP State Test Wall)

4

Standards for Mathematical Practice

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction.



5

5

Standards for Mathematical Practice

These Standards are not intended to be new names for old ways of doing business. They are a call to take the next step.

1. **Make** sense of problems and **persevere** in solving them.
2. **Reason** abstractly and quantitatively.
3. **Construct** viable arguments and **critique** the reasoning of others.
4. **Model** with mathematics.
5. **Use** appropriate tools strategically.
6. **Attend** to precision.
7. **Look for** and **make use** of structure.
8. **Look for** and **express** regularity in repeated reasoning.



6

6

Activity #1: Select a SMP

1. Locate the Standards for Mathematical Practice (SMPs) on your table. (Tan paper)
2. Number Heads (#1-8). This will identify which SMP to read.
3. As you read your SMP, highlight and create a list of at least 3 key words or phrases that summarizes your SMP. Use the margins to do this.
4. As a group, have a “table-top discussion” about your SMP. Be prepared to report out.



7

7

Standards for Mathematical Practice

The Standards for Mathematical Practice are:

- **observable behaviors** that should take place during every lesson, every activity, all math homework, and every mathematical task.
- **describable “actions”** required by the teacher and the student in order to meet the demands for rigor and complexity required by the CCRS.



8

8

Activity #2: SMP Placemat



Directions:

1. Locate the large brown envelope on your table.
2. Empty the contents of the envelope on the table to allow every member of your group to see them.
3. As a group, determine which column describes the behaviors indicated on each card.

Walk – Share – Discuss – What Resonates?



SMPs at Home

- **Parents need not** have a math background to “implement” the SMPs at home **OR** engage their child/ren in mathematical dialogue about their **homework**
- It’s important that parents **feel connected** to their child’s mathematical growth...even if its on a **very limited** basis
- Providing **parents** with an idea for doing this will begin to make the SMPs non-negotiable and “the norm”
- The goals are discourse and self-reflection for the student



11

11

Activity #3: SMPs on the Fridge



Directions:

1. Take a few minutes to quietly reflect on the SMP you read, your notes in the margin, and the Placemat activity.
2. Grab a few post it notes and a pen; and, locate a “refrigerator” near you.
3. Write a few parent-friendly questions or prompts a parent could leave on the fridge for their child/ren to evoke the SMPs?



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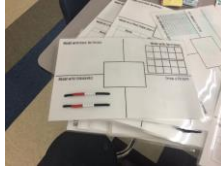
Walk – Share – Discuss – What Resonates?



SMPs in the Classroom

- Teachers **must have** the math background to “implement” the SMPs in the classroom **AND** engage their students in mathematical dialogue about their **classwork**
- It’s important that teachers **show the connections between the math to ensure** their student’s mathematical growth...on a **consistent** basis
- Providing **teachers** with an idea for doing this will begin to make the SMPs non-negotiable and “the norm”
- The goals are discourse and self-reflection for the student

Activity #4: Frayer Mat



Directions:

1. Locate one "station" in the back of the room.
2. Examine the Frayer Mat.
3. Complete the task as a group.
4. Take turns asking questions that would evoke each of the SMPs.

Walk – Share – Discuss – What Resonates?



The Standards

K.NBT.1

Compose and decompose numbers from 11 to 19 into ten ones and some further ones to understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., $18 = 10 + 8$).

1.NBT.2

Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:

- 10 can be thought of as a bundle of ten ones — called a “ten.”
- The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
- The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).



17

SMPs in the School Building

- Administrators must find the perfect locations and opportunities to “implement” the SMPs in the building throughout the school year.
- This will allow students to engage in mathematical dialogue in **common areas** (such as the library, the lunchroom, the gym, etc.)
- This will create a culture of SMP **processing**
- The goals are discourse and self-reflection among students in quick, short, and undistruptive ways



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Activity #5: State Test Time



Scenario:

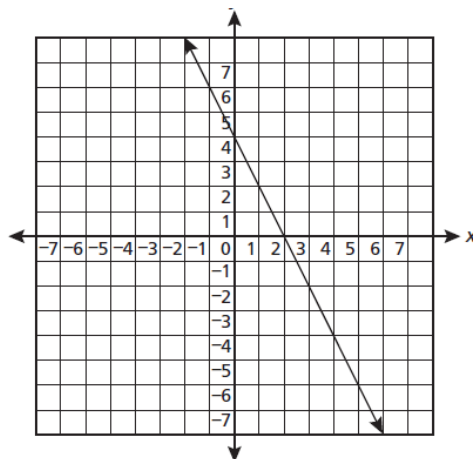
Your Algebra I state test scores show a slight decrease over the last 3 years. You consider helping the building level administrator and Algebra I teachers create a “SMP State Testing Practice Wall” on the entrance of each door of the cafeteria. Each month the Wall changes after the team meets. Students may respond to the prompt on the Wall using a drop-box. The diagram on the next slide is from a practice MAAP Algebra I test, and it is used for week #1. What type of questions might you place on the WALL to evoke ONE SMP from students as they wait to be served in the cafeteria?



19

19

Activity #5: State Test Time



20

20

SMP Checklist

- ☐ Is not "Problem Solving Friday".
- ☐ Is "enrichment" for only advanced students.
- ☐ Is the process of arriving at an answer, not only the answer itself.
- ☐ Requires students to actively think about their learning and be able to communicate it effectively.
- ☐ Can not occur naturally during all parts of the instructional day.
- ☐ Must become habits of mind and behavior for only the student.
- ☐ Can be used as a rubric for creating and/or reviewing lesson plans.

Place a checkmark beside
each true statement.



21

21

Training Reflection: High – Five

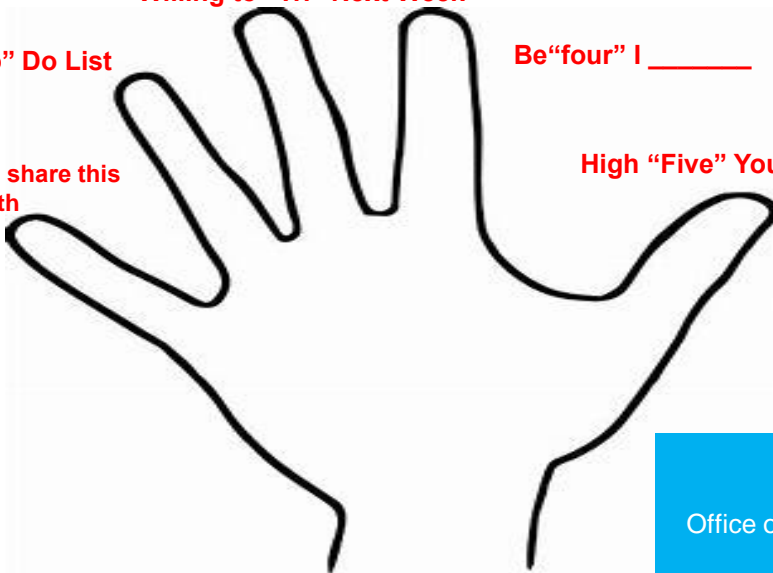
Willing to "Tri" Next Week

"Two" Do List

Be "four" I _____

"#1" Person to share this
information with

High "Five" Your Table. You did it!



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2

22