



Standards for Mathematical Practice

- 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.

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As I was preparing to think about those routines that we have in place in our classrooms or want to put in place in our classrooms, I decided to look up the definition.

That said – think about your daily routines. What is a *personal daily* routine you have? Maybe it is to start your day. Maybe to end.

Turn and talk to someone sitting next to you and share a personal routine.



DO NOW – my memory



How many have seen this problem? The idea is to put operational symbols in between the 4's to get the answer. There were many times in my teaching career that I had these on the board and students would work on these at the beginning of class. When there was a solution or solutions, they would get recorded. This was a routine and everyday task students worked on. The challenge was that I did nothing with it. I did not probe student thinking. It was just a thing on the board.

Our challenge is to use routines as a way to engage students in reasoning. Let's examine a routine.



The routine is Which Does Not Belong? I will reveal sets and your goal is to decide which does not belong to that set. With students, you might only ask for which one does not belong – I am going to ask you to think about reasons that each of them might not belong to the set.

The examples that I will show will introduce you to the idea and then you will have time to work with a partner to think of an example or two to share with our large group.

The first examples may seem rather simplistic to you. The idea is to build the routine. In a classroom, when I say "Which Does Not Belong?" the students know what to expect. It becomes regular or customary.



After doing each of the 5. Allow them time to work with a partner on a set they might build for which does not belong.

Give them approximately 3-5 minutes to come up with examples and let them know they will share with the whole group.



A second routine is Tell Me All You Can. Again, the idea is to have an overarching routine that can be used with any context. I will model and then once again, you will have a short amount of time to develop some ideas for yourself and walk away with some examples from the large group.

For Tell Me All You Can, we have some prompts. You will receive a mini copy of these. We are going to hand out a copy of these so that you will have these prompts. When starting this routine, it can be helpful to have them on a piece of chart paper and enlarged so that students can see them and use them. There have been occasions when they were put on a notecard and taped to the desk. Allowing students access with the prompts right there provides the opportunity for success.

The idea is to estimate, not to get an exact answer. Let's examine a few.











The problem, the numbers, what is in the range of your students



Explain 4 Strikes

435 x 2 = 870



Fraction; play

½ x 3/4 = 3/8

Process: what did you notice about my role as we played the game as a whole group



Four Strikes does not have to be whole numbers. It can extend to all areas of reasoning.

Talk to your partner about the mathematical ideas behind this 4 Strikes. What do students need to know and be able to reason about for this.

√86=9.27



What did you notice as you were designing.



Here were the goals.



Which of the practices were you engaged in during this session? Turn and talk to neighbor.

It is our hope that you leave with a way to think about engaging students in reasoning with routines and the decisions you might have to think about in order to design those routines.

