1. **Plan the Ten-minute Talk**;

* Choose an important component of number sense that students must develop over time to target and formulate a question.

Here are four examples of possible prompts:

1. Where is 2.078 on the number line?



2. (Use before starting a unit on exponential expressions or functions.) Place the numbers 30, 31, and 32 on the number line.



3. Write three numbers that are equivalent to 5/3. Try to write one that you don’t think anyone else will think of.

4. Find the product without using the standard algorithm: 28\*32.

* Plan how you are going to get students to share their thinking, how you are going to encourage them to clarify their thinking, how you will hold back evaluative responses, and how you will close the activity.

1. **During the activity**: If possible, videotape, audiotape or take notes as soon as the class ends. Withhold your immediate responses and work to understand the meanings behind students’ explanations. Ask further questions (without putting words into the students’ mouths) to check to see if you fully understand what they meant to say.
2. **After the activity**: As soon as possible after the Ten-Minute Talk, use students’ responses for reflecting on what you know about the mathematics of the students.
   1. Write student responses.
   2. Choose at least one student’s response that was unclear to you and write questions that you could pose to this student to better understand his or her thinking. Briefly describe your purpose for asking these questions.
   3. Write questions you could ask to explore what you still wonder about students’ ideas. (Not leading questions.)
   4. Choose a question from (c) for the next week. When using this question, notice student responses that could indicate slightly different ways of thinking than the week before.

Example Ten-Minute Talk

1. Plan

* Question: Where is 2.078 on the number line?



* Explain to students what a Ten-Minute Talk is, that I just want to understand what they think, and that this is good practice for clarifying the SMP– that I am not looking for a specific right answer. It is practice for them to explain their thinking and listen carefully to others (SMP 3), and to reason quantitatively (SMP 2), to use tools strategically (SMP 5), and to communicate precisely (SMP 6). **Expectations**: they must all be ready to explain their thinking to the class, and must listen to others to compare their ideas to the one just offered. I will distribute half-sheets of paper for them to draw the number line and their answer on, and encourage them to add anything that might show how they thought about it. When I ask the question, I want them all to think quietly for a minute and then I will use popsicle sticks to call on students randomly to come up to the document camera and describe how they thought about it. I will ask only clarifying questions, but no leading questions and no evaluative responses.

1. I followed my plan for the most part, having students bring their drawings to the document camera, asking a couple of clarifying questions. I had students show their sketches to their elbow partner before I called on anyone, and at the end I had them discuss with their elbow partner which methods they thought were the best and why. Finally, I had them ask questions and describe what they noticed about the SMP we highlighted.
2. Reflection
   1. Students’ responses:

* It’s just a little more than 2 (indicates a little more than 2).
* The 0 doesn’t matter, so I put it about 7/8 of the way from 2 to 3.
* I broke the line between 2 and 3 into ten equal parts then put it just before the first one.
* The 78 is like if there are a hundred small spaces and we go 78 of them, so I imagined breaking it up into 100 pieces and went 78 of them.
* It’s just somewhere between 2 and 3, probably less than halfway since there’s a zero in the first spot.
  1. A response that was unclear:

I broke the line between 2 and 3 into ten equal parts then put it just before the first mark.

Possible questions that could have been asked, and purposes for asking them:

How accurate do you think your answer is? Why did you break it into 10 parts? Why did you put it just before the first one?

My goals in asking these questions would be to understand if and how he is using place value sense to find the position.

c. Questions to explore what I still wonder about students’ understandings:

* I wonder how students who seemed to understand this could handle either a repeating decimal like 2.0787878… or an irrational number like the square root of 5?
* Many students lacked precision in the way they placed their number. I wonder if I could ask it in a way that would encourage more precision?

d. Question for the next week: (goal: to see if they use more refined strategies that explicitly rely on place value when they need to be more precise).

Suppose a trust-worthy pirate tells you that there is a large diamond buried between a tree and a rock that are exactly 2 Farthels apart (a Farthel is a pirate measure that is a little more than 4 meters). The diamond is buried about 6 feet straight below a point 1.309 Farthels from the tree toward the rock. Because it is such hard work to dig (you only have a spoon) you want to find the exact location before you start digging. Describe how you would locate the diamond.