

Notice and Wonder (Math)

Purpose

This routine meets students where they are and relieves the pressure of finding an immediate solution to a problem. The routine helps students determine what the problem is asking and identify multiple strategies to solve it.

Time

This routine takes 5 - 10 minutes.

Supported standards

MP. 1 Make sense of problems and persevere in solving them.

Materials

- Problem/activity to be worked on during class time
- Notice and wonder routine video example:
<https://www.youtube.com/watch?feature=youtu.be&v=6xXeMDP64GA>

Procedure

1. This routine can be used in individual or small group settings as well as in person or remotely. It can be used with warm-up materials as well as challenging thinking problems such as word problems.
2. The instructor decides what topic will be covered in the class and has material ready to present to the student(s).
3. Upon giving the student(s) the worksheet with the task, the instructor should ask the student(s) what they notice about the problem in front of them. The instructor should give the student(s) enough time to think of what they see and encourage them that anything they notice can be correct. The instructor writes notices on the board (in class or on the screen).
4. The instructor then asks the student(s) what they wonder about the task in front of them. Again, the instructor should give students time to think and write ideas on the board.
5. As ideas come in, the instructor can understand where students are, what they are seeing in the problem, and what they don't know about the problem. It also gives the instructor a chance to address anything that was noticed or discuss ideas that weren't noticed.

- The instructor then proceeds with the lesson.

Example

Example One (place value chart):

Decimal Place Value Chart													
Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	Decimal Part	Tenths	Hundredths	Thousandths	Ten-Thousandths	Hundred-Thousandths	Millionths
Whole part							●	Whole part					

- The instructor presents the place value chart to the student(s).
- The instructor does not describe the material. Instead, the instructor asks the student(s), “What do you notice about the chart? What do you wonder about the chart?”
- The instructor waits for ideas and then writes down what students notice and wonder.
- The instructor can elaborate on student ideas or mention things that the instructor noticed as well.
- The instructor continues with the lesson.

Possible student notices and wonders:

- I noticed that the left side is purple, the decimal is yellow, and the right side is green.
- I noticed that it says whole part two times.
- I noticed the decimal is kind of in the middle.
- I noticed that the green side has a “ths” at the end of the words.
- I noticed there’s no “oneths” spot.
- I noticed the words on the left are kind of like the words on the right.
- I wonder why it says whole part two times.
- I wonder why there’s a “ths” on the green side.
- I wonder how I would write a number using this.
- I wonder why there are three colors.

Example Two (Geometry word problem):

The spray from a spinning lawn sprinkler covers an area of 1,963 square feet. If Andrew is standing 30 feet away from the sprinkler, will he get wet? Why or why not?

1. The instructor presents the task to students.
2. The instructor asks students what they notice and wonder about the problem and waits for responses.
3. The instructor can elaborate on these ideas and continue having students solve the problem.

A variation with the word problem is to leave the final question off so students don't start solving. (The spray from a spinning lawn sprinkler covers an area of 1,963 square feet. Andrew is standing 30 feet away from the sprinkler.)

Possible student notices and wonders:

1. I noticed that there are 1,963 square feet.
2. I noticed that it says the words "covers an area."
3. I noticed that Andrew is standing 30 feet away.
4. I wonder what shape we are talking about.
5. I wonder how far the sprinkler sprays
6. I wonder if I need a radius or diameter.