

Learning to Question and Questioning to Learn in Mathematics

Persevering	<ul style="list-style-type: none">• How would you describe the problem in your own words?• What facts do you have? What do you know that is not stated in the problem?• How did you tackle similar problems?• Could you try it with simpler numbers? Fewer numbers? With a number line?• What about putting things in order?• Would it help to create a diagram? Make a table? Draw a picture?• Can you guess and check?• Have you compared your work with anyone else?
Making Sense of Problems	<ul style="list-style-type: none">• What information do you have? What do you need to find out?• What strategies are you going to use?• Will you do it mentally? With pencil and paper? Using a number line, table, diagram or picture?• Will a calculator help?• What tools will you need?• What do you think the answer or result will be?
Reasoning & Justifying	<ul style="list-style-type: none">• Can you tell me why that is true?• How did you reach your conclusion?• How does your answer connect to the question? Does it make sense?• Can you make a model to show that?• Can you convince the rest of us that your answer makes sense?
Critiquing the Reasoning of Others	<ul style="list-style-type: none">• What do you think about what _____ said?• Do you agree? Why/why not?• Does anyone have the same answer but a different way to get to it?• Can you explain what ____ is saying? Can you explain why his/her strategy works?• What don't you understand about what ___ is saying?
Modeling Situations	<ul style="list-style-type: none">• How would you model the situation with a diagram or picture? A table? Graph? Equation? With words?• Can you use color, words, or diagrams to show the connections between these ideas?• How do the different models connect with each other? For example, how does the table connect to or relate with the graph? How does the graph connect or relate to the equation?
Making Use of Patterns	<ul style="list-style-type: none">• What patterns do you notice? How would you describe the pattern(s)?• What would the next number or item be in the pattern? How do you know?• How would you find the next number in the pattern? How about the 100th number?• Can you make a rule or equation that gives you the next term? How about any term?• How do you know that your rule or equation always works?
Reflection and Learning from Errors	<ul style="list-style-type: none">• How did you get your answer? Can you explain why your method works?• Does your answer seem reasonable? Why or why not?• What if you had started with...rather than...? What if you could only use...?• What have you learned or found out today?• What new words did you use today? How did you use them?• What did you learn from that mistake/error? How did you know it was an error?• Can you explain where your thinking changed?• What are the key points or big ideas in this lesson?
Taking Responsibility	<ul style="list-style-type: none">• How are your notes/notebook organized?• How do you identify what is important to remember? (colors, shapes, etc)• How does what you learned in class today connect to what you already knew?• How do you identify what you have questions about?• How do you keep track of new vocabulary?• How and when do you ask your teacher and other students for help?• What outside resources do you use? (tutoring center, etc)• What online resources do you use?