Teaching Questions: Chapter 1.2:

3) The beginning of the number pattern 1,2, 4, 8 was used by two teachers in separate classes. Teacher A asked, “What is the next number in this patter?”. Teacher B asked, “What are some possibilities for the next number in this pattern?” List more than one way this number pattern can be continued and explain your reasoning for each way. Discuss the difference between the two questions in terms of expected student responses.

List more than one way this number pattern can be continued: 1,2,4,8,16,32,64, 128, 256,… and 1,2,4,8, 9, 11, 15, 16, 18, 22… The first sequence is made by repeatedly doubling the number to get the next. The second sequence is made by repeatedly adding 1, then 2, then 4, then back to adding 1, then 2, then 4 and continuing on. The two questions from teacher A and B are both focused on having students find patterns and build a sequence but teacher A’s question suggests there is only one answer whereas teacher B’s encourages multiple answers. Student responses to teacher A are likely to be minimal, only one person needs to raise their hand to answer the question, only one person needs to participate. For teacher B, the request for “some possibilities” suggests there is more than one answer. More students are likely to raise their hands and just because one answer is given, it doesn’t mean that the problem is over. Other answers can be considered and more participation can happen.