Nature of Science and Math Practices Assignment (B)

B. Select 3 of the practices in Common Core Mathematics Practices and write a brief analysis of how the article meets the math practice.

Make sense of problems and persevere in solving them – This standard makes me think of the goal that all students must be able to accomplish by the time they graduate. Students will use this standard not only throughout school, but in their careers also. Referencing the article, mathematically proficient students begin by reading and understanding the problem. Rather than jumping into a solution attempt, the students determine a strategy to solve the problem. They next change the words in the problem into a math procedure. By monitoring and assessing their progress they can change strategies if needed and make sure answer is sensible. The article states*, Younger students rely on concrete objects or pictures to solve problems.* This relates to the CPA approach. (Concrete- Pictorial- Abstract) By starting with the concrete stage, then pictorial stage to solve a problem, where the student builds a foundation for their mathematical understanding. They can then move to the Abstract stage where they can demonstrate an understanding by solving complex math problems.

Construct viable arguments and critique the reasoning of others – This article reminds me of " Number Talks" that I do in my class daily. Referencing the article, *Mathematically proficient students understand and use stated assumptions, definitions and previously established results in constructing arguments.* The students can talk and describe their thinking to justify their answers. They listen to their peers' ideas and determine if they make sense and respond to the arguments of others. The article

states that, mathematically proficient students can compare two plausible arguments, distinguish the correct argument and identify the flaw in argument that is incorrect and explain what it is. Elementary students may construct arguments using concrete objects and drawings to justify their answers. Their arguments can be made formal during the abstract phase, where they are able to discuss or write the problem using mathematical terms to support or disagree to others. This article meets the math practice because it discusses how students listen to their peers ideas and determine if their answer makes sense. If they think the answer is incorrect they ask questions to make viable arguments to oppose the answer of their peers.

Model with mathematics – When I first look at this practice, I think of students using manipulatives to solve math problems, but that is not what it means at all. The article states, mathematically proficient students can apply mathematics to solve problems of the real world. They will use this practice in everyday life from elementary school, high school and eventually the workplace. The students can take a real-world problem, dissect it and use math tools to solve the problems such as, diagrams, symbols, graphs, flowcharts and words. They will also be able to make connections between the models. The article meets the standard because it states how students use math to solve problems, and apply their this skill outside of math class into their everyday life.