STANDARD FOR MATHEMATICAL PRACTICE #2

REASON ABSTRACTLY & QUANTITATIVELY

I'M USING THIS SMP WHEN...

- I identify quantities in a situation (context) and describe how they are related.
- I show how quantities in a situation are related with pictures, diagrams, tables, graphs and/or equations.
- I flexibly work in or out of a context, choosing the best way to find the solution.
- I think about if my computations and solution makes sense in a context.

TEACHING ACTIONS TO ENGAGE STUDENTS IN THIS PRACTICE

- Demonstrate how and support students in using diagrams, tables, graphs, and/or equations to represent quantities and relationships between quantities.
- Pose questions that require students to explain the connections between mathematical symbols (including expressions, equations and inequalities) and contexts.
- Choose tasks that allow for multiple solution pathways, encouraging students to choose strategies and representations that make sense to them.
- Encourage students to flexibly use properties of operations when finding solutions.
- Highlight the importance of considering the units in a situation and if solutions makes sense in terms of the situation.

SMP 2: Reason abstractly and quantitatively

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

Kentucky Department of Education (2019, p. 13)

- What can I count or measure?
- How do the quantities in this problem relate to one another?
- How might I represent the quantities so I can see the relationships?

STUDENT ASK-YOURSELF QUESTIONS

Adapted from Kelemanik et al. (2016, p. 179)

SMP #2