### Common Core State Standards, Mathematics Practices

#### Questions for Planning & Observation

#### Make sense of problem and persevere in solving.

**Do students:**
- Unpack the problem?
  - What is the story?
  - What are the given quantities?
  - What needs to be found out?
- Use strategies to enter the problem?
  - Previous similar or simpler problems.
  - Knows representations/models that work.
  - Language needed to understand problem.
- Recognize relationships in the problem? Relationships needed to find a solution?
  - Solve a part of problem needed to solve second part?
  - Relationship between quantities?
  - Look for regularities, trends?
- Know what the answer tells you? What form should the answer be? What units are called for?
- Do strategies and results make sense?
  - Can students explain why they are trying a particular strategy?
  - If not making progress, can students change course and try a different strategy?
  - Use another strategy to verify and explain solution?
- What mathematics should be evident in all solutions? How will students see the same mathematics in each representation and solution?

#### Reason abstractly and quantitatively.

**Do students:**
Mathematize the problem?
- What are the given quantities?
- How do they relate to each other?
Represent the problem symbolically?
- Can students explain what symbols mean and how relate to quantities, other symbols, representations, models?
- Explain the context of problem?
What properties and reasoning will support solutions? How can the problem be decomposed and recombined?
What are the units needed while solving and reporting answer?

#### Construct viable arguments and critique the reasoning of others.

**Do students:**
- Make conjectures?
  - Explore the problem to support or disprove their conjecture?
  - Refine or change their conjecture?
- Have opportunities to explain their conclusions and communicate their reasoning with others? What language is needed?
- Have opportunities to ask useful questions to seek clarity? Follow the arguments of others looking for flaws and explaining them?
Model with mathematics.

**Do students:**
- Apply the mathematics to the problems?
- Make and recognize assumptions and approximations?
- Understand they may need to make revisions?
- Identify important quantities and the relationships between them?
- Interpret the mathematics in the context of the problem?
- Reflect on the results?
  - Make sense of solutions?
  - Evaluate model to see if it can be improved?

Use appropriate tools strategically.

**Do students:**
- Choose tools to fit the problem and know how to use them?
- Recognize usefulness and limitations of tool?
- Use technological tools to explore and deepen understanding?

Attend to precision.

**Do students:**
- Communicate precisely to others?
  - Do they use clear definitions?
  - State the meaning of the symbols they use?
- Calculate accurately and precisely?
- Examine their claims and check reasoning?

Look for and make use of structure.

**Do students:**
- Recognize the structure of problem?
  - Patterns (e.g., commutative property)
  - Definitions (e.g., rectangles have 4 sides)
  - Utilize properties
  - Decompose & recombine numbers and expressions?
- Are students able to shift perspective?

Look for and express regularity in repeated reasoning.

**Do students:**
- Notice if calculations repeat themselves?
- Look for general methods? Shortcuts?
- Maintain oversight of process & attend to details?
- Evaluate the reasonableness of the results?