

CCSS Math Practices Alignment Sample

Activity: “Points, Lines and Planes” for TI-Nspire™ Technology

Note: This alignment sample is intended to highlight opportunities to use TI Technology to help facilitate students’ participation in the CCSS Standards for Mathematical Practice. The prompts and examples provided here are from the Teacher and Student activity documents and demonstrate how the activity can be used to engage students in the Practices. It is possible the activity can be used to engage students in the other Math Practices that are not specified here.

2. Reason abstractly and quantitatively.

Students should:

- Understand and explain the meaning of quantities and relationships in the problem.
- Be able to represent a problem using words, numerical expressions or equations, graphs and diagrams.
- Consider the units involved in the problem and use appropriate conversions, as needed.

TI-Nspire™ Technology and Teaching Tips:

- Discuss that lines are the intersection of planes. Allow students to provide evidence of why that is true.
- Ask students to think about how they might determine whether two planes are parallel or perpendicular.

TI-Nspire™ Navigator™ System Extensions:

- Use Live Presenter to have a student explain his/her model or solution to a problem. Encourage students to discuss the solution and how they could use similar reasoning to solve other problems.
- Question 6. Have students click on segments that are parts of skew lines. Use Class Capture to share the answers with the class and verify student understanding.

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

Students should:

- Use appropriate language, definitions, assumptions and previously established outcomes to build an explanation for their results.
- Draw conclusions based on the context of the problem and reason inductively from data.
- Justify and communicate their conclusions to others.
- Analyze and respond to the arguments of others.
- Ask useful questions to clarify others’ arguments.

TI-Nspire™ Technology and Teaching Tips:

- Ask students to think of a counterexample to the statement that two lines that are parallel are always in the same plane.

TI-Nspire™ Navigator™ System Extension:

- After doing page 1.2, send a yes/no question using Quick Poll to ask Question 3.d. If students’ responses are split, ask students who answered “no” to convince the students who answered “yes” that their answer is correct.

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4. Model with mathematics.

Students should:

- Explore mathematical models to build a context for problems.
- Use models to generalize a solution from a set of observations.
- Apply mathematics to solve problems in the real world.
- Make assumptions and approximations in order to simplify a complex situation using an appropriate model.
- Use tools to model a mathematical situation.

TI-Nspire™ Technology and Teaching Tips:

- Ask students to use the model on page 2.1 to show that the intersection of two planes is a line.
- Considering the tools available on the handheld or software, discuss what other models might be helpful for demonstrating the concepts presented in this activity. What are the limitations of those models?

TI-Nspire™ Navigator™ System Extensions:

- Use Live Presenter to have a student explain his/her model or solution for the problem.
- Use Class Capture to view students’ models for the problem. Identify various models and have students explain why they chose different models. Provide students with an opportunity to evaluate which models are best for the given problem and why.

7. Look for and make use of structure.

Students should:

- See the “big picture” in a problem and look for patterns in intermediary results.
- Identify patterns and use previous knowledge to leverage those relationships to solve problems.

TI-Nspire™ Technology and Teaching Tips:

- Discuss how to identify perpendicular and parallel planes. What geometric and algebraic properties can be used to describe all perpendicular and all parallel lines?

TI-Nspire™ Navigator™ System Extension:

- Have students examine a pattern in a function or geometric relationship. Send an open-response Quick Poll to find out what they notice.