

CCSS Math Practices Alignment Sample

Activity: “Families of Functions” 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:

- Allow students to discuss their conjectures on the effects of h and k on the graphs of the functions.
- Discuss the domain and range for the functions.
- Explain the meaning of key points on graphs: maxima, minima, zeros, intersection points, intercepts, etc.

TI-Nspire™ Navigator™ System Extension:

- 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.

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:

- If using the TI-Nspire™ Apps for iPad®, allow students to use the camera to insert an image in a new Graphs page that can be used to model a quadratic equation. Ask the students to graph a function that best fits the image.
- Use the graph of a function to model a problem and use attributes of the graph (i.e., slope, intercepts, intersections, maxima/minima) to solve the problem and interpret its solution.
- Consider the window, scale, and domain for graphical models.

TI-Nspire™ Navigator™ System Extension:

- 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.

CCSS Math Practices Alignment Sample

Activity: “Families of Functions” for TI-Nspire™ Technology

6. Attend to precision.

Students should:

- Use clear definitions and precise mathematical language when justifying their conclusions.
- Use correct symbols in expressions, label graphs accurately, specify correct units and appropriately use estimation to solve problems.
- Express numerical answers with the appropriate degree of precision.

TI-Nspire™ Technology and Teaching Tips:

- Ask students to describe the transformations for a given parent function.
- Ensure that students express their observations using appropriate terminology.

TI-Nspire™ Navigator™ System Extension:

- Use Class Capture to view students’ screens and ask students to explain the transformations for a given parent function. Be sure students use the correct symbols and precise mathematical language to express ideas and solutions.

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:

- As students move the sliders for the h and k values, be sure they make note of the effects on the graph and on the equation.
- Discuss the effects the parameters a, h, and k have on the graphs of the functions.

TI-Nspire™ Navigator™ System Extension:

- Send a multiple choice Quick Poll for Question 4
 - QUESTION: $h(x) = 3(x - 4)^2 + 2$ has been translated
 - ANSWER CHOICES: A. left 4 units, down 2 units B. left 4 units, up 2 units C. right 4 units, down 2 units D. right 4 units, up 2 units
 - Students should discuss why choice D is the correct answer.