



THE OHIO STATE UNIVERSITY

Mathematics Teaching Institute

Day Three— Making Friends of Fractions

Mathematics Teaching Institute, July 27-31, 2015

Sponsored by **Ohio** | Department
of Education



Debrief 13 Rules that Expire

What are the hardest things to teach about fractions? (Post-its to chart paper)

What are the hardest things to learn about fractions? (Post-its to chart paper)



Problem Posing - Part I

Find the area of a rectangle whose dimensions are 3 feet by 4 feet.

- Solve it!
- What was given?
- What were you being asked to find

Adapted from Brown, S. I., & Walter, M. I. (1990). *The art of problem posing* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Ltd.

Questions motivated by Varygiannes, D. (2013). The impact of open-ended tasks. *Teaching Children Mathematics*, 20(5), 277-280.

Zaslavsky, O. (1995). Open-ended tasks as a trigger for mathematics teachers' professional development. *For the Learning of Mathematics*, 15(3), 15-20.



Your garden has an area of 20 square feet.
What are possible dimensions of the garden?

- Solve it!
- What was given?
- What were you being asked to find?

Questions motivated by Varyiannes, D. (2013). The impact of open-ended tasks. *Teaching Children Mathematics*, 20(5), 277-280.

Zaslavsky, O. (1995). Open-ended tasks as a trigger for mathematics teachers' professional development. *For the Learning of Mathematics*, 15(3), 15-20.



Sally has 128 feet of fence and wants to enclose an area in her backyard so her dog can run around. How should she position the fence so the dog will have the most area to run and play?

- Solve it!
- What was given?
- What were you being asked to find?

Questions motivated by Varygiannes, D. (2013). The impact of open-ended tasks. *Teaching Children Mathematics*, 20(5), 277-280.

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What do you notice in the progression of the three tasks?



Dan Meyer: Math class needs a makeover



Your Turn!

Start with a task you would consider using in Week One of your school year.

- Adapt the task for the students in your respective classroom by removing constraints and overly guiding step-by-step instructions.
- What do you feel students will do when they encounter your adapted task?
- Be prepared to share your original and adapted-task with your table groups. This is a collaborative process!



Break

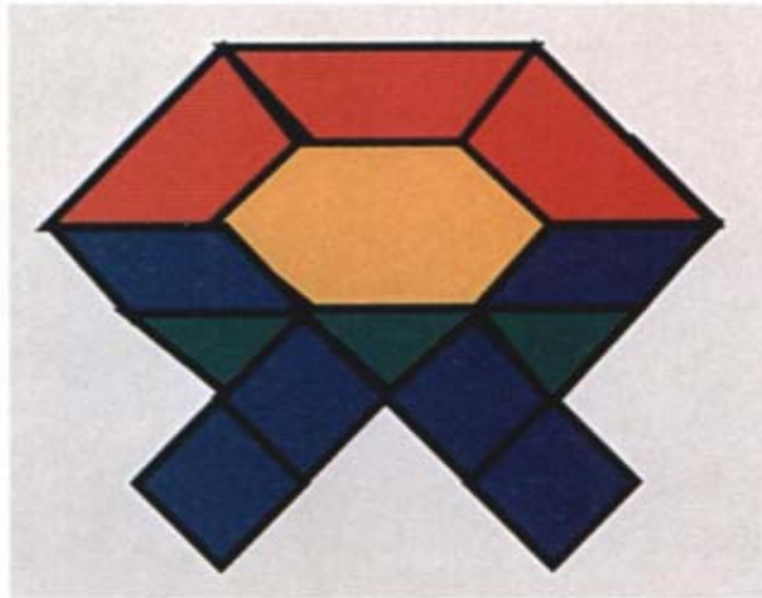
See you in 10 minutes



Math Workshop: Making Friends with Fractions

Consider Task A: (Adapted from Caldwell, 1995)

What fraction is Yellow? Green? Red? Blue?
Explain your reasoning.





In Math Workshop:

Create a design that is $\frac{1}{3}$ yellow.

Create a design with 6 pieces that are $\frac{1}{2}$ red.

Create a design in which the fraction of the area that is blue is the same as the fraction of the pieces that are blue.

(Adapted from Caldwell, 1995)



If you were learning about fractions for the first time, what advantages would math workshop have over the traditional tell-show-do approach?



Work time at math workshop
Rotate when you hear the timer
(every 15 minutes)



Lunch

We will return at 12:45



Connecting Math Workshop to Concepts Using Manipulatives

Hanging Your Fractions Out to Dry

Structuring Math Workshop



Daily Feedback Form

Homework Read: The Having of Wonderful Ideas (Duckworth, 1972)



MCP Year Three Recognition and Alumni Panel Discussion