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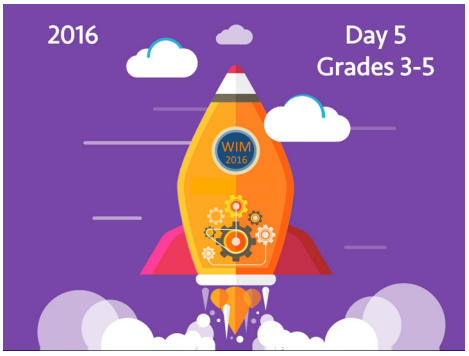

Introduction:

Mathematics problems always have many ways of seeing them, many ways of approaching them, and sometimes have different answers. In this activity there are many different possible solutions, which gives students opportunity to be creative, and to discuss their sense making. Activities such as this one allow different students to feel like their ideas are valid and valued, which makes them feel more comfortable with mathematics and enjoy learning it.

Agenda for the day:

Activity	Time	Description/Prompt	Materials
Mindset Video	5 min	Play the mindset video, *Our Brains Think about Math Visually* https://www.youcubed.org/wim2-day-5/	Mindset video day 5, *Our Brains Think about Math Visually*
Shape Origami	10 min	Set up the challenge.	Rectangular Paper (8.5x11 or something smaller)
	15 min	Challenge 1: 1. Make the shape individually 2. Convince a partner 3. Share strategies whole class *Decide how many and which challenges are right for your students, then repeat this cycle for each challenge.*	
Closing	5 min	Remind students of the importance of visualizing and drawing in mathematics, and the power of fingers for representing numbers in the brain.	

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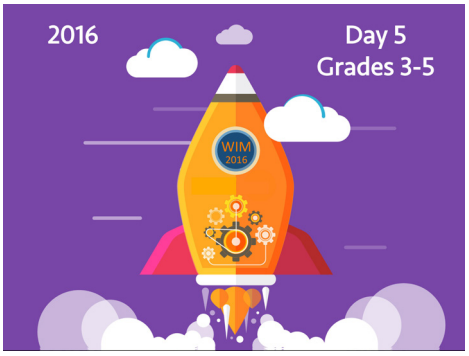

Activity: Shape Origami

This activity helps students see that mathematics is open and creative and there are lots of ways of seeing ideas. Students also experience making shapes, which invokes important brain areas.

Pass out a sheet of paper; it can be 8.5 x 11 piece of paper or any other size as long as it is a rectangle. You might choose the size of the paper depending on the age of your students and what you think would be the easiest for them to fold. For an activity like this it is nice to have extra paper on tables so students can make mistakes and try again with a different sheet of paper.

Whenever I give students an activity like this I like to describe for them what the activity will be like without saying too much about what they are going to have to do. For this activity, I would tell them I was going to give them three different challenges and all they will need to solve the challenge is a sheet of paper and their most creative thinking. With an introduction like this, I am giving messages about what mathematics is and what students should be ready to bring when they are doing mathematics.

Before revealing any of the challenges I would give students time to make sure they have a sheet of paper in front of them and have cleared everything else off the table. Try to get them excited about the challenges ahead.

When all students are ready, I would reveal one of the challenges. Move through the challenges as they make sense for your students. One possible sequence is:
1. How would you fold this sheet of paper to make a smaller rectangle?
2. How would you fold this sheet of paper to make a triangle?
3. How would you fold this sheet of paper to make a square?

Give each group enough time for every student to make their shapes. If a group or individual has finished, ask them to make a different version of the shape, e.g. a different sized rectangle.

Once all students have a rectangle, prompt students to turn to a partner and take turns convincing each other that they had folded a smaller rectangle.

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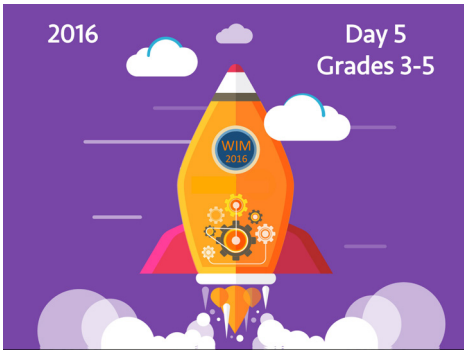
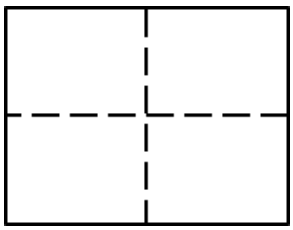
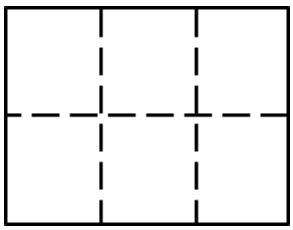
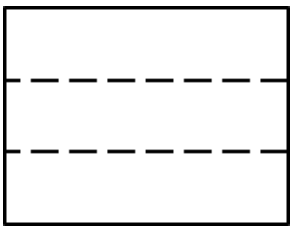


After each partner receives a chance to share and convince each other, ask some students to share their strategy for making a smaller rectangle with the whole class. When students are sharing record their strategies by sketching a sheet of paper and sketching in dotted lines where they folded to make the shape. This is a good way to visually show all the ways of seeing how to make the shapes.

Here are some examples of strategies students might use and how they can be recorded:







When the students have finished sharing and the class is convinced that they've made a smaller rectangle, ask students to share another way of making a smaller rectangle, I would keep going like this until there were many different strategies. Once a few different strategies have been shared, move the class onto the next shape and repeat the cycle of giving students alone time to think, time to share and convince a partner, and then the whole class sharing.

When closing this activity I would highlight all of the different ways of making one of the shapes, choosing the shape that had a lot of strategies. I would then ask students to share what they thought was the most challenging part of the activity.

Extensions for the activity:
- Can you fold the paper to make a circle?
- What shapes can you make by folding the paper
- Fold the paper to make a combination of two shapes e.g. a triangle and a rectangle.