

Fall 2018 Math Circle

A NOTE TO FAMILIES

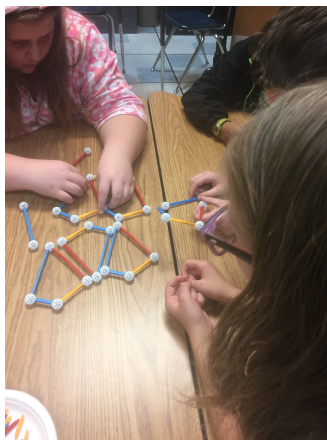
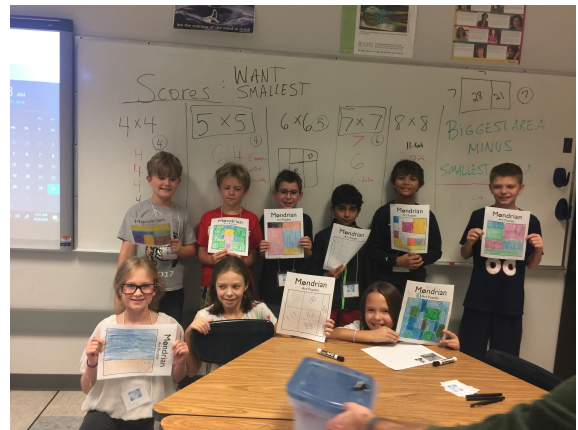
Thank you for participating in the Fall 2018 Shippensburg Area Math Circle. This session marks the beginning of our 5th year of Math Circle and we were thrilled to have 15 students registered. We really liked seeing students collaborating and working together alongside our Shippensburg University student leaders (Sarah and Crystal). We really hope this was a positive experience for your child.

We hope to continue and build the Shippensburg Area Math Circle. For more information about the Shippensburg Area Math Circle visit us at <http://webpace.ship.edu/lebryant/mathcircle>. In addition to family contributions, we thank our sponsors, the Shippensburg University Department of Mathematics and College of Arts and Sciences.

Below we include some notes about the activities we did, along with some links to learn more.

ACTIVITIES

Math and Mondrian Mondrian's paintings are famous for their bold colors and use of lines to divide up the space on the canvas. We tried new rules to try to find the "smallest possible score" for our art. Along the way we are thinking about topics like area, perimeter, optimization, and map coloring. Complete notes are included at <http://mathpickle.com/wp-content/uploads/2015/08/Mondrian-Art-Puzzles.pdf>



ZomeTools: Quadrilaterals We used ZomeTools to create a variety of quadrilaterals. We then tried to repeat those quadrilaterals to create a tiling. Last but not least, we let our imaginations run wild, creating tall or wild structures with these fun building tools. If you want to build structures at home, you don't have to have ZomeTools. In fact, marshmallows and toothpicks make good building kits.

Exploding Dots We officially participated in Global Math Week by trying out Exploding Dots. After experimenting with James Tanton's $1 \leftarrow 2$ machine we learned how to code numbers. We then found the code for our birthdays to create our own exploding dots birthday bracelets. This fun activity is a great way to explore thinking in different number systems.



Fractals Fractals are all around us, and even computers can use fractals to create realistic-looking art. The simple rules of repeating a process can create something special! The fractal we all worked on together is called Sierpinski Triangle, and it even has a connection to another famous triangle (Pascal's). We saw that many real-life objects (like vein systems and lightning bolts) are actually self-similar, exhibiting fractal properties.

Math Without Words We love working in groups, but can you work in a group with no talking allowed? Yes!! In fact, that is exactly what we did. One of the related activities involved the Tower of Hanoi, a famous puzzle involving moving disks according to simple rules. However, whether we are quiet or loud, we always listen to each and enjoy the fun of learning.

SOME RECOMMENDATIONS

We hope you continue to encourage problem-solving of all types and varieties. You can play games like Set, Blokus, or Mancala.

Interesting websites with great math content:
 Math Pickle <http://mathpickle.com/>
 Math for Love <http://mathforlove.com/>