Middle School Math Circle Problems

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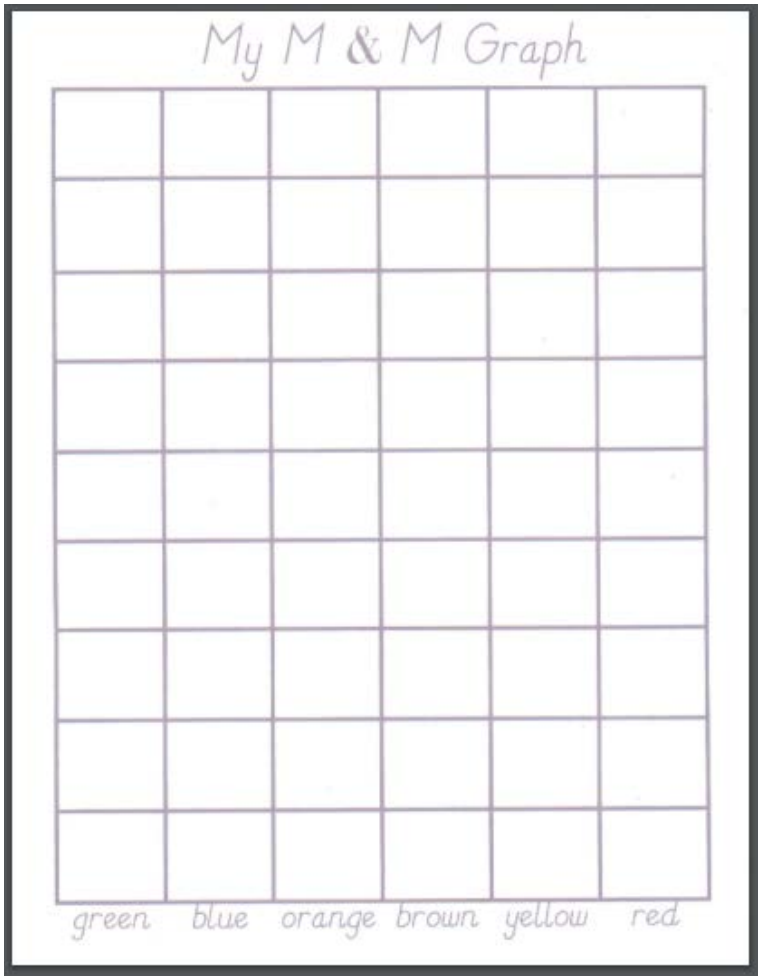
Problem 1 – M&M Math

Goal: Discover a connection between statistics and the wider world

M. S. Math Circle Problems

Statistics

Problem 1 – M&M Math



Problem 1 – M&M Math

Activity 1: Mode, Median, and Mean

Your sample:	Green	Blue	Orange	Brown	Yellow	Red	Total
Number of M&Ms							

Mode (if applicable)	
Median	
Mean	

Your partner's sample:	Green	Blue	Orange	Brown	Yellow	Red	Total
Number of M&Ms							

Mode of both samples (if applicable)	
Median of both samples	
Mean of both samples	

Problem 1 – M&M Math

Activity 2: Predictions and Percentages

Your sample:	Green	Blue	Orange	Brown	Yellow	Red	Total
Predicted number							
Predicted %							100%
Observed number							
Observed %							100%

You and a partner:	Green	Blue	Orange	Brown	Yellow	Red	Total
Predicted number							
Predicted %							100%
Observed number							
Observed %							100%

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Statistics

Entire group:	Green	Blue	Orange	Brown	Yellow	Red	Total
Predicted number							
Predicted %							100%
Observed number							
Observed %							100%

All M&Ms	Green	Blue	Orange	Brown	Yellow	Red
% reported by Mars						

NOTE:

Distribution of M&M colors as reported by Mars in 2008 (last time proportions were published online):

16% 24% 20% 13% 14% 13%

See http://blogs.sas.com/content/iml/2017/02/20/proportion-of-colors-mandms.html for more info.

Problem 1 – M&M Math

Alternatives:

- *Students create own tables/graphs*
- *Students input data into Excel*

Benefits:

- *Accessible to all levels*
- *Allows students to explore new problems*
- *Start with chocolate and colors*

Problem 2 – Platonic and Archimedean Solids

Goal: Discover Euler's Formula

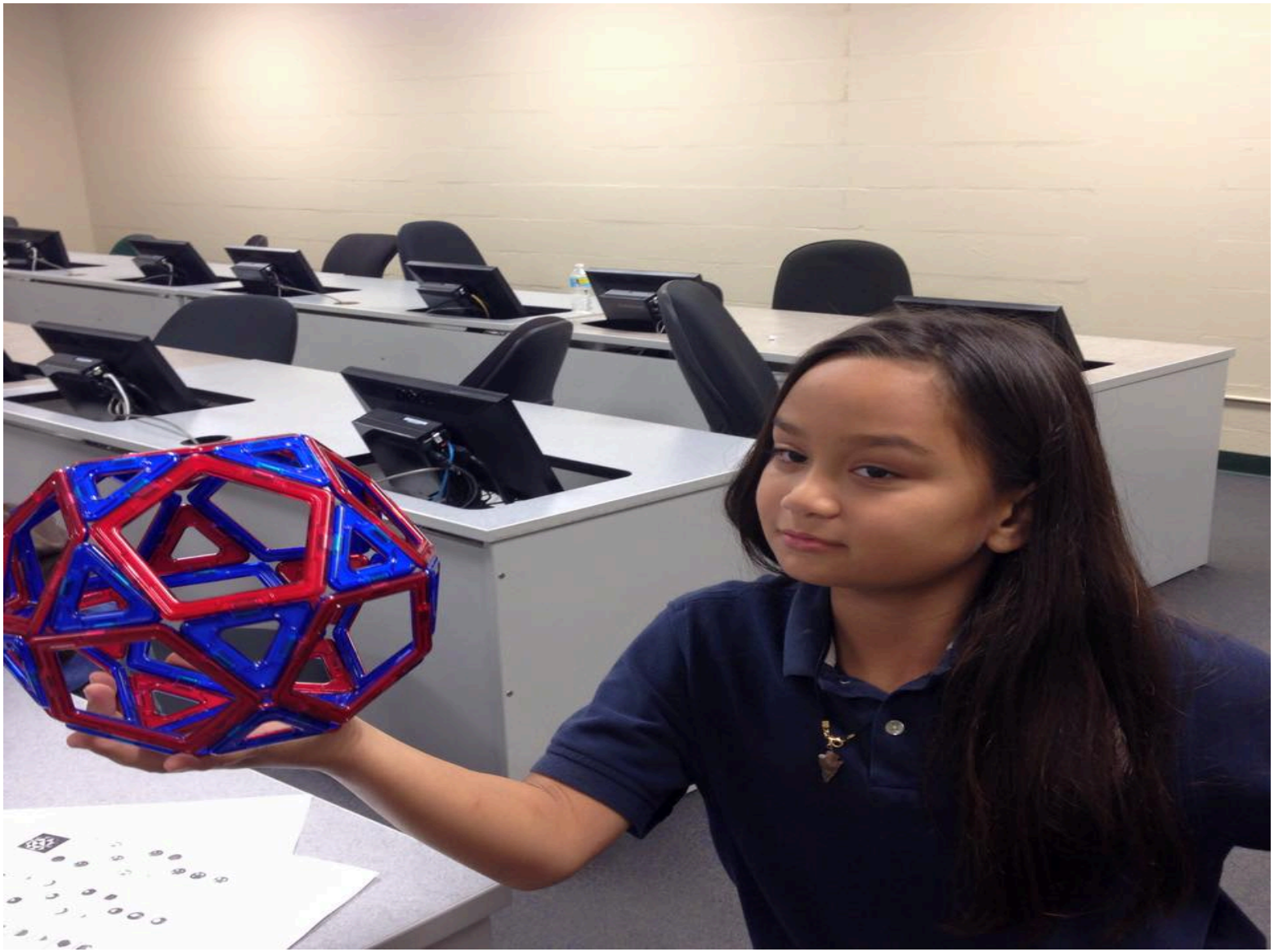
Activity 1: Have Students build all the Platonic solids using Magformers

Activity 2: Have students build a couple of the Archimedean solids using Magformers.

Activity 3: Have students count the edges, the faces and the vertices.

M. S. Math Circle Problems

Geometry



Problem 3 – Graph Theory

Goal: The Four Color Theorem

Activity 1: Provide a copy of the Seven Bridges of Königsberg and describe the problem:

"Can you take a walk through the town, visiting each part of the town and crossing each bridge only once?"

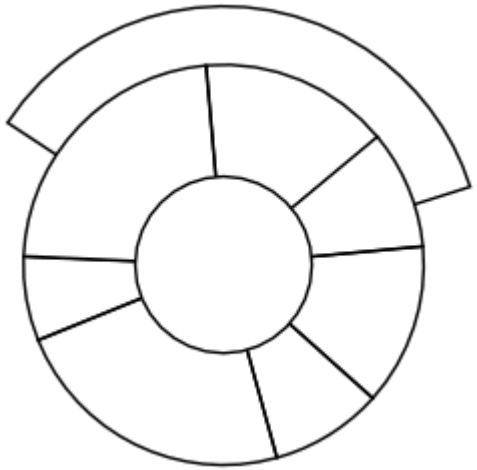
Problem 3 – Graph Theory

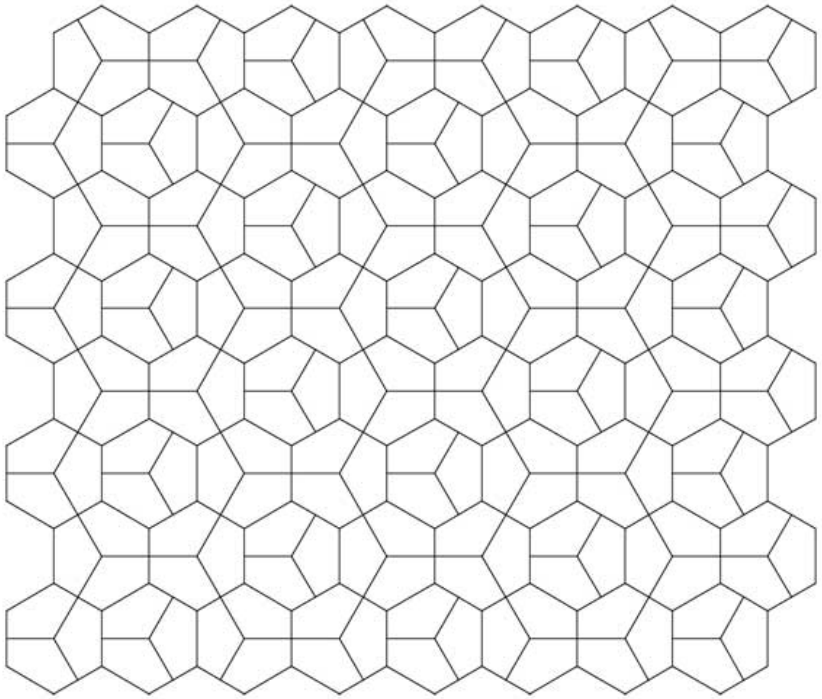
Activity 2: Give a hand-out of several different maps for students to color using the least number of colors with no regions sharing a boundary having the same color.

Activity 3: Give a hand-out of several different graphs and have students color the vertices so no adjacent vertex is colored with the same color.

Activity 4: Give a blank map of the United States for students to color with 4 colors, with no states sharing a boundary having the same color.

Problem 3 – Graph Theory





Thank you for your time!

If you have any questions, please contact us at

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