

Enatai Math Challenge

March 2010

Lucky Thirteen

These problems are labeled in order of increasing difficulty. Choose the one that fits your math and grade ability and solve the problem. People at home can help you. You will need to submit your answer using the R-E-C format that is explained on the attached form. Be certain to put the letter of your problem, your name and your teacher's name on the form when you submit it. All solutions are due to Mrs. Gaylord by the last school day of the month. Bring your completed R-E-C form to your teacher. Students who successfully complete the challenge with the correct answer and a logical explanation of their mathematical thinking will receive a certificate and their name listed in the monthly Principal Update. Happy problem solving!!



Is 13 Lucky?

Some people think so. Try your luck with grouping 13 pennies into groups of 2. On a sheet of paper show how you grouped them. Next try making groups of 3, 4, 5, and 6. Be sure to record on your paper how you made your groups. What do you notice? What kind of luck did you have in making your groups?



A dozen is 12.

A dozen is 12 items; a baker's dozen is 13. Hundreds of years ago, English bakers began the tradition of putting a little extra in the customer's basket because sometimes bakery items were lost, broken, eaten, burned or otherwise ruined. A baker's dozen made sure customers still had 12 items when they got home. What kind of cookie would you want if you could have a baker's dozen? Predict your classmates' favorite cookies. Collect data to check your predictions and then create a graph to show your data.

Polygons are shapes with many sides.



Have fun exploring this virtual geoboard:

<http://standards.nctm.org/document/eexamples/chap4/4.2/part2.htm>

Tasks: Use the virtual geoboard and the geopaper attached for recording:

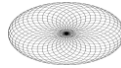
- How many different sized squares can you make?
- How many different hexagons can you make?
- Make the polygon with the fewest number of sides.
- Make the polygon with the largest number of sides.
- Make polygons with every number of sides between the fewest and the largest.

Appollo 13



Was this mission lucky or unlucky? Explain. What date did Appollo 13 lift off? What time did it lift off? Appollo 13 was planned as a lunar landing mission. How did teamwork and problem solving play a role in Appollo 13's safe return to earth? Use teamwork to solve the following problem: If each of 13 space stations must carry out a space exploration with every other research station exactly once, how many space explorations would take place altogether? Show how you know.

What are Archimedean solids?



What else can they be called? How many exist? List their names. Find a real-life example of each one. Create a chart of how many edges, faces, and vertices each Archimedean solid has. Subtract the number of edges plus the number of vertices from the number of faces for each one. Is there a pattern? Explain the result. This Web site can help you explore:

www.scienceu.com/geometry/facts/solids/index.html.

A prime number



A prime number has only two factors, itself and 1. Is 13 a prime? Using a hundreds chart, follow the rules of Eratosthenes, the Greek mathematician who devised a system for finding primes. First cross out 1. Next cross out the multiples of 2 that are greater than 2. Cross out all the multiples of 3 that are greater than 3. Do the same for the multiples of 5 and 7. The remaining numbers are considered prime. How many prime numbers are in the first 100 counting numbers? Name them and color code each as odd or even. What do you notice? Which prime numbers come before 13? Which prime numbers follow 13? Why can you stop crossing out after the multiples of 7? If you want to find all the prime numbers up to 200, could you stop crossing out after the multiples of 7? Explain your thinking. Or check out Eratosthenes Sieve at:

<http://www.andrews.edu/~calkins/math/webtexts/sieveOfEratosthenes.htm>

Triskaidekaphobia



Triskaidekaphobia is fear of the number 13. Paraskavedekatriaphobia is fear of Friday the 13th. When is the next Friday the 13th on the calendar? How many does this year have? In the next 3 years, does ever year have a Friday the 13th? Does every year have the same number of Fridays the 13th? Do you notice any patterns?

