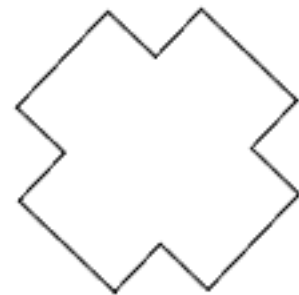
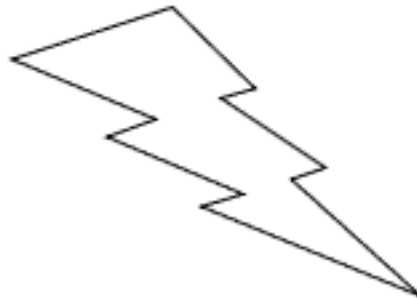
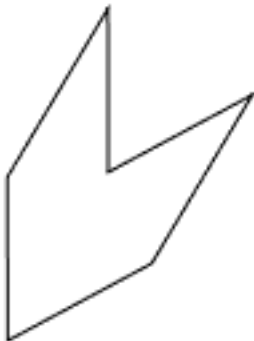
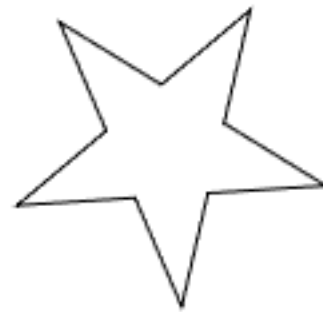
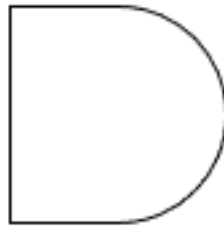


Part and Whole

Level A

You and your friend have made a batch of cookies that have different shapes. You want to share each cookie between you and your friend so that you can taste each one. You decided you want to make sure to share the cookie so both pieces are the same. How should you cut your cookies to make sure each of you has the same shape and size of the cookies?

Draw a line through the cookies where you would make a cut and explain why the two pieces are the same.

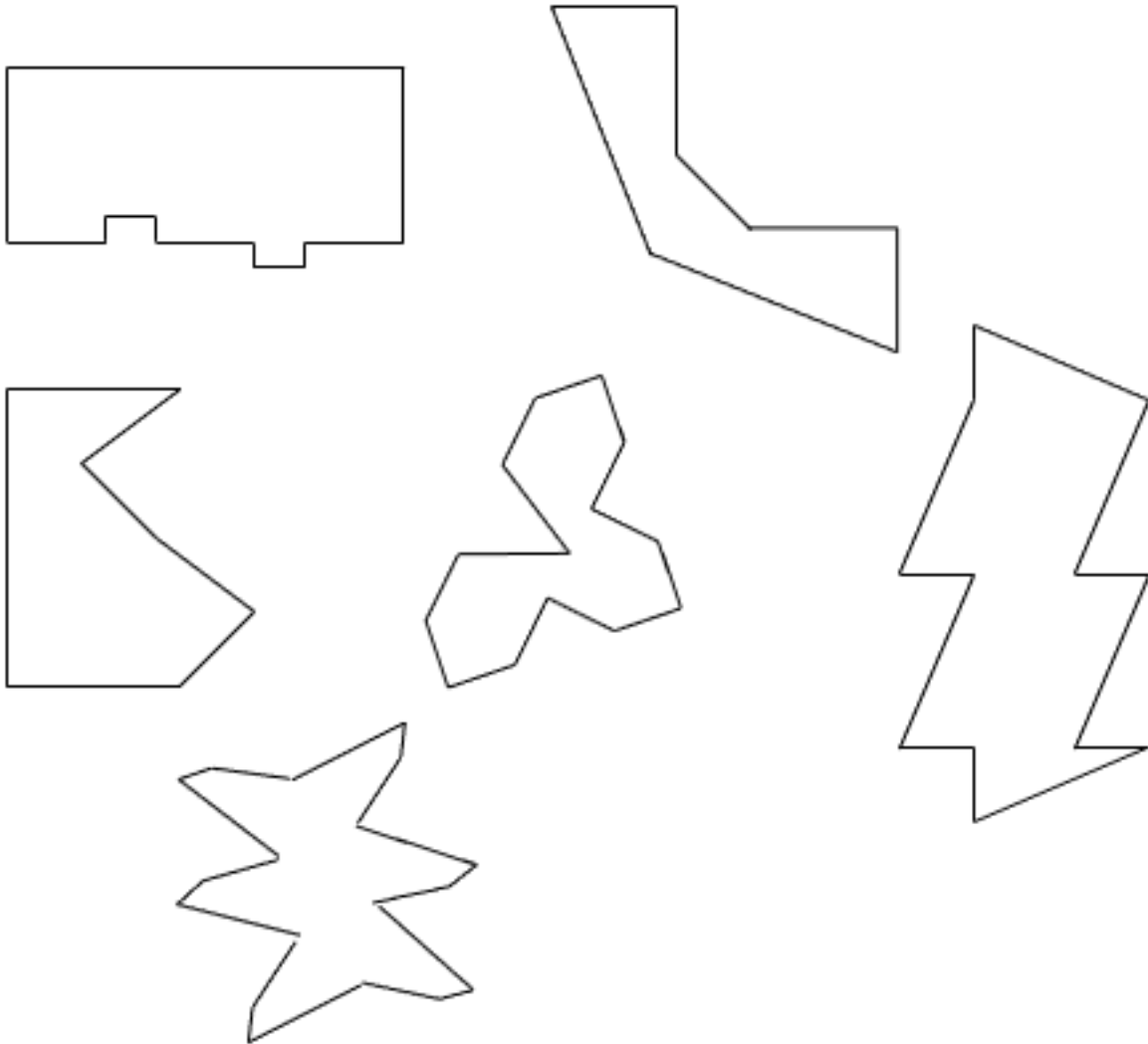


Part and Whole

Level B

Maggie and Lexie were making funny shapes out of flat clay. They decided to play a game. Maggie would make a clay shape, and Lexie would have to divide the clay shape using one cut-line. The two pieces would not have to look the same, but they would have to be the same size (same amount of clay). Below are Maggie's clay shapes. Show where Lexie should make a cut-line to make two pieces so both would be the same amount of clay.

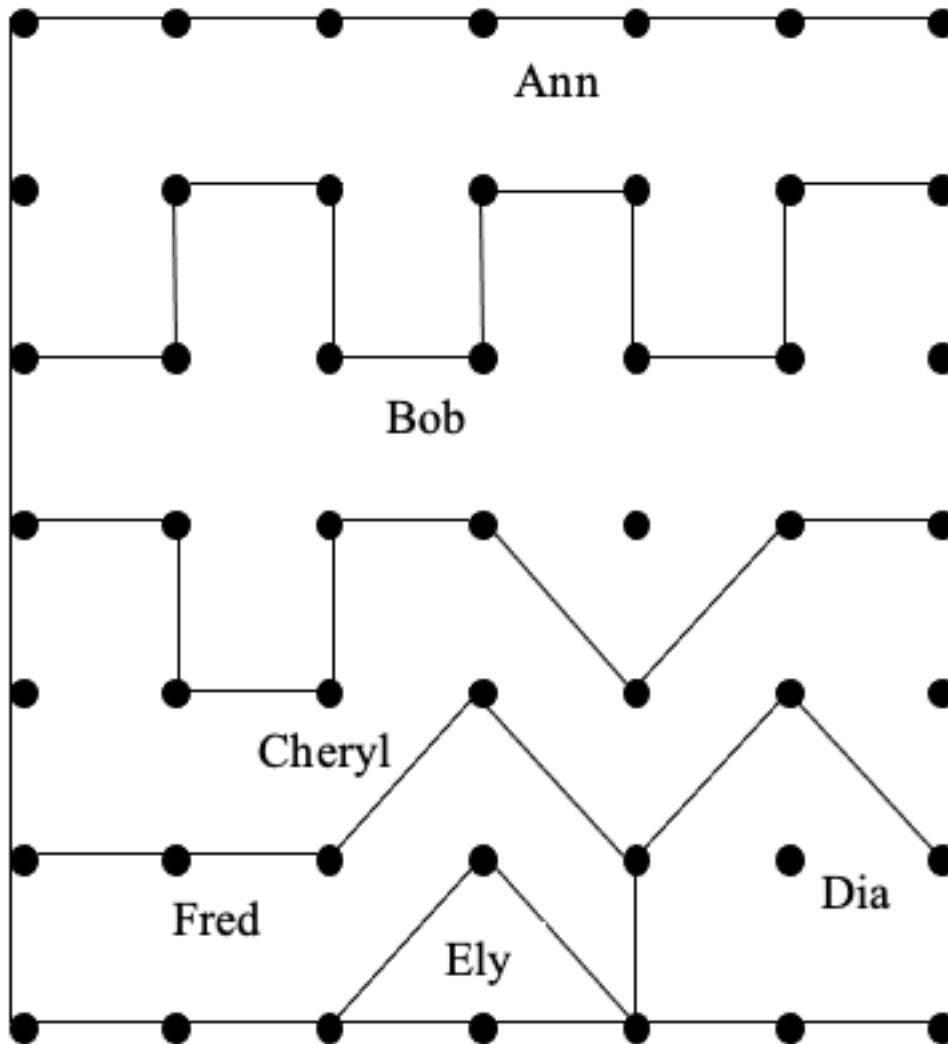
Maggie's Shapes



Part and Whole

Level C

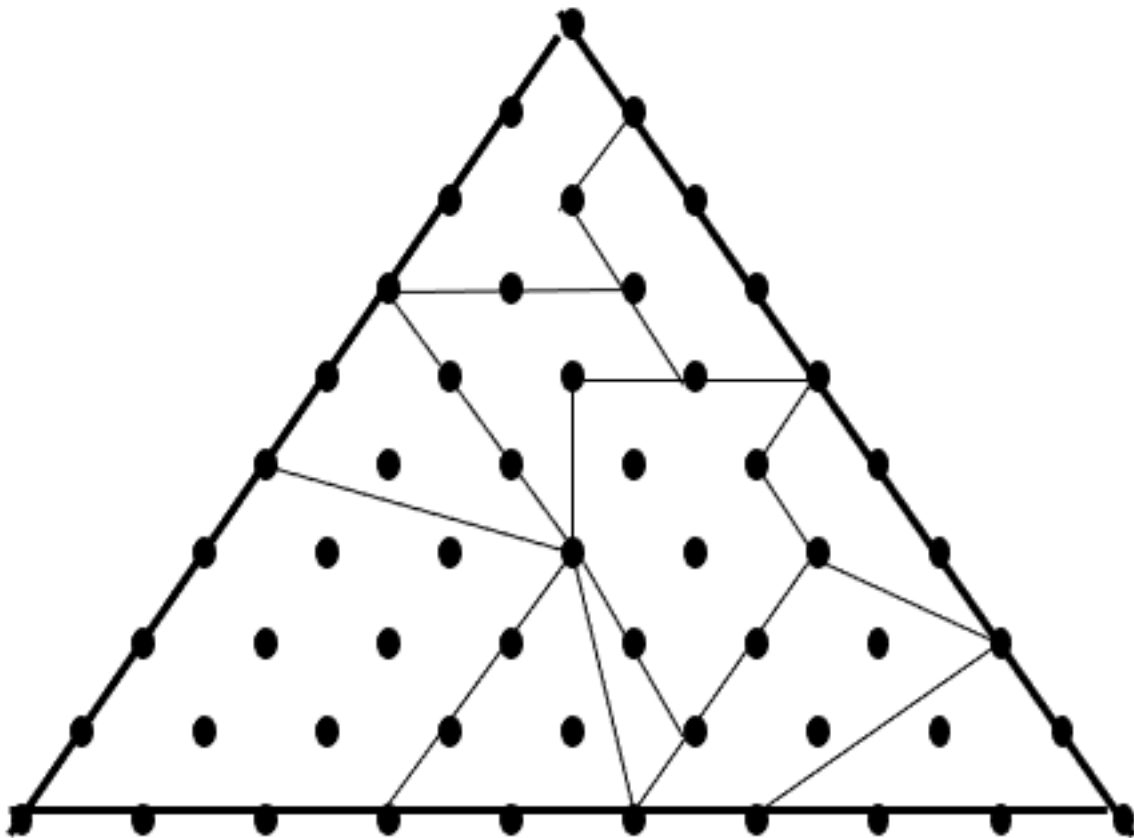
Great Uncle Alberto owned a parcel of land. In his will, he left a map of the land, which was divided into different regions. He wrote the names of each of his nephews and nieces on different regions of the map, indicating who will inherit that section of land. The regions range in size. Your job is to determine the fractional part of each region as it relates to the whole parcel. Examine the map below and determine the fractional piece of each region of land. Explain how you determined the fractional part awarded to each niece and nephew.



Part and Whole

Level D

You work for a puzzle company. They sent you the following puzzle. You need to determine the fractional size of each piece so that the company will know the materials needed for the different sized pieces. Determine the fractional size of each piece and explain your reasoning.



You have been assigned to create a more complicated puzzle. Create a design and provide a key to the fractional size of each shape, explaining how you determined its size.

Part and Whole

Level E

A unit fraction has a numerator of one and a natural number denominator. Find five unique unit fractions that sum to 1.

Determine if there are more sets of five unique unit fractions that sum to 1. If so, determine a general method for finding other sets. If not, explain why not.

What other n number of unique unit fractions can be found that sum to 1? Explain your reasoning and justify your conclusions.

Except for 1 and $\frac{1}{2}$, fractions can be broken into unit fractions that result in a sum of 1 using the following generalization,

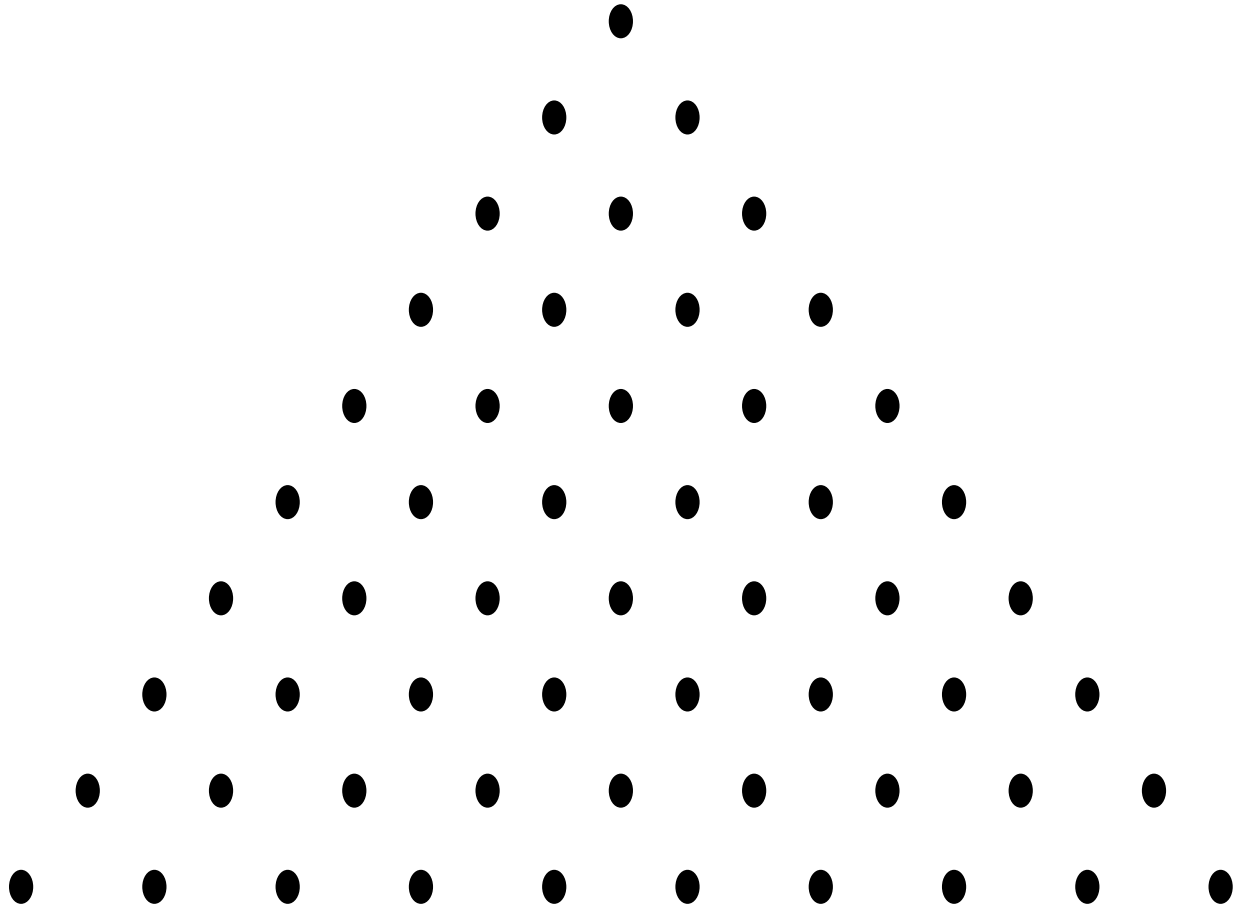
$$\frac{1}{a} = \frac{1}{(a+1)} + \frac{1}{a(a+1)} \text{ where } a > 0.$$

Verify this algebraic identity.

How can you use the identity above to write n number of unit fractions that result in a sum of 1?

Part and Whole

Manipulatives



– Inside Problem Solving: Part and Whole –

