



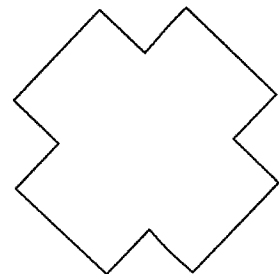
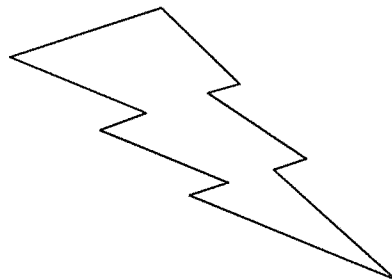
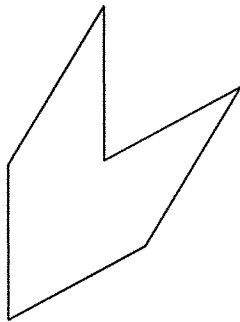
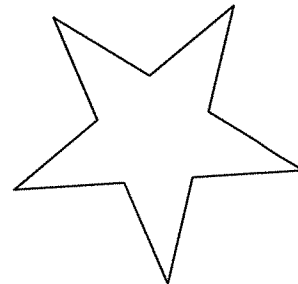
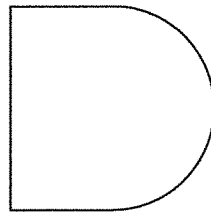
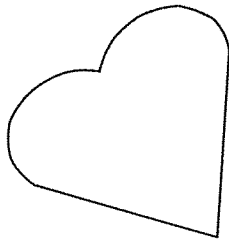
# Problem of the Month Part and Whole



## 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 have the same shape and size of the cookies?

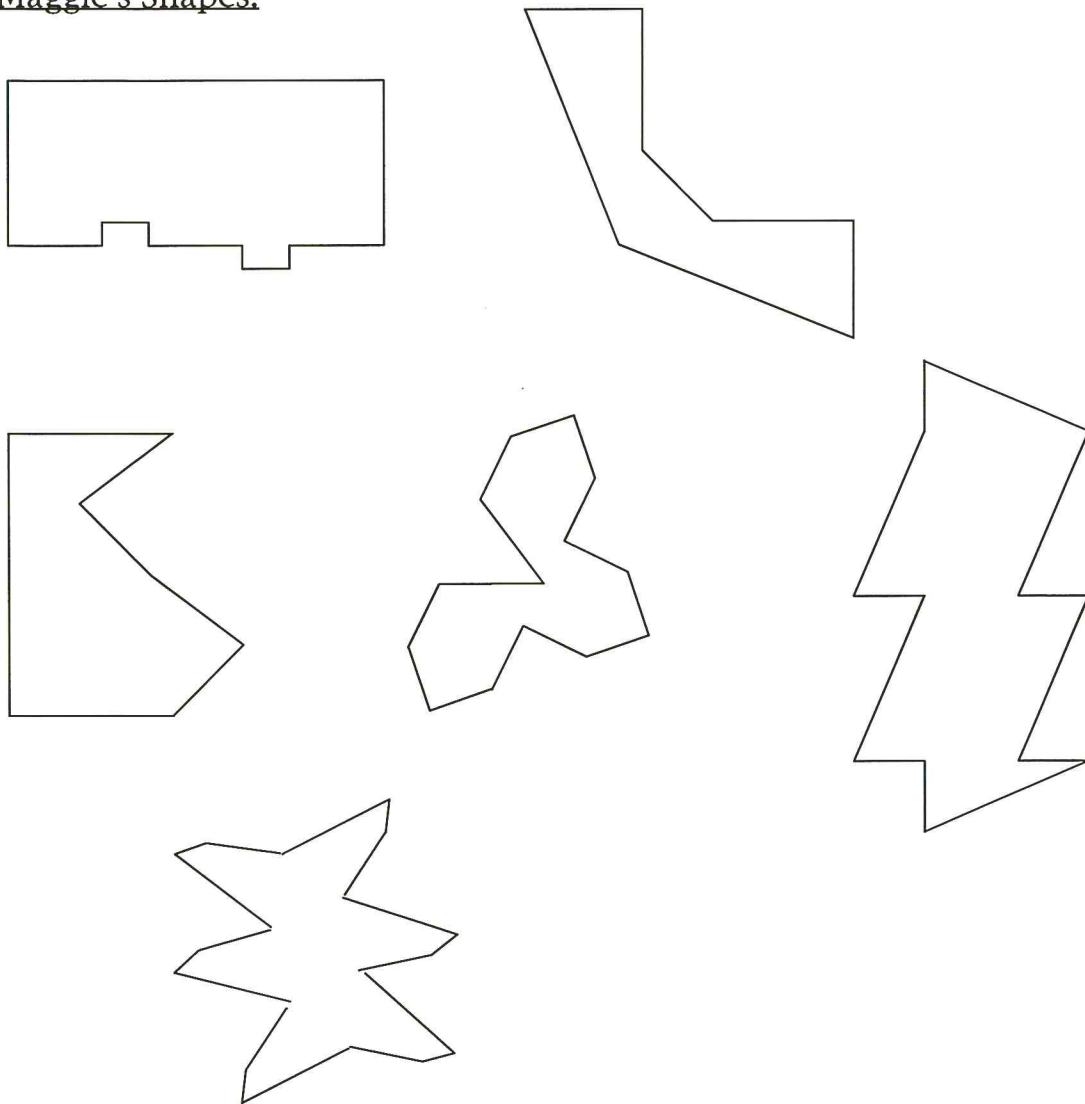
Draw a line through the cookies where you would make a cut and explain why the two pieces are the same.



**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.

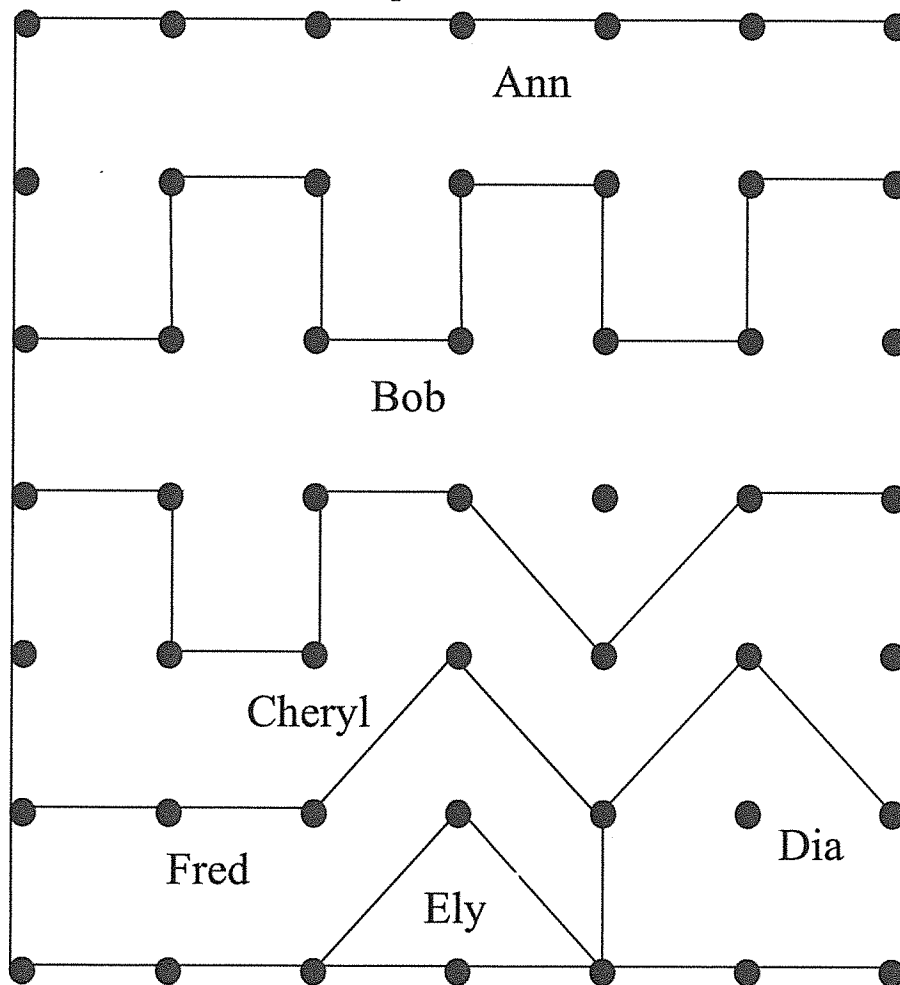
Maggie's Shapes:



Explain to Lexie why you know your methods are right.

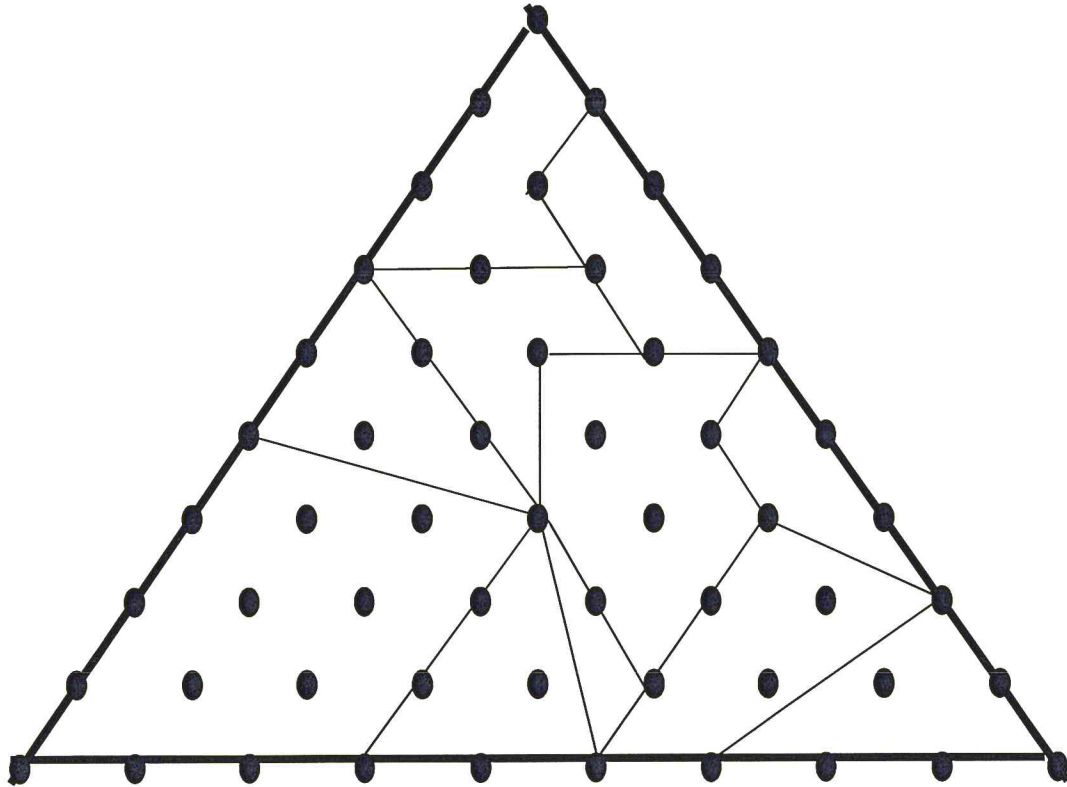
### Level C:

Great Uncle Landowner has a parcel of land he owned. In his will, he left a map of the land that is divided into different regions. He wrote the names of each of his nephews and nieces on different regions of the map. He wrote the name in each region to indicate 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 fraction piece of each region of land. Explain how you determined that fractional part awarded to each niece and nephew.



**Level D:**

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

Level E:

A unit fraction has a numerator of one and a natural number denominator. Find five different unit fractions with a sum of 1.

Determine if there are more sets of five unit fractions, if so determine a general method for finding other sets. If not, prove why not.

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

