

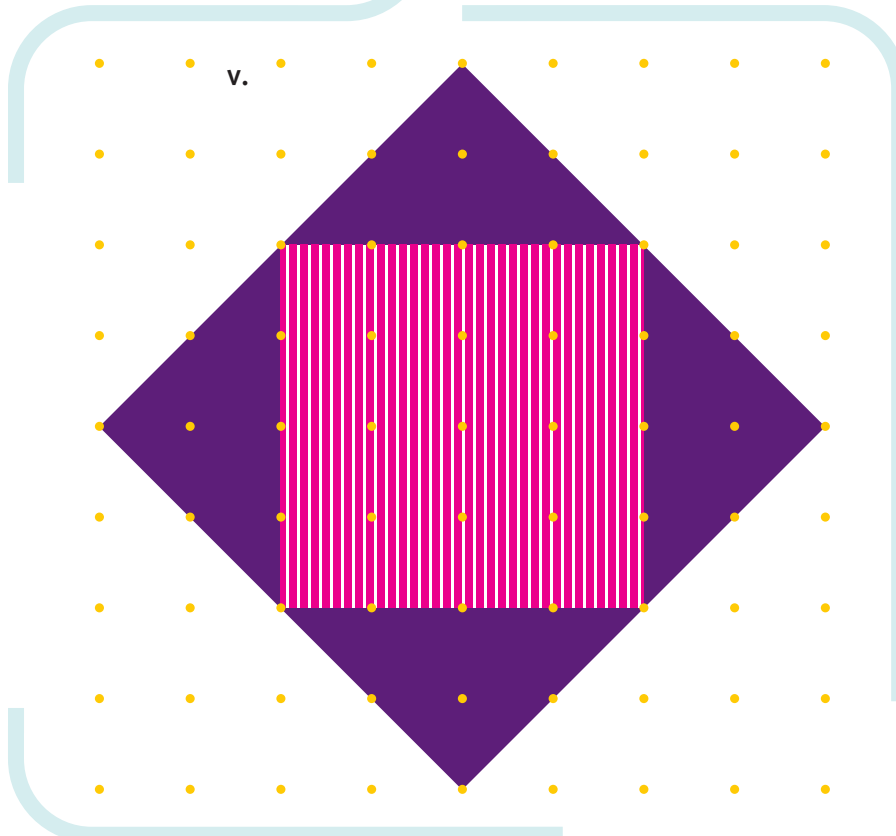
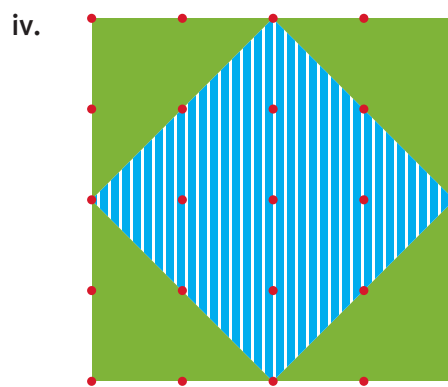
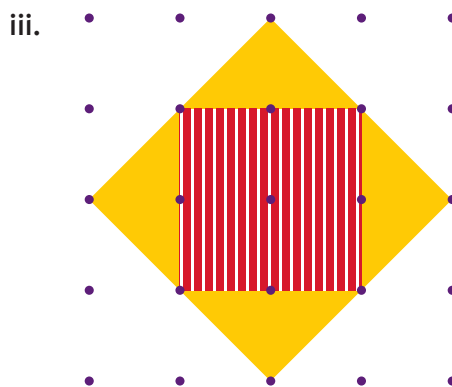
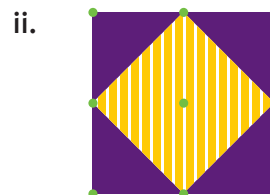
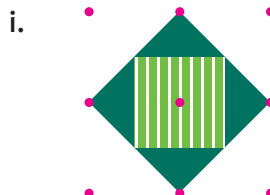
The Power of 2

ACTIVITY ONE

You need: square dot paper or a geoboard, newspaper, scissors, circular plastic lids (three different sizes), a calculator, a classmate

In this pattern, the first striped square (i) has an area of 1 square unit.

1. a. What are the areas of the other striped squares?
- b. What will the area of the sixth striped square be?

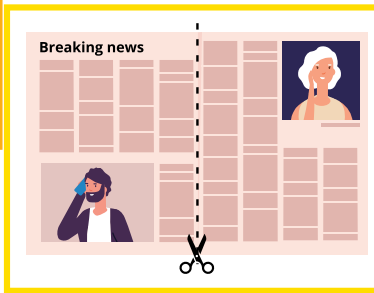


2. If the pattern is continued, give a rule for finding the area of the outside square in this pattern by using the area of the square that it encloses.
Hint: compare the area of the two squares.



ACTIVITY TWO

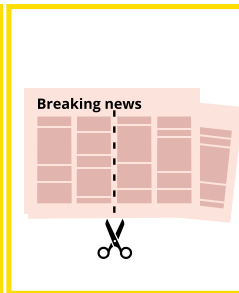
Take a large sheet of newspaper.



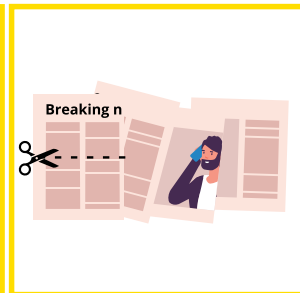
Cut it in half.



Stack the pieces and cut them in half.



Stack those pieces and cut them in half.

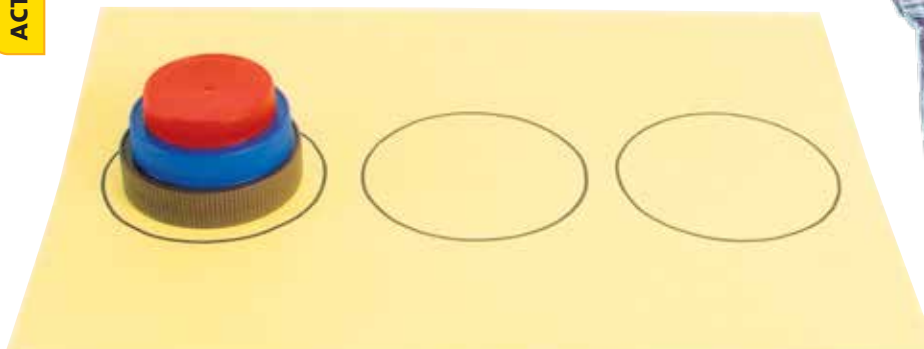


And so on. ● ● ●

1. After 5 cuts, how many pieces of paper will you have?
2. How many cuts would it take to produce more than 100 pieces?
3. Sali uses a calculator to work out that 20 cuts will give more than one million pieces of paper. Is he correct? How did he use the calculator?

ACTIVITY THREE

Draw 3 circles in a line on a piece of paper. Stack 3 different plastic lids inside one circle from the largest to the smallest.



Your task is to shift the stack to another circle by moving 1 lid at a time. When you move a lid, you must put it into an empty circle or on top of another lid that is larger.

1. a. What is the smallest number of moves it takes to shift the stack?
b. Try using 2 lids ... then 4 lids.
How many moves does each stack take to shift?
Compare your answer with a classmate's.
2. Find a rule that might help you work out how many moves it takes to shift a stack of 5 lids.