

Math Lab: Examining Patterns

Materials

- eight pieces of shoelace licorice of equal length (alternative to licorice—eight French fries)
- knife

Procedure

Follow the steps. Record your information in the chart:

Number of Licorice Pieces	8							
Expressed as Powers of 2	2^3							

Step 1: Starting with eight licorice pieces, remove (or eat) four pieces.

Step 2: In the first row of the chart, record the number of licorice pieces that remain.

Step 3: Now eat half of the licorice that is left.

Step 4: Repeat steps 1 and 2 until you have one piece of licorice left.

Step 5: Use the knife to cut the remaining licorice piece into two halves.

Step 6: Eat one-half of the licorice and record the fraction of licorice that is left (e.g., $\frac{1}{2}$ and $\frac{1}{4}$).

Step 7: Repeat steps 4 and 5 until it is too difficult to cut the remaining licorice in half.

Step 8: Complete the second row of the chart by writing the number of licorice pieces as powers of 2.

Lab Analysis

Answer the following questions:

1. What is the pattern in the first row of the chart?
2. What is the pattern in the second row of the chart?
3. What is the value equal to 2^0 ? Can you give a reason for this?
4. What is the connection between the fractions in the first row and their equivalent powers of 2?
5. If you were able to continue slicing the licorice in half, why would you never be able to completely eat the licorice?