Explore

A single human cell divides to form 2 new cells.
Each new cell divides in 2.
This process continues.
Suppose you start with a single human cell.
How many cells will there be after 8 rounds of division? 256

Show *and* Share

Describe the strategy you used to solve the problem.

Connect

Suppose a cow produces her first female calf
when she is 2 years of age.
After that, she produces a female calf each year.
Suppose each calf produces her first female calf
when she is 2 years of age and no cows die.
How many cows are there after 5 years? 8

Strategies

- Make a table.
- Use a model.
- Draw a diagram.
- Solve a simpler problem.
- Work backward.
- Guess and check.
- Make an organized list.
- Use a pattern.
- Draw a graph.

Understand

What do you know?
- Each cow produces a female calf at age 2.
- Every year after that, she produces 1 female calf.
- No cows die.

Plan

Think of a strategy to help you solve the problem.
- You can **draw a diagram**.
- Find out how many cows there are after 1 year, then after 2 years, and so on.

Copy and continue the diagram.

1 cow		🐄	Start
1 cow		🐄	After 1 year
2 cows	🐄 ←	🐄	After 2 years
3 cows	🐄	🐄 → 🐄	After 3 years

After 1 year, there is 1 cow.
After 2 years, there are 2 cows.
After 3 years, there are 3 cows.
How many cows are there after 5 years?

Check your work.
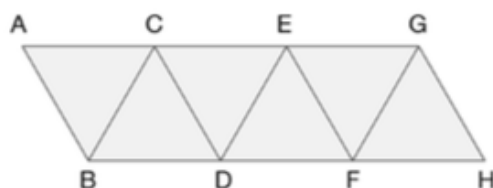What pattern do you see in the numbers of cows?

Practice

1. A mouse crawls through this maze.
   The mouse always moves forward.
   a) How many different paths could
      the mouse take from A to B?   2
      From A to C? From A to D?   2, 4
      What pattern do you see?
   b) Predict the number of different paths
      the mouse could take from A to H.   42

2. Here is a regular pentagon. Copy the pentagon.
   Draw all its diagonals.
   How many different triangles are there?
   How many of each type are there?

Reflect

How does drawing a diagram help to solve a problem?
Use words, pictures, and numbers to explain.