Unit 6, Lesson 2

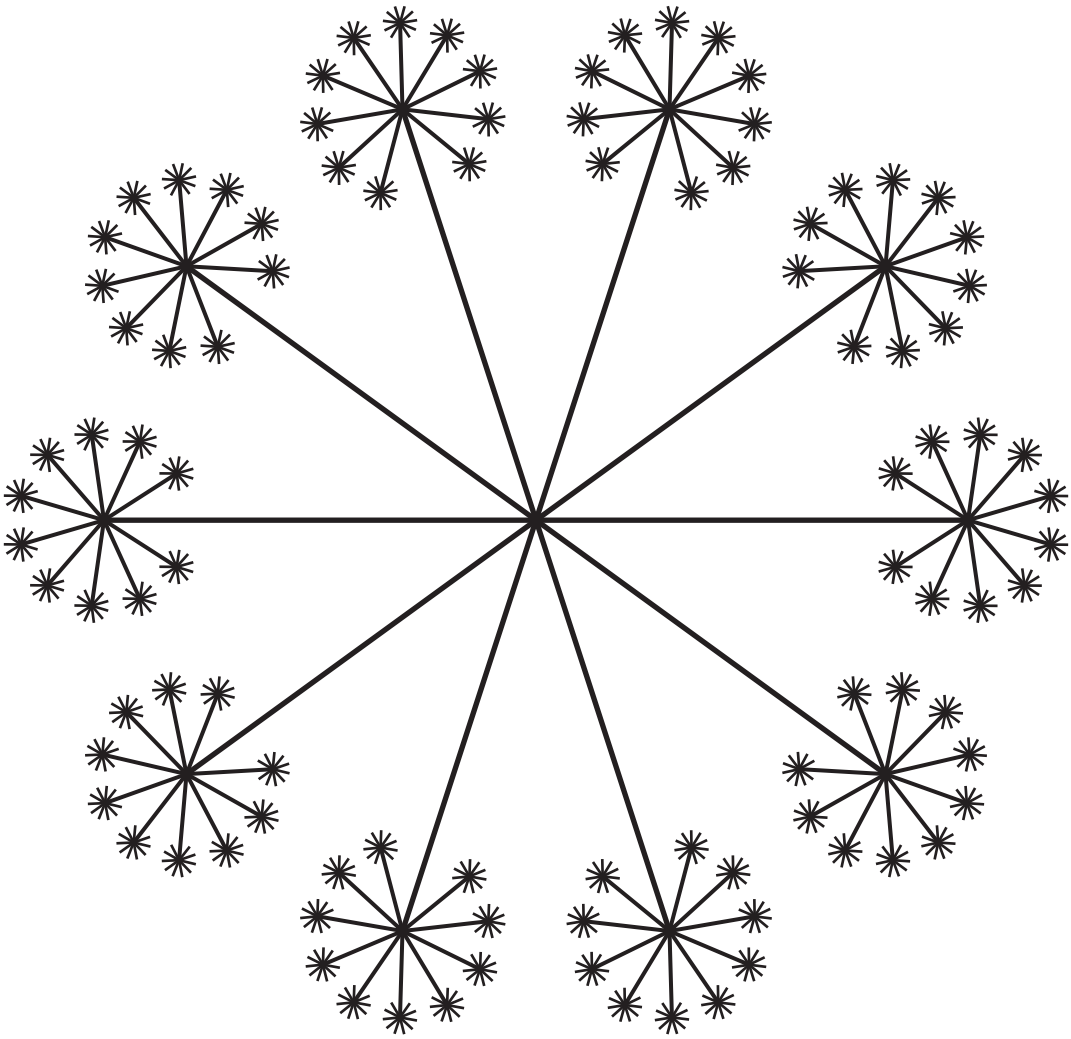
Powers of 10

Let's use exponents to show powers of 10.

Warm-up

How Many Do You See: Snowflake

How many do you see? How do you see them?



Activity 1

Populations of Delaware and the United States

1. About 1,000,000 people live in Delaware.

   a. How do you say this number?

   b. How many thousands is 1,000,000? Explain or show your reasoning.

   c. Write the number, using powers of 10.

   d. Look at the diagram in the *Warm-up*. If each snowflake is made up of smaller snowflakes, how many times do you expand the focus of the diagram to see 1,000,000 tiny segments? Explain or show your reasoning.

2. In 2023, the population of the United States was about one-third of 1,000,000,000.

   a. How would you say 1,000,000,000?

   b. How many millions is 1,000,000,000? How many thousands is it? Explain or show your reasoning.

   c. Write the number, using powers of 10.

   d. Look at the diagram in the *Warm-up*. If each snowflake is made up of smaller snowflakes, how many times do you expand the focus of the diagram to see 1,000,000,000 tiny segments? Explain or show your reasoning.

Activity 2

Powers of 10

1. Find the unknown number that makes each equation true. Explain your reasoning.

   a. $2{,}000 = _____ \times 20$

   b. $20 \times 10 \times _____ = 20{,}000$

   c. $_____ \times 10 = 100{,}000$

   d. $1{,}000 \times 10{,}000 = _____$

2. How are products of 10 useful in solving these problems?

3. Write each power of 10 as a number.

   a. 10^3

   b. 10^4

   c. 10^7

Activity 3

Beyond One Billion

1. How would you say the number 1,000,000,000,000?

2. How many billions is 1,000,000,000,000? How many millions? Explain or show your reasoning.

3. Write the number, using powers of 10.

4. Describe an example of something in the world that numbers 1,000,000,000,000.