In this activity, assume that all patterns are formed by multiplying the same number to get from one term to the next. This list of numbers is called a geometric progression or a geometric sequence. The pattern of growth is called exponential growth.

1. Find the missing term in the sequence \( \{1, 2, 4, 8, \ldots, 32, 64, 128, \ldots\} \)
2. Find the next term in the sequence \( \{5, 50, 500, 5000, \ldots\} \)

What is the minimal amount of information you need to know in order to answer a question of this type?

3. Find the next term in the sequence \( \{3, 12, \ldots\} \)
4. Find the first term in the sequence \( \{\ldots, 12, 18, \ldots\} \)
5. Fill in the blank: \( \{1, \ldots, 25, \ldots\} \)
6. Fill in the blank: \( \{1, \ldots, 9, \ldots\} \)

In general, if the first term of a geometric series is 1, what do you call the second term if you know the third term?

7. Fill in the blank: \( \{1, \ldots, 2, \ldots\} \)
8. Fill in the blanks: \( \{\ldots, 1, \ldots, 2\sqrt{2}, \ldots\} \)
9. Fill in the blanks: \( \{\ldots, 1, \ldots, 8, \ldots\} \)
10. Fill in the blanks: \( \{1, \ldots, 1, \ldots, x, \ldots\} \)

In general, if the first term of a geometric series is 1 and the \( n^{th} \) term is \( x \), what is the second term?

11. You invest $100 initially with interest compounded annually. After 10 years, your investment has grown to $200. What was the annual interest rate?