# Patterns in Numbers

You have learned that repeated multiplication can be represented using exponential notation. You may discover some interesting patterns when working with these numbers.

The table at the right shows powers of 2 from $2^1$ to $2^{10}$ in exponential and standard forms.

**1.** Describe the pattern in the table.

_____

_____

_____

**2.** Continue the pattern. Write the next three numbers in exponential and standard forms.

_____

_____

_____

| Powers of 2 | Powers of 3 |
|---|---|
| $2^1 = 2$ | |
| $2^2 = 4$ | |
| $2^3 = 8$ | |
| $2^4 = 16$ | |
| $2^5 = 32$ | |
| $2^6 = 64$ | |
| $2^7 = 128$ | |
| $2^8 = 256$ | |
| $2^9 = 512$ | |
| $2^{10} = 1024$ | |

**3.** Complete the chart above to represent the powers of 3 from $3^1$ through $3^{10}$. What patterns do you see in these numbers?

_____

_____

**4.** Are the patterns the same for the powers of 2 and 3? Why or why not?

_____

_____

_____

**5.** What do you think the pattern will be if the base is 8? Explain.

_____

_____

_____