



# Patterns that Grow

Let's create and describe growing patterns that follow a given rule.

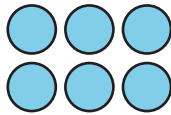
## Warm-up

### Notice and Wonder: Sets of Circles

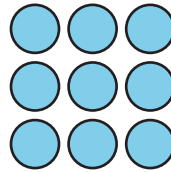
What do you notice? What do you wonder?



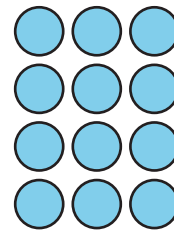
step 1



step 2



step 3



step 4

## Activity 1

### Bottle Cap Patterns

Han and Lin create patterns with bottle caps. Here are the first 2 steps.



1. Han starts with 1 row of 5 bottle caps. He adds a new row of 5 bottle caps in each step.
  - a. Describe or draw how Han's pattern will continue.

- b. What do you notice about Han's pattern? Why do you think this happens?

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2. Lin creates a different pattern. She starts with 1 row of 5 bottle caps. Then she doubles the number of rows of bottle caps.
- a. Describe or draw how Lin's pattern will continue.

- b. What do you notice about Lin's pattern? Why do you think this happens?

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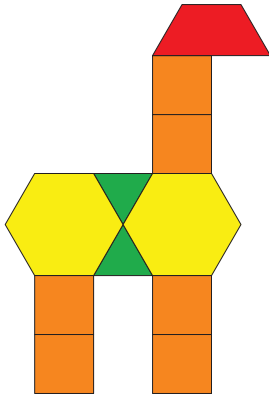
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## Activity 2

### Taller and Taller

Jada uses pattern blocks to make a giraffe. She wants to create a pattern with this giraffe as the first step. For each step that follows, her rule is to add 2 square blocks to make the giraffe's neck longer.



Partner A:

1. Create the next 3 steps of Jada's pattern. Use pattern blocks or draw to continue Jada's pattern.
2. List the number of square blocks in each of the first 5 steps. Write 2 observations about the numbers in the pattern.

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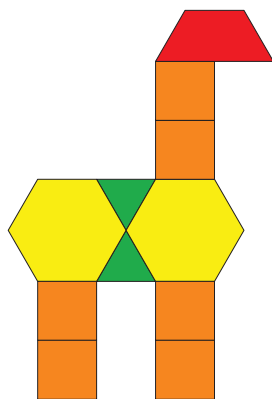
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3. Will a step ever have 25 square blocks? Explain or show your reasoning

Jada uses pattern blocks to make a giraffe. She wants to create a pattern with this giraffe as the first step. For each step that follows, her rule is to add 2 square blocks to make the giraffe's neck longer.



Partner B:

1. Create the next 3 steps of Jada's pattern. Use pattern blocks or draw to continue Jada's pattern.
2. List the total number of blocks in each of the first 5 steps. Write 2 observations about the numbers in the pattern.

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3. Will a step ever have a total of 25 blocks? Explain or show your reasoning.