Linear Relations - Pictorial Patterns

In this tutorial, we'll explore how to develop an equation for describing a relationship in a pictorial pattern.

An urban agriculture company uses wooden boards as edging around rooftop garden plots. The number of wooden boards the company uses is *related* to the number of garden plots required by the customer.

The diagrams below represent the garden plots.
Seeing *patterns* in diagrams can help us identify *relationships.*

- What details would you consider important when trying to determine a *pattern* in the diagrams shown above?

- How would you demonstrate your thinking as you look to determine a *pattern* that *relates* the number of wooden boards to the number of garden plots?

- How do the numbers that appear throughout your *pattern*, illustrate the *relationship* of wooden boards to garden plots?

- Can you think of other ways to represent or write this *pattern*?

- How could you determine the number of wooden boards required for 7 garden plots using the previous *patterns?*

Recording information from the diagrams into a *table of values* will also help us determine a *pattern*.

- How would you demonstrate your thinking as you construct your table and record values from the diagrams?

- How would you use the values recorded in your table to explain the same *pattern* we saw in the diagrams?

- How would you use your *table of values* to determine the number of boards required for 7 garden plots?

- Can you anticipate problems when using the *pattern* in your *table of values* to determine the number of wooden boards required for 50 garden plots?

We can also write an *equation* to show how the number of boards, *b*, is *related* to the number of plots, *p*.

- How would you demonstrate your thinking as you use the *pattern* in your *table of values* to write an *equation* that represents the *relationship* of boards, *b*, to plots, *p?*

- How would you explain and demonstrate verifying your *equation* using the values in your table?

- How does your *equation* explain how the number of boards, *b*, is *related* to the number of plots, *p?*

Let's try using your *equation* to solve some problems…

- How would you explain and demonstrate your solution for determining how many boards are needed for 50 plots?

- How would you explain and demonstrate your solution for determining how many plots could be constructed using 79 boards?

Linear Relations - Pictorial Patterns - Skills Checklist

- ☑ I can identify a pattern in a diagram
- ☑ I can explain how a pattern can represent a relationship
- ☑ I can illustrate a pattern by constructing a table of values
- ☑ I can describe a relationship using a pattern in my table of values
- ☑ I can write an equation to represent a relationship
- ☑ I can explain and demonstrate how I use my equation to solve for a missing term in a relationship

Linear Relations - Pictorial Patterns - Worksheet