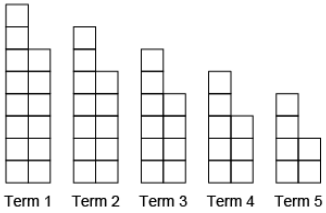
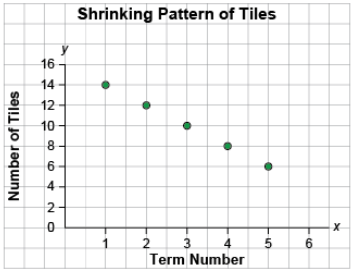
Patterning and Algebra

Activity 4 Assessment

Patterning Consolidation

Generalizing and Representing Patterns

Identifies how a pattern repeats, increases, or decreases and describes pattern rule.	Represents patterns using tables or charts and describes the pattern rule.	Represents patterns using graphs and describes the pattern rule.	Represents patterns symbolically and writes the pattern rule.
 "This is a decreasing pattern. The pattern rule is: Start with 14 red tiles and take away 2 tiles each time."	<table><tr><th>Term Number</th><th>Number of Tiles</th></tr><tr><td>1</td><td>14</td></tr><tr><td>2</td><td>12</td></tr><tr><td>3</td><td>10</td></tr><tr><td>4</td><td>8</td></tr><tr><td>5</td><td>6</td></tr></table> "The table shows the number of tiles decreases by 2 each time."	 "By looking at the graph, I see that the number of tiles starts at 14 and decreases by 2 with each term."	18, 17, 15, 12, 8, … "Pattern rule: Start at 18 and take away 1. Increase the number taken away by 1 each time."

Observations/Documentation

Patterning and Algebra

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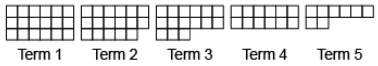
Generalizing and Representing Patterns (con't)

Extends patterns using repeated addition/subtraction, multiplication, and division.



18, 17, 15, 12, 8, …

"The next term would have 8 – 5 = 3 squares. It would be the last term because I cannot take 6 away from 3. Decreasing patterns end but repeating and increasing patterns don't."

Creates patterns and explains the pattern rule.

Term Number	Picture	Number of Counters
1	●	1
2	●● ●●	4
3	●●● ●●● ●●●	9
4	●●●● ●●●● ●●●● ●●●●	16

"I created an increasing pattern with the pattern rule: Start at 1. Multiply the term number by itself."

Uses patterns to solve problems.

Term Number	Picture	Number of Counters
1	●	1
2	●● ●●	4
3	●●● ●●● ●●●	9
4	●●●● ●●●● ●●●● ●●●●	16

How many counters are in Term 8?

"64 counters; I used the rule and multiplied the term number by itself: 8 × 8 = 64."

Fluently identifies, creates, and extends various patterns to solve real-life problems.

Number of Bracelets	Number of Plain Beads	Number of Patterned Beads
1	4	12
2	8	24
3	12	36
…	…	…
8	32	96

Naomi beaded bracelets using 4 plain and 12 patterned beads.

"Plain beads: Multiply the number of bracelets by 4: $4n$
Patterned beads: Multiply the number of bracelets by 8: $8b$."

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Extending Patterns to Solve Problems

Determines the pattern rule.

100, 97, 91, 86, 70, 55, 37, 16

"The pattern rule is: Start at 100 and subtract 3. Increase the number subtracted by 3 each time."

Uses pattern rule to determine missing values.

How would you determine the missing value for week 5?

Week	Practice Time (min)
1	25
2	35 = 25 + 10
3	50 = 35 + 15
4	70 = 50 + 20
5	
6	125 = 95 + 30

"The pattern rule is: Start at 25 and add 10. Then increase the amount added by 5 each time. Week 5 is 70 + 25 = 95."

Extends patterns using mathematical expressions.

3, 8, 13, 18, 23, 28

"I can use the expression $5n - 2$ to extend the pattern, where n represents the term number. The seventh term would be $5 \times 7 - 2 = 33$."

Flexibly describes and solves problems using mathematical expressions and properties.

Input	Output
10	19
9	17
8	15
7	13
6	11
5	
4	

"To determine the output number, multiply the input number by 2 and subtract 1. I would use the expression $2n-1$, where n is the term number, to find the missing values: $2 \times 5 - 1 = 9$, $2 \times 4 - 1 = 7$."

Observations/Documentation