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| **Generalizing and Representing Patterns** | | | |
| Identifies how a pattern repeats, increases, or decreases and describes pattern rule.    “This is a decreasing pattern. The pattern rule is: Start with 14 red tiles and take away 2 tiles each time.” | Represents patterns using tables or charts and describes the pattern rule.    “The table shows the number of tiles decreases by 2 each time.”   |  |  | | --- | --- | | Term  Number | Number of Blocks | | 1 | 8 | | 2 | 16 | | 3 | 24 | | Represents patterns using graphs and describes the pattern rule.    “By looking at the graph, I see that the number of tiles starts at 14 and decreases by 2 with each term.” | Represents patterns symbolically and writes the pattern rule.  18, 17, 15, 12, 8, …  “Pattern rule: Start at 18 and take away 1. Increase the number taken away by 1 each time.” |
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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.    “I created an increasing pattern with the pattern rule: Start at 1. Multiply the term number by itself.” | Uses patterns to solve problems.    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.    Naomi beaded bracelets using 4 plain and 12 patterned beads.  “Plain beads: Multiply the number of bracelets by 4: 4*n* Patterned beads: Multiply the number of bracelets by 8: 8*b*.” |
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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?    “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  5*n* – 2 to extend the pattern, where *n* represents the term number.  The seventh term would be  5 × 7 - 2 = 33.” | Flexibly describes and solves problems using mathematical expressions and properties.    “To determine the output number, multiply the input number by 2 and subtract 1. I would use the expression 2*n*-1, where *n* is the term number, to find the missing values:  2 × 5 - 1 = 9 , 2 × 4 - 1 = 7.” |
| **Observations/Documentation** | | | |
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