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| **Generalizing and Representing Increasing and Decreasing Patterns** | | | |
| Recognizes that a pattern increases or decreases    “The terms are getting bigger.” | Identifies how a pattern changes (describes rule)    “It grows by 2 tiles each time.” | Represents patterns symbolically and writes rules using addition or subtraction  1, 3, 5, …  “Start at 1 and add 2 each time.”  17, 14, 11, …  “Start at 17 and take away 3  each time.” | Extends patterns using repeated addition and subtraction  357 –  9 = 348 357 – 12 = 345 357 – 15 = 342 357 – 18 = 339  “I added 3 to the number taken away and subtracted 3 from the difference.” |
| **Observations/Documentation** | | | |
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| Finds missing terms or errors in patterns  3, 8, 13, 18, 22, 28, ….  “Start at 3 and add 5 each time.  18 + 5 = 23, so 22 should be 23.”  32, 28, ★, 20, 16, 12, 8, ….  “Start at 32 and subtract 4 each time. 28 – 4 = ★, so ★ is 24.” | Creates patterns and explains pattern rules  “85, 75, 65, 55, …. I started with my house number and took away 10 each time.” | Uses patterns to solve problems  “If I save 2 quarters a day, when will  I have 10 quarters?  2, 4, 6, 8, 10 I will have 10 quarters after 5 days.” | Identifies and extends patterns involving multiplication    “Each input number is  multiplied by 2.” |
| **Observations/Documentation** | | | |
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| **Identifying Equivalent Expressions** | | | |
| Models expressions concretely to determine equivalence    “I could trade rods for other rods to make both models look the same. So, 2 × 8 and 4 × 4 are equivalent.” | Use number relationships or mental math strategies to determine equivalence  9 + 7 and 42 – 27  “9 + 7: take 1 from 9 and give it to 7 to make 8 + 8, or 16. 42 – 27: add 3 to each number to make 45 – 30, or 15. Since 15 doesn’t equal 16, the expressions are not equivalent.” | Uses equal sign as balance (left side equals right side) and not equal sign as imbalance  2 × 8 = 4 × 4 9 + 7 ≠ 42 − 27  “The equal sign means that the expressions on both sides are worth the same amount.” | Records an equation with an unknown to match a given situation  “I started with 12 stickers.  My friend gave me some more.  Now I have 21 stickers.   12 + ■ = 21   I used a box to represent the unknown, but I could have used a different shape.” |
| **Observations/Documentation** | | | |
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