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| **Generalizing and Representing Patterns** | | | |
| Identifies how a pattern repeats, increases, or decreases and describes the pattern rule.    “This is an increasing pattern. The pattern rule is: Start with 5 red tiles and add 4 tiles each time.” | Represents patterns using tables, charts, or graphs and describes the pattern rule.    “The graph represents a growing pattern. The pattern rule is: Multiply the term number by 4 and add 1.”   |  |  | | --- | --- | | Term  Number | Number of Blocks | | 1 | 8 | | 2 | 16 | | 3 | 24 | | Represents patterns symbolically, using algebraic expressions and equations.    “An algebraic expression for the pattern rule: 4*n* + 1, where *n* is the term number. An equation for the pattern: *v* = 4*n* + 1, where *v* is the term value.” | Identifies and describes different representations of patterns as linear or non-linear.    “The first graph represents a linear pattern because the points lie on a straight line. The second graph represents a non-linear pattern because the points do not lie  on a straight line.” |
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| **Generalizing and Representing Patterns (cont’d)** | | | |
| Extends patterns using repeated addition and subtraction, multiplication, and division.    “This is a linear decreasing pattern because the same number (3) is subtracted each time. To extend the pattern, I subtract 3 from the previous term: 11 − 3 = 8, 8 − 3 = 5, 5 − 3 = 2. The term values can be represented with the expression  23 − 3*n*, where *n* is the term number.” | Creates and translates linear patterns using various representations.  Kiera has $15 to spend on items that cost $3 each.    “The table shows that for each additional item bought, the money left decreases by $3. The graph shows the same linear pattern, where the money left decreases by $3 as you move from point to point.” | Uses patterns to represent and solve problems.  How far had the bus travelled after 3 h 30 min?    “The bus travels 70 km in 1 h  (60 min). So, in 30 min,  the bus travels 70 km ÷ 2 = 35 km.  In 3 h, the bus travels 210 km.  So, in 3 h 30 min, the bus travels 210 km + 35 km = 245 km.” | Fluently identifies, creates, and extends patterns to solve real-life problems.  How much would a 6-km ride cost?    “I added 2 × $0.50 = $1.00 to the cost of a 4-km ride which is $5.00. So, a 6-km ride costs:  $5.00 + $1.00 = $6.00.  Or, I could multiply the number of kilometres by $0.50, then add $3:  6 × $0.50 + $3 = $3 + $3, or $6.” |
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| **Number Pattern Relationships** | | |
| Recognizes pattern relationships in repeating, increasing, and decreasing patterns.    “I see a relationship that shows skip-counting backward by 3. The rule is: Start with 20 tiles and take away 3 tiles each time.” | Identifies and describes linear and non-linear patterns in tables, charts, and graphs.    “The graph shows a non-linear increasing pattern. The points do not lie on a straight line, and a different number is added to the term value each time.” | Creates and translates repeating, increasing, and decreasing patterns using various representations.    “Each of these representations shows a linear pattern that follows the pattern rule: Start at 20 and subtract 3 each time.” |
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| **Number Pattern Relationships (cont’d)** | | |
| Creates and translates repeating, increasing, and decreasing patterns and describes them using algebraic expressions and equations.    “I created this increasing pattern. An expression for the term values is: 3*n* + 2, where *n* is the term number. An equation for this pattern is:  *v* = 3*n* + 2, where *v* is the term value.” | Describes patterns to show relationships among whole numbers and decimals with tenths, hundredths, and thousandths.    “As the number that is subtracted decreases by 0.001, the difference increases by 0.001.” | Fluently identifies and describes linear and non-linear patterns and justifies choice of representation to show pattern relationships.  Students raised $180 to buy 8 games that cost $26 each. Do they have enough money?    “This is a linear pattern where $26 dollars is added each time. I used the equation *c* = 26*n* to determine the cost of n games in dollars, where n = 8: *c* = 26 × 8, which is $208. There is not enough money to buy games for 8 classes.  Only 6 classes can have a game.” |
| **Observations/Documentation** | | |
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