Patterning and Algebra

Activity 2 Assessment
Solving Problems

Extending Patterns to Solve Problems

Determines the pattern rule.

5, 10, 15, 20, 25, 30, 35, 40

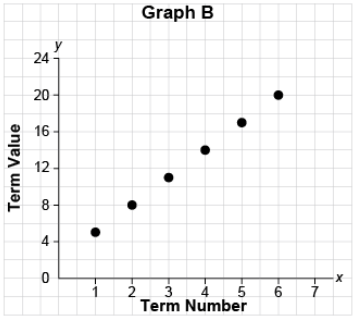
"The term numbers are consecutive multiples of 5."

Uses pattern rule to determine missing values.

Term Number	5	10	15		25	30
Term Value	16	31		61	76	

"The pattern rule for the term numbers is: Skip count by 5s. So, the missing term is 20. The pattern rule for the term values is: Multiply the term number by 3, then add 1. The missing term values are: 15 × 3 + 1 = 46 and 30 × 3 + 1 = 91."

Extends patterns using mathematical expressions.



"I can use the expression 3*n* + 2 to extend the pattern, where *n* represents the term number. The seventh and eighth terms would be 3 × 7 + 2 = 23 and 3 × 8 + 2 = 26."

Flexibly describes and solves problems using mathematical expressions and properties.

Zac earned $504 to buy games for a children's hospital.
Each game costs $64.
How many games can Zac buy?

Number of Games Bought	Total Money Spent ($)	Money Left Over ($)
1	64	440
2	128	376
3	192	312
4	256	248
5	320	184
6	384	120
7	448	56

"Expression for money spent ($) is 64*v*, where *v* is the number of games bought. The money left over, in dollars, is: 504 – (the money spent) = 504 – 64*v*. Zac can buy 7 games and have $56 left over."

Observations/Documentation

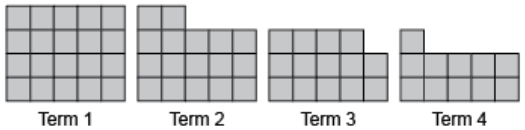
Patterning and Algebra

Activity 2 Assessment

Solving Problems

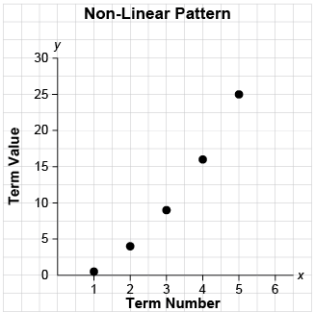
Number Pattern Relationships

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."

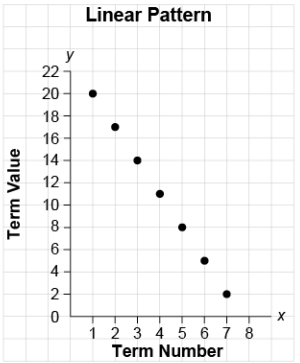
Identifies and describes linear and non-linear patterns in tables, charts, and graphs.



"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.

Term Number	1	2	3	4
Term Value	20	17	14	11

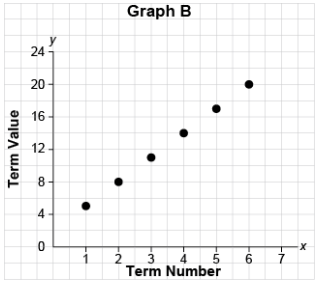


"Each of these representations shows a linear pattern that follows the pattern rule: Start at 20 and subtract 3 each time."

Observations/Documentation

Activity 2 Assessment
Solving Problems

Number Pattern Relationships (cont'd)

Creates and translates repeating, increasing, and decreasing patterns and describes them using algebraic expressions and equations.	Describes patterns to show relationships among whole numbers and decimals with tenths, hundredths, and thousandths.	Fluently identifies and describes linear and non-linear patterns and justifies choice of representation to show pattern relationships.
	3.004 – 0.004 = 3.000 3.004 – 0.003 = 3.001 3.004 – 0.002 = 3.002 3.004 – 0.001 = 3.003 3.004 – 0.000 = 3.004	Students raised $180 to buy 8 games that cost $26 each. Do they have enough money?
"I created this increasing pattern. An expression for the term values is: $3n + 2$, where n is the term number. An equation for this pattern is: $v = 3n + 2$, where v is the term value."	"As the number that is subtracted decreases by 0.001, the difference increases by 0.001."	<table><tr><th>Number of Classes</th><th>Total Cost of Games ($)</th></tr><tr><td>1</td><td>26</td></tr><tr><td>2</td><td>52</td></tr><tr><td>3</td><td>78</td></tr><tr><td>4</td><td>104</td></tr><tr><td>5</td><td>130</td></tr><tr><td>6</td><td>156</td></tr><tr><td>7</td><td>182</td></tr><tr><td>8</td><td>208</td></tr></table>
		"This is a linear pattern where $26 dollars is added each time. I used the equation $c = 26n$ to determine the cost of n games in dollars, where $n = 8$: $c = 26 \times 8$, which is $208. There is not enough money to buy games for 8 classes. Only 6 classes can have a game."

Observations/Documentation