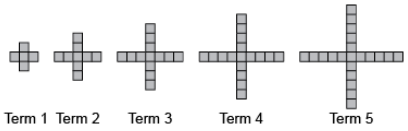
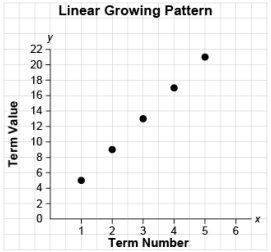
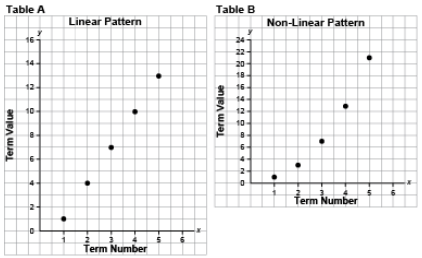
Patterning and Algebra

Activity 4 Assessment

Patterning Consolidation

Generalizing and Representing Patterns

Identifies how a pattern repeats, increases, or decreases and describes the pattern rule.	Represents patterns using tables, charts, or graphs and describes the pattern rule.	Represents patterns symbolically, using algebraic expressions and equations.	Identifies and describes different representations of patterns as linear or non-linear.
			
"This is an increasing pattern. The pattern rule is: Start with 5 red tiles and add 4 tiles each time."	"The graph represents a growing pattern. The pattern rule is: Multiply the term number by 4 and add 1."	"An algebraic expression for the pattern rule: $4n + 1$, where n is the term number. An equation for the pattern: $v = 4n + 1$, where v is the term value."	"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."

Term Number	1	2	3	4	5
Term Value	5	9	13	17	21

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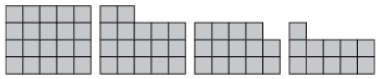
Patterning and Algebra

Activity 4 Assessment

Patterning Consolidation

Generalizing and Representing Patterns

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



Term 1 Term 2 Term 3 Term 4

Term Number	1	2	3	4	5	6	7
Term Value	20	17	14	11	**8**	**5**	**2**

"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.

Number of Items Bought	Money Left ($)
1	12
2	9
3	6
4	3
5	0

"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?

Time (h)	Distance Travelled (km)
1	70
2	140
3	210
4	280

"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?

Distance Driven (km)	Money Earned ($)
1	3.50
2	4.00
3	4.50
4	5.00

"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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Patterning and Algebra

Activity 4 Assessment

Patterning Consolidation

Extending Patterns to Solve Problems

Determines the pattern rule.

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

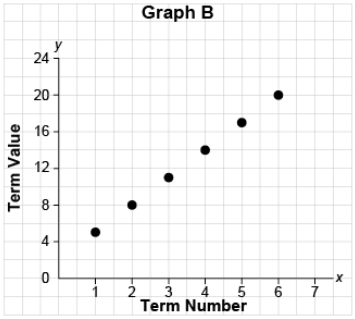
"The term numbers are consecutive multiples of 5."

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 $3n + 2$ to extend the pattern, where n represents the term number. The seventh and eighth terms would be $3 \times 7 + 2 = 23$ and $3 \times 8 + 2 = 26$."

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

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