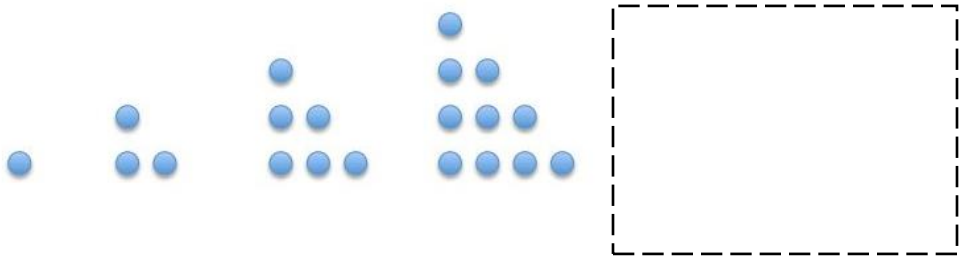
Grade 5+: Patterning

Name: _____ **Date:** _____

Assessment Question	Reflections
1. Write the missing pattern term: 5, 25, 15, 35, ____ ,45, 35	
2. Write the next two terms in this pattern: 5.7, 5.8, 5.9, ____, ____	
3. Following this pattern, how many dots will be in Figure E? _____  A B C D E	
4. The first term of a pattern is 8. The pattern **alternates** adding 3 and subtracting 2. What is the seventh term?_____ ____, ____, ____, ____, ____, ____, ____,	

5. Which expression represents the pattern rule?

Figure Number (n)	Number of Dots
1	81
2	80
3	79
4	78
5	77

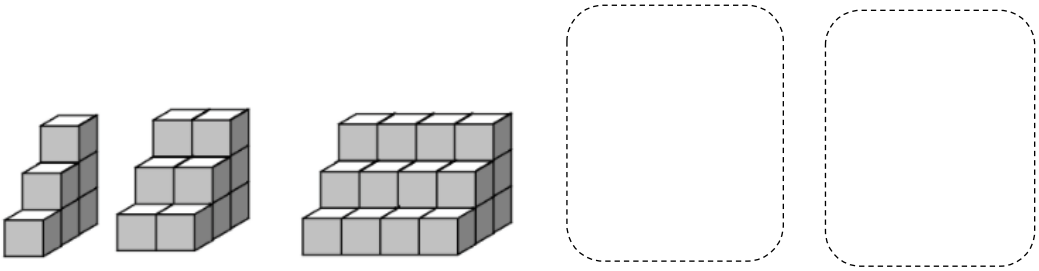
A. n + 80

B. 82 – n

C. n – 1

D. 81 - n

6. Here is a pattern of linking cubes.



1 2 3 4 5

The pattern continues. Complete this table for Figures 4 and 5.

Figure	Number of Cubes
1	6
2	12
3	
4	
5	

7. Fun Fair tickets are one dollar each. For every three tickets you buy, you get a fourth ticket free.

What is the greatest number of tickets you can get for $10.00?

Show your thinking.

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Performance Task:

Vivienne began decorating her birthday cake for her tenth birthday party. She ran out of time!

Describe the pattern and use it to finish her birthday cake.

Your turn! Design your own birthday cake using your own increasing or decreasing pattern.

Describe your pattern: _____

Grade 5+: Patterning

Performance Task:

On the whiteboard, Keelan and Rebecka see:

2, 4, _____, _____, _____, …

They each create a different **increasing** pattern.

Keelan's increasing pattern	Rebecka's increasing pattern
Pattern: 2, 4, ____, ____, ____, ____	Pattern: 2, 4, ____, ____, ____, ____
Pattern Rule:	Pattern Rule:
Draw a model of Keelan's pattern.	Draw a model of Rebecka's pattern.

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Collaborative Task

Find and describe 3 different increasing patterns in the multiplication table. Explain each pattern.

Consider patterns which are horizontal, vertical, diagonal or in a square.

×	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81

×	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81

×	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81

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Collaborative Task:

Your team of archeologists has just uncovered a tablet with a message believed to be from Julius Caesar to his people from nearly 2000 years ago.

Julius Caesar used a pattern rule, called a cipher, to communicate secret messages without revealing his plans to his enemies.

1. Only part of the message was decoded below.

   As a team find the pattern rule in his cipher.

2. Complete the table to reveal the rest of this famous quote.

Caesar's Message	E	X	P	E	R	I	E	N	C	E		I	S
Coded Message	H	A	S	H	U	L	H	Q	F	H		L	V

Caesar's Message											
Coded Message	W	K	H		W	H	D	F	K	H	U

Caesar's Message												
Coded Message	R	I		D	O	O		W	K	L	Q	J	V

3. Using your own pattern rule, create your own cipher.
   Use your cipher to create a secret message for your classmates.