SEQUENCES

A NUMERICAL SEQUENCE

A.1 FINDING TERM

Ex 1:

n	1	2	3	4	5	6
n^{th} term	3	5	7	9	11	13

What is the 4^{th} term of this sequence?

Ex 2:

n	1	2	3	4	5	6
n^{th} term	2	6	12	20	30	42

What is the 5^{th} term of this sequence?

Ex 3:

n	1	2	3	4	5	6	7	8
n^{th} term	4	9	16	25	36	49	64	81

What is the 7^{th} term of this sequence?

Ex 4:

n	1	2	3	4	5	6	7	8
n^{th} term	1	3	7	15	31	63	127	255

What is the 8^{th} term of this sequence?

B RECURSIVE DEFINITION

B.1 CALCULATING THE FIRST TERMS

Ex 5: Find the first five terms in the sequence: start at 7 and **add** 4 each time.

n	1	2	3	4	5
n^{th} term					

Ex 6: Find the first five terms in the sequence: start at 100 and **subtract** 15 each time.

n	1	2	3	4	5
n^{th} term					

Ex 7: Find the first five terms in the sequence: start at 2 and **multiply** by 2 each time.

n	1	2	3	4	5
n^{th} term					

Ex 8: Find the first five terms in the sequence: start at 81 and **divide** by 3 each time.

n	1	2	3	4	5
n^{th} term					

B.2 IDENTIFYING THE RECURSIVE RULE

Ex 9:

n	1	2	3	4	5	6	...
n^{th} term	3	5	7	9	11	13	...

- The sequence starts at ☐.
- The rule is ☐ Add ☐ Subtract ☐ Multiply ☐ Divide ☐

Ex 10:

n	1	2	3	4	5	6	...
n^{th} term	60	55	50	45	40	35	...

- The sequence starts at ☐.
- The rule is ☐ Add ☐ Subtract ☐ Multiply ☐ Divide ☐

Ex 11:

n	1	2	3	4	5	6	...
n^{th} term	64	32	16	8	4	2	...

- The sequence starts at ☐.
- The rule is ☐ Add ☐ Subtract ☐ Multiply ☐ Divide ☐

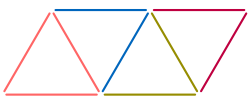
Ex 12:

n	1	2	3	4	5	...
n^{th} term	1	10	100	1 000	10 000	...

- The sequence starts at ☐.
- The rule is ☐ Add ☐ Subtract ☐ Multiply ☐ Divide ☐

B.3 IDENTIFYING THE RECURSIVE RULE IN GEOMETRIC PATTERNS

Ex 13: Observe the following pattern made with sticks:



Fill in the table below:

Number of triangles	1	2	3	4
Number of sticks				

What rule can you find for the number of sticks?
Start with ____ sticks. Add ____ sticks for each new triangle.

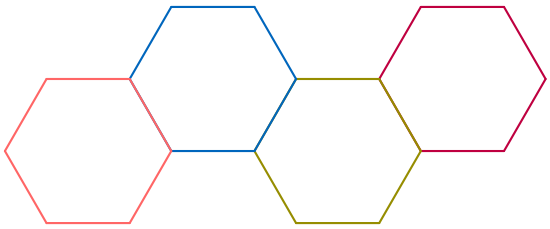
Ex 14: Observe the following pattern made with sticks:

Fill in the table below:

Number of squares	1	2	3	4
Number of sticks				

What rule can you find for the number of sticks?
Start with ____ sticks. Add ____ sticks for each new square.

Ex 15: Observe the following pattern made with sticks:



Fill in the table below:

Number of hexagons	1	2	3	4
Number of sticks				

What rule can you find for the number of sticks?
Start with ____ sticks. Add ____ sticks for each new hexagon.

Ex 16: Observe the following pattern made with sticks:

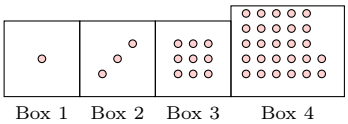
Fill in the table below:

Diagram number	1	2	3	4
Number of sticks				

What rule can you find for the number of sticks?
Start with ____ sticks. Add ____ sticks for the next diagram.

B.4 IDENTIFYING THE RECURSIVE RULE IN DOT PATTERNS

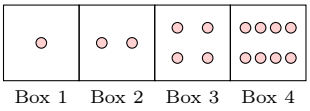
Ex 17: Observe the following pattern made with dots:



What rule can you find for the number of dots?
Start with ____ dot. Multiply by ____ the number of dots for each new box.
Fill in the table below:

Box	1	2	3	4
Number of dots				

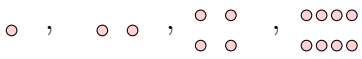
Ex 18: Observe the following pattern made with dots:



What rule can you find for the number of dots?
Start with ____ dot. Multiply by ____ the number of dots for each new box.
Fill in the table below:

Box	1	2	3	4
Number of dots				

Ex 19: Observe the following dot pattern:



Fill in the table below:

Diagram number	1	2	3	4
Number of dots				

What rule can you find for the number of dots?
Start with ____ dot. Multiply by ____ the number of dots for each new diagram.

C ARITHMETIC SEQUENCE

C.1 FINDING NEXT TERM IN ARITHMETIC SEQUENCE

Ex 20: What is the 6^{th} term of this sequence?

n	1	2	3	4	5	6
n^{th} term	3	5	7	9	11	

Ex 21: What is the 6^{th} term of this sequence?

n	1	2	3	4	5	6
n^{th} term	3	8	13	18	23	

Ex 22: What is the 5^{th} term of this sequence?

n	1	2	3	4	5
n^{th} term	20	18	16	14	

Ex 23: What is the 6^{th} term of this sequence?

n	1	2	3	4	5	6
n^{th} term	80	70	60	50	40	

D GEOMETRIC SEQUENCE

D.1 FINDING NEXT TERM IN GEOMETRIC SEQUENCE

Ex 24: What is the 6^{th} term of this sequence?

n	1	2	3	4	5	6
n^{th} term	2	4	8	16	32	

Ex 25: What is the 5^{th} term of this sequence?

n	1	2	3	4	5
n^{th} term	1	3	9	27	

Ex 26: What is the 6^{th} term of this sequence?

n	1	2	3	4	5	6
n^{th} term	64	32	16	8	4	

Ex 27: What is the 5^{th} term of this sequence?

n	1	2	3	4	5
n^{th} term	243	81	27	9	

Ex 28: What is the 6^{th} term of this sequence?

n	1	2	3	4	5	6
n^{th} term	3	6	12	24	48	