

Exercise 1.7

1. Examine each of the following patterns of numbers and determine if the pattern has a linear or quadratic relationship.

(a) 4, 7, 10, 13, 16, ...

(b) -2, 2, 6, 10, 14, ...

Pattern	4	7	10	13	16
1st Difference		+3	3	3	3
2nd Difference			0	0	0

⇒ LINEAR

Pattern	-2	2	6	10	14
1st Difference		+4	4	4	4
2nd Difference			0	0	0

⇒ LINEAR

1. Examine each of the following patterns of numbers and determine if the pattern has a linear or quadratic relationship.

(c) -4, -3, 0, 5, 12, ...

(d) 2, 1, -2, -7, -14, -23, ...

Pattern	-4	-3	0	5	12
1st Difference		1	3	5	7
2nd Difference			2	2	2

Quadratic

Pattern	2	1	-2	-7	-14	-23
1st Difference		-1	-3	-5	-7	-9
2nd Difference			-2	-2	-2	-2

Quadratic

1. Examine each of the following patterns of numbers and determine if the pattern has a linear or quadratic relationship.

(e) 2, 7, 22, 47, ...

(f) 3, 1, -5, -15, -29, ...

Pattern
1st Difference
2nd Difference

2	7	22	47
	5	15	25
		10	10

Quadratic

Pattern
1st Difference
2nd Difference

3	1	-5	-15	-29
	-2	-6	-10	-14
		-4	-4	-4

Quadratic

1. Examine each of the following patterns of numbers and determine if the pattern has a linear or quadratic relationship.

(g) 1, -4, -19, -44, -79, ...

(h) 3, -2, -7, -12, -17, ...

Pattern
1st Difference
2nd Difference

1	-4	-19	-44	-79
	-5	-15	-25	-35
		-10	-10	-10

Quadratic

Pattern
1st Difference
2nd Difference

3	-2	-7	-12	-17
	-5	-5	-5	-5
		0	0	0

Linear

1. Examine each of the following patterns of numbers and determine if the pattern has a linear or quadratic relationship.

(i) 0, 3, 12, 27, 48, ...

(j) 5, 17, 37, 65, 101, ...

Pattern
1st Difference
2nd Difference

0	3	12	27	48
	3	9	15	21
		6	6	6

Quadratic

Pattern
1st Difference
2nd Difference

5	17	37	65	101
	12	20	28	36
		8	8	8

Quadratic