

Patterns and Relations: Introduction to Algebra

1. Complete the T chart using the pattern rule.

a) Input	Output
1	
2	
3	
4	

P.R. Multiply by 2 and add 1

b) Input	Output
1	
2	
3	
4	

P.R. Multiply by 4 and subtract 3

c) Input	Output
2	
3	
4	
5	

P.R. Multiply by 7 and add 5

d) Input	Output
1	
3	
5	
7	

P.R. Multiply by 4 and subtract 2

e) Input	Output
19	
12	
13	
24	

P.R. Multiply by 3 and add 3

f) Input	Output
4	
36	
108	
60	

P.R. Divide by 2 and add 5

2. Identify the pattern rule that relates the Input to the Output in each T chart. Use the work space to test your rule.

a) Input	Output
1	5
2	8
3	11

P.R.

Work Space

b) Input	Output
1	7
2	12
3	17

P.R.

Work Space

c) Input	Output
1	5
2	13
3	21

P.R.

Work Space

d)	Input	Output
	1	9
	2	13
	3	17

P.R.
Work Space

e)	Input	Output
	1	1
	2	4
	3	7

P.R.
Work Space

f)	Input	Output
	1	22
	2	32
	3	42

P.R.
Work Space

g)	Input	Output
	1	2
	2	7
	3	12
	4	17

P.R.
Work Space

h)	Input	Output
	1	3
	2	9
	3	15
	4	21

P.R.
Work Space

i)	Input	Output
	1	5
	2	6
	3	7
	4	8

P.R.
Work Space

k)	Input	Output
	1	7
	2	9
	3	11
	4	13

P.R.
Work Space

l)	Input	Output
	0	4
	1	8
	2	12
	3	16

P.R.
Work Space

m)	Input	Output
	1	4
	2	8
	3	12
	4	16

P.R.
Work Space

3. More Challenging - Identify the pattern rule that relates the Input to the Output in each T chart. Use the work space to test your rule.

HINTS:

- 1) If the Input numbers are in decreasing order, rewrite them in increasing order, remembering to take the corresponding output numbers with them.
- 2) If the Input numbers are not in order, rewrite them in order, remembering to take the corresponding output numbers with them.
- 3) If the Input numbers are missing numbers, rewrite the list, leaving spaces for the missing numbers. Remember to do the same for the corresponding output numbers.
- 4) If you subtract the Input from the Output and you always get the same number, you know the rule only involves addition or subtraction.

a)	Input	Output
	5	27
	6	32
	7	37
	8	42

P.R.
Work Space

b)	Input	Output
	8	13
	4	5
	3	3
	7	11

P.R.
Work Space

	Input	Output

c)	Input	Output
	10	31
	9	28
	3	10
	1	4

Input	Output

d)	Input	Output
	4	7
	5	9
	6	11
	7	13

P.R.
Work Space

P.R.
Work Space

e)	Input	Output
	57	63
	58	64
	59	65
	60	66

f)	Input	Output
	2	7
	4	13
	6	19
	8	25

Input	Output

P.R.
Work Space

P.R.
Work Space