

# PA8-13: Finding Rules for T-tables – Part II



INPUT	OUTPUT
1	5
2	8
3	11

In the T-table shown, the output is calculated from the input by two operations.

To find the rule, follow the steps below:

### Step 1

Find the step (or gap) between the numbers in the OUTPUT column.

INPUT	INPUT × GAP	OUTPUT
1		5
2		8
3		11

3  
3

### Step 2

Multiply the INPUT numbers by the gap.

INPUT	INPUT × GAP	OUTPUT
1	3	5
2	6	8
3	9	11

3  
3

### Step 3

What must you add to each number in the second column?

INPUT	INPUT × GAP	OUTPUT
1	3	5
2	6	8
3	9	11

3  
3

Add 2

### Step 4

Write a rule for the T-table – **Rule:** Multiply by 3 and add 2.

### TEACHER:

In T-tables, it is common to use the titles "input" and "output," or "term number" and "term." We will use both forms.

1. Use the steps above to find the rule that tells you how to calculate the OUTPUT from the INPUT:

a)

INPUT	INPUT × GAP	OUTPUT
1	2	3
2	4	5
3	6	7

2  
2

Add 1

Rule: Multiply by 2 and add 1.  
Output =  $2 \times \text{Input} + 1$

b)

INPUT	INPUT × GAP	OUTPUT
1	4	8
2	8	12
3	12	16

4  
4

Add 4

Rule: Multiply by 4 and add 4.  
Output =  $4 \times \text{Input} + 4$

c)

INPUT	INPUT × GAP	OUTPUT
1	3	7
2	6	10
3	9	13

3  
3

Add 4

Rule: Multiply by 3 and add 4.  
Output =  $3 \times \text{Input} + 4$

d)

INPUT	INPUT × GAP	OUTPUT
1	7	12
2	14	19
3	21	26

7  
7

Add 5

Rule: Multiply by 7 and add 5.  
Output =  $7 \times \text{Input} + 5$

# PA8-13: Finding Rules for T-tables – Part II (continued)

2. Write a rule that tells you how to calculate the OUTPUT (or Term) from the INPUT (or Term Number):

a)

INPUT	INPUT × GAP	OUTPUT
1	5	9
2	10	14
3	15	19

Multiply by 5 and add 4.  
 $Output = 5 \times Input + 4$

b)

INPUT	INPUT × GAP	OUTPUT
1	6	12
2	12	18
3	18	24

Multiply by 6 and add 6.  
 $Output = 6 \times Input + 6$

c)

TERM NUMBER	TERM NUMBER × GAP	TERM
1	4	7
2	8	11
3	12	15

Multiply by 4 and add 3.  
 $Term = 4 \times Term\ Number + 3$

d)

TERM NUMBER	TERM NUMBER × GAP	TERM
1	5	7
2	10	12
3	15	17

Multiply by 5 and add 2.  
 $Term = 5 \times Term\ number + 2$

3. Write a rule that tells you how to calculate the OUTPUT (or Term) from the INPUT (or Term Number):  
 NOTE: In this case, you will have to subtract rather than add.

a)

INPUT	INPUT × GAP	OUTPUT
1	5	4
2	10	9
3	15	14

Multiply by 5 and subtract 1.  
 $Output = 5 \times Input - 1$

b)

INPUT	INPUT × GAP	OUTPUT
1	3	2
2	6	5
3	9	8

Multiply by 3 and subtract 1.  
 $Output = 3 \times Input - 1$

c)

TERM NUMBER	TERM NUMBER × GAP	TERM
1	4	0
2	8	4
3	12	8

Multiply by 4 and subtract 4.  
 $Term = 4 \times Term\ Number - 4$

d)

TERM NUMBER	TERM NUMBER × GAP	TERM
1	6	5
2	12	11
3	18	17

Multiply by 6 and subtract 1.  
 $Term = 6 \times Term\ Number - 1$