Name:_____ Div_____ Date:_____

1.2 Patterns from Tables

How does this pattern of squares represent the table of values?

Input	Output _____
1	2
2	3
3	4
4	5

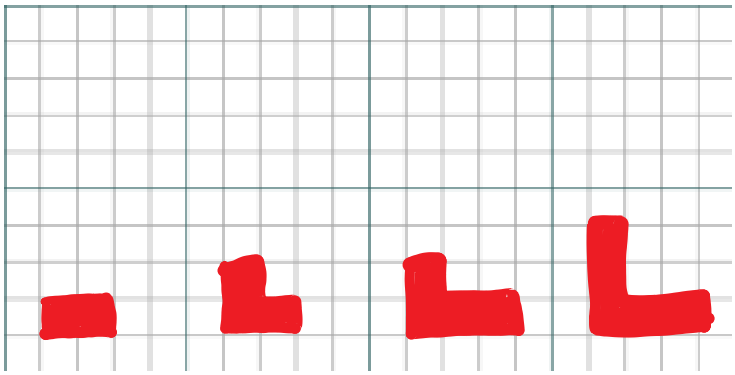
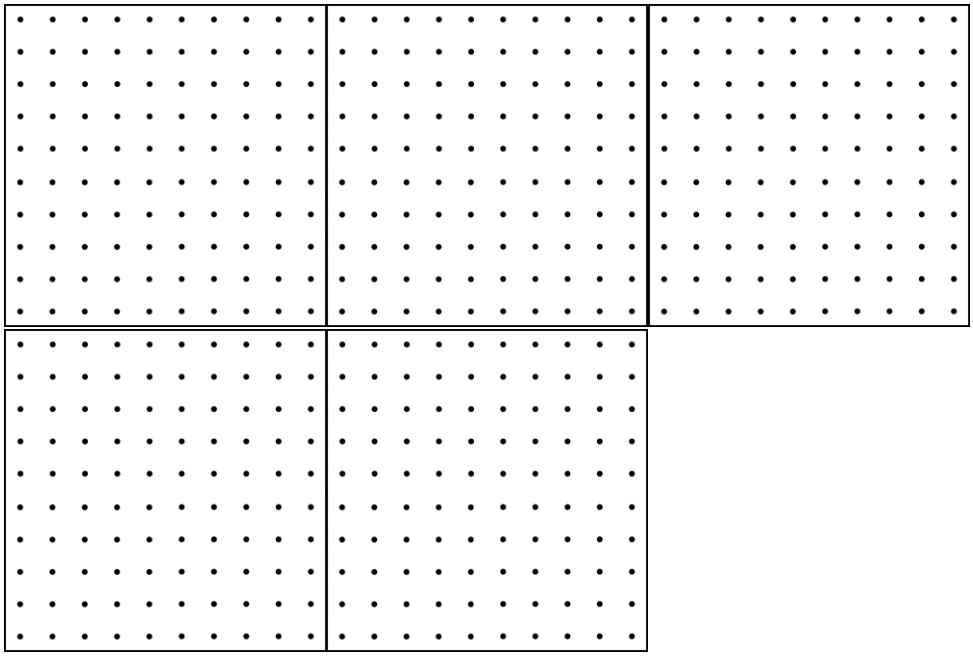


Fig. 1. Fig.2 Fig.3 Fig.4

Explore:

Use the dot paper to build figures represented by this table.

Input	Output
1	3
2	5
3	7
4	9
5	11



Name:_____ Div_____ Date:_____

Connect:

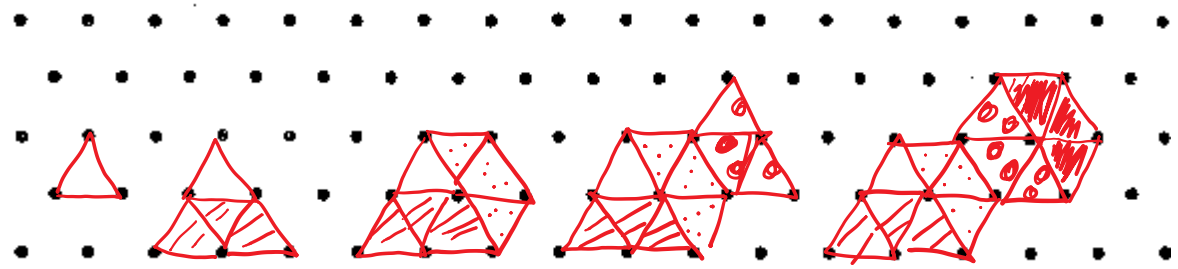
We can draw pictures to show the relationship in a table of values.

Input	Output
1	1
2	4
3	7
4	10
5	13

In this table:
The input increases by 1 each time.
The output increase by 3 each time.

We could draw a pattern of triangles on triangular dot paper.

The figure number is the input number. The number of triangles in each figure is the output.



We can use a pattern rule to describe the relationship between the 2 columns in a table of values.
This **pattern rule** tells us the **numbers** and **operations** in the corresponding Input/Output machine.

Input	Output
1	3
2	5
3	9
4	13
5	17

The table shows the input and output for this two-operation machine.

Steps to identifying the numbers and operations in the machine.

1. Identify the pattern rule for output:
The output starts at **1** and goes up by **4** each time

** this tells you that the input must be multiplied by 4
Look at input 2 using this operation.
Does it match?
If not, compare the difference. ** 2 x 5 = 8.

What would you have needed to do to get to 5? Subtract 3.

So, **-3** goes into the second part of the machine. **8-3 =5**

The Input/Output machine **multiplies** the input by **4**, then **subtracts 3**.
The pattern rule that relates to the input to the output is:

Multiply the input by 4. Then subtract 3.

We can use this to predict the output for any input.
eg. Find the output for an input of 8.

8 x 4 -3 = 29

- We can check this by extending the table. Add 1 to each input and add 4 to each output.

Homework: p. 14 # 1 ac, 2 ac, 3, 4a, 5 Bonus: 4b, 6