**Straws and Connectors Worksheet 9- Growing Square Shape 3**

Pattern 3

**Figure 1 Figure 2 Figure 3**

**What do you notice?**

**What do you wonder?**

**Straws and Connectors Worksheet 9- Growing Square Shape 3**

1. **Visual Pattern. Draw figure 4**

**Figure 1 Figure 2 Figure 3 Figure 4**

1. **Table**

|  |  |  |
| --- | --- | --- |
| **Figure Number (n)** | **Number of Connectors(C)** | **Number Of Straws(S)** |
| ***1*** |  |  |
| ***2*** |  |  |
| ***3*** |  |  |
| ***4*** |  |  |
| ***5*** |  |  |
| ***10*** |  |  |
| ***20*** |  |  |
| ***n*** |  |  |

1. **a) Rule in words for finding the number of connectors for any figure number- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**b) Rule in words for finding the number of straws for any figure number\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**IV . Rule in Symbols a)**Rule for Connectors b) Rule for Straws

**V. Graph** . Plot the ordered pairs on the same coordinate plane. Connect all points on each set . Set 1 – (n,C) , Set 2 –(n, S)



Set 1

|  |  |
| --- | --- |
| **n** | **C** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

Set 2

|  |  |
| --- | --- |
| **n** | **C** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

1. **Describe each graph.**
2. **What geometric relationship exists between the two graphs?**
3. **What conjectures can you make about the two equations and their graphs?**

**Straws and Connectors Worksheet 9- Growing Square Shape 3**

1. **Visual Pattern- Draw figure 4.**

**Figure 1 Figure 2 Figure 3 Figure 4**

1. **Table-** Complete the Table below.

|  |  |  |
| --- | --- | --- |
| **Figure Number (n)** | **Number of Connectors(c)** | **Number Of straws(s)** |
| *1* | ***4= 2 x 2=(1+1)(1+1)*** | ***4= 2(1) + 2 (1)*** |
| *2* | ***9= 3 x 3=(2+1)(2+1)*** | ***12= 3( 2) + 3 (2)*** |
| *3* | ***16= 4 x 4=(3+1)(3+1)*** | ***24= 4(3)+ 4 (3)*** |
| *4* | ***25= 5 x 5=(4+1)(4+1)*** | ***40 = 5(4) + 5(4)*** |
| *5* | ***36= 6 x 6=(5+1)(5+1)*** | ***30= 6(5) + 6(5)*** |
| *10* | ***121= 11 x11=(10+1)(10+1)*** | ***220=11(10) +11(10)*** |
| *20* | ***441= 21x 21=(20+1)(20+1)*** | ***840=21(20) + 21(20)*** |
| *n* | ***(n+1) (n+1) = (n+1)2*** | ***(n+1)(n) + (n+1)(n)= 2(n+1)(n)=2n2 + n=2n(n+1)*** |

1. **a)Rule in words for finding the number of connectors for any figure number . *The number of connectors is equal to the square of the sum of the figure number and 1.***

**b) Rule in words for finding the number of straws for any figure number. *The number of straws is equal to twice times the figure number increased by 1.***

**IV . Rule in Symbols**

1. Rule for Connectors b) Rule for Straw

**C = (n+1)2 S = 2n2+2n=2n(n+1)**

1. **Graph**



