**Straws and Connectors Worksheet 8- Growing Square Shape 2**

Pattern 3

**Figure 1 Figure 2 Figure 3**

**What do you notice?**

**What do you wonder?**

**Straws and Connectors Worksheet 8- Growing Square Shape 2**

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- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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

1. **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 8- Growing Square Shape**

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=4(1) = 4[1(1+1)/2]=4[2(2)/2]*** | ***4 =4 +0=4 + 4(0)*** |
| *2* | ***12=4(3)= 4[2(2+1)/2]=4[2(3)/2]*** | ***12=4 + 8 = 4 + 4(2)*** |
| *3* | ***24=4(6) = 4[3(3+1)/2]=4[3(4)/2]*** | ***16=4 + 12= 4 + 4(3)*** |
| *4* | ***40=4(10) = 4[4(4+1)/2]=4[4(5)/2]*** | ***20 =4 + 16= 4 + 4(4)*** |
| *5* | ***60=4(15) = 4[5(5+1)/2]=4[5(6)/2]*** | ***24=4 + 20= 4 + 4(5)*** |
| *10* | ***220= 4[10(10+1)/2]=4[10(11)/2]*** | ***44 =4 + 40= 4 + 4(10)*** |
| *20* | ***840=4[20(20+1)/2]=4[20(21)/2]*** | ***84 = 4 + 80= 4 + 4(20)*** |
| *n* | ***4[n(n+1)÷2]=2(n)(n+1)=2n2+2n=2n(n+1)*** | ***4 + 4(n)=4(n+1)=4n+1*** |

1. **a)Rule in words for finding the number of connectors for any figure number . *The number of connectors is equal to 2 times the figure number times 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 4 times the figure number increased by 1.***

1. **IV . Rule in Symbols**
2. Rule for Connectors b) Rule for Straw

**C = 2n(n+1) S = 4n + 4**

