**Handshakes**

How many handshakes are possible between *n* people? In this activity, you will explore how the total number of handshakes that take place in a group of people is related to the number of people in the group. Separate into teams of six students to complete the following exercises.

1. Complete the table below by counting the total number of handshakes that take place between the numbers of people given in the table. In each case, perform the handshakes in your group.

|  |  |
| --- | --- |
| **# of People** | **# of Handshakes** |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |

1. If the # of people is the input variable, and the # of handshakes is the output variable, identify the ordered pairs (*x*,*y*) from the table above.
2. Plot the ordered pairs on the graph below. Scale and label the axes appropriately.



1. Is this a function? Explain.
2. If the answer to question 4 is “yes,” use the **Parent Function Reference Sheet** to help decide what kind of a function it is.
3. Let *x* represent the number of people in a group, and *f*(*x*) represent the number of total possible handshakes that take place between members in the group. Write a recursive rule to find *f*(*x*).
4. Challenge question: Can you find an explicit rule for *f*(*x*)?
5. What is *f*(*12*)?
6. If a group of people performed 36 handshakes, how many people were in the group?
7. Can you find *f*(-3) or *f*(5.5)? Explain.
8. How would you describe the domain of *f*(*x*)?