How Many Handshakes?

Objective: The student will draw a vertex-edge graph to help in determining the number of handshakes.

1.   Within a group of men, each man shakes the hand of each of the other men exactly once. If there are three men, how many handshakes were there? Draw a vertex-edge graph to illustrate the problem, and determine the number of handshakes.

2.   If there are four people in the group, and each person shakes the hand of each of the other individuals exactly once, how many handshakes were there? Draw a vertex-edge graph to illustrate, and determine the number of handshakes.

3.   Draw vertex-edge graphs to illustrate the handshakes if there are five or six people, and determine the number of handshakes.

4.   Based on the graphs and the answers from the previous three questions, try to find a formula for the number of handshakes when there are n people.