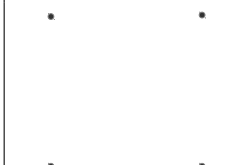
Activity 2: Counting

Suppose you come across an ice cream shop with a total of 31 flavors. The shop happens to be holding a special promotion:

Special Promotion

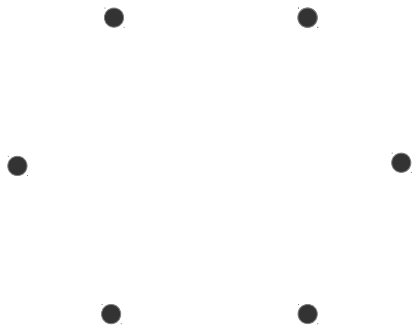
Double Scoop Madness: Guess the number of possible flavor combinations in a double scoop ice cream cone. Guess correctly and get a free cupcake ! (limit one per customer)

You need to count the total number of different purchases that you can possibly make. The only rule is that any order you make must be a double scoop of two distinct flavors. Maybe filling in the table will help you answer the question:

	n (number of possible flavors)	number of edges (possible flavor combinations)	
			

Questions

1. Inspect your table and try to see if there's a pattern that the number of edges follows. Make a guess for the number of edges in the complete graph on 6 vertices. You can draw edges in the following picture to check your guess:



2. How many different possibilities are there for your double scoop ice cream cone?

Bonus Question

3. Now assume we are allowed to get two scoops of the same flavor. How many ways can we create a double scoop ice cream cone in this case?