Name: _____

Directions: Show all work. No credit for answers without work.

1. [**2 parts, 2 points each**] A florist offers 5 different types of vase and 12 different types of flower. To order a flower arrangement, a customer specifies the desired type of vase and the desired type of flower. Express your answers as a concrete, simplified number.

   (a) How many ways are there to order a flower arrangement?

   (b) One day, the florist decides to add 3 new vase types and 4 new flower types. How many ways are there to order flower arrangements that use a new vase type or a new flower type (or both)?

2. [**3 parts, 2 points each**] Determine the number of ways that integers in $\{1, 2, 3, 4, 5, 6\}$ can be arranged in some order, subject to each of the following. Express your answers as a concrete, simplified number.

   (a) No additional restrictions.

   (b) All odd numbers come before all even numbers? (For example, 3 1 5 6 4 2 counts but 3 1 6 5 4 2 does not.)

   (c) The even numbers are consecutive? (For example, 3 2 4 6 5 1 counts but 3 2 4 5 6 1 does not.)