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Problem 1 *A Zoo manager thinks of a way to set up a new pavilion. He has 7 different plants and 12 different animals.*

- *How many ways are there to choose one animal?*

- *How many ways are there to choose two animals?*

- *How many ways are there to choose two animals and three plants?*

- *The manager decides to line up 5 cages along a side of the pavilion and to put one animal in each cage. In how many ways can he do it?*

- *Taking some further thought, the manager decides to line up 6 cages along a side of the pavilion, to put one animal in each cage and to grow one plant between each pair of the neighboring cages. In how many ways can he do it?*

Problem 2 *There are two plates on the table. One plates has 10 identical candies, the other has 8 different fruits.*

- *How many ways are there to choose one candy?*

- *How many ways are there to choose seven candies?*

- *How many ways are there to choose five fruits?*

- *How many ways are there to choose three candies and six fruits?*

- *Gregory decides to choose two fruits, two candies, and to line up all the four objects on the table. In how many ways can he do it?*

- *Gregory decides to choose five fruits, seven candies, and to line up all the twelve objects on the table. In how many ways can he do it?*

Problem 3 *How many different 7-symbol license plates are possible if the first three symbols are letters and the remaining four are digits 0-9? (Letters and digits can repeat).*

It's time to get back to Problem 16 (page 10) of the previous handout.

If you are finished with Handout 3 and there still remains some time ...

Problem 4 *Consider the following string of numbers:
6, 1, 6, 2, 6, 3, 6, 4, ... What is the 2014th number in the sequence?*

Problem 5 *A rectangular table is filled with numbers. The sum of the numbers in each row equals 100. The sum of the numbers in each column equals 150. The table has 9 rows. How many columns has the table?*

