Math 5a. Homework 4

Numeral systems

1. Choose a whole number from **30 to 100** (inclusive). Take that many objects of the same kind, such as matches, candies, or counting sticks.

Use your objects to write the chosen number in **every base from 2 through 16**, arranging them into groups for each base. Record all 15 representations in your notebook and label each one with its base.

For a base **b**, make groups of **b** objects. Then combine **b** of these groups into a larger group, and continue in the same way. Keep grouping until fewer than **b** groups remain at each level. Read the counts from the largest groups down to single objects to find the digits. Write **0** for any missing place.

Remember: Use capital Latin letters for digit values greater than 9:

A = 10 B = 11 C = 12 D = 13 E = 14 F = 15

In base **b**, only digits with values from **0** to **b - 1** are allowed. For example, base 12 uses 0-9, A, and B.