# Math 2100 – Spring 2019

# Lab 1

**Names:**

## Venn buttons

Do Activity 2.1.1 (but not question #4), which involves sorting buttons into different Venn diagrams. You'll need to use mad scissor skills, too!

## Macaroni bases

Count out 6 piles of 8 pieces of macaroni each. These will be your "stock" of macaroni.

(a) Form as many groups of 10 pieces of macaroni as your stock will allow (placing each group of 10 in a cup) and record your result.

| Tens | Ones |
|------|------|
|      |      |

What is the base-ten numeral representing the number of macaroni pieces in your stock?

(b) Empty the cups and form groups of 4 now (each cup now contains 4 pieces). Suppose you could only count to 4. Can you record the result in the table below? If not, why not?

| Fours | Ones |
|-------|------|
|       |      |

(c) From the groups of 4, form "supergroups" each containing groups of 4 cups.  Record your result.

| Four fours | Fours | Ones |
|------------|-------|------|
|            |       |      |

What is the base-four numeral for the number of pieces in your stock?

(d) Carry out the same procedure as in (c), now grouping into groups and supergroups of five.  What is the base-five numeral for the number of pieces in your stock?

| Five fives | Fives | Ones |
|------------|-------|------|
|            |       |      |

(e) From your stock, select a subset of pieces containing $221_{three}$ pieces and draw a picture.  Do not convert $221_{three}$ to a base-ten numeral and count.  Pretend that you could only count to three.

(f) Convert $472_{eight}$ to base 10.

(g) Convert 224 to base 6