Put answers in spaces provided unless otherwise stated. SHOW ALL WORK. (No Work = No Credit) Remember that you lose points for sloppy work, not following directions, and unclear answers. Simplify answers completely unless otherwise noted.

(6 points)
1. Suppose that Washington license plates are made using 3 digits followed by 3 letters. Set up, but do not compute.

   a. How many different license plates are possible if repetition is allowed?

      \[ 10 \cdot 10 \cdot 10 \cdot 26 \cdot 26 \cdot 26 \]
      \[ D \quad D \quad D \quad L \quad L \quad L \]

   b. How many different license plates are possible if repetition of letters is not allowed?

      \[ 10 \cdot 10 \cdot 10 \cdot 26 \cdot 25 \cdot 24 \]
      \[ D \quad D \quad D \quad L \quad L \quad L \]

(6 points)
2. A college offers 3 introductory courses in history, 2 in science, 2 in mathematics, 2 in philosophy, and 1 in English.

   a. If a freshman takes one course in each area during her first semester, how many course selections are possible?

      \[ \frac{3 \cdot 2 \cdot 2 \cdot 2 \cdot 1}{H \quad S \quad M \quad P \quad E} = 24 \text{ selections} \]

   b. If a part-time student can afford to take only one introductory course, how many selections are possible?

      \[ 3 + 2 + 2 + 2 + 1 = 10 \text{ selections} \]
3. Suppose 100 high school students are surveyed about their classes. The results indicate that 45 are taking Spanish, 32 are taking History, and 20 are taking both. Leave your answers as simplified fractions. **Box your answers for parts b, c, and d.**

a. Draw a Venn diagram to represent the situation.

![Venn Diagram](image)

b. How many students are taking Spanish or History?

57

c. How many students are taking neither Spanish nor History?

43

d. How many students are taking Spanish but not History?

25