Print **all** group member's names here. Circle the name of the group member who turns this in.

1. A surveyor recorded the age of members of a group, and whether or not they owned dogs, in order to begin a study on how pets affect aging.

age (years)	18-49	50-64	65 or over	*total*
own dog(s)	144	54	29	
no dog	144	71	58	
total				

   a. **How many people** are in the group?

   Suppose we choose a person at random. Let D be the event that the person owns a dog, Y (younger) the event they are between 18 and 49 years old, M (middle) that they are between 50 and 64 years old, and E (elder) that they are 65 or older. Find the following probabilities (leave your answer as fractions; no need to reduce).

   b. $P(M)$

   c. $P(\bar{D})$

   d. $P(D \cap Y)$

   e. $P(D \cup E)$

   f. $P(Y \cap \bar{D})$

   g. $P(Y \cup E)$

   h. $P(Y \cap E)$

   i. $P(D|Y)$

   j. $P(Y|D)$

   Can you express these in words? Compare your answers to parts (d), (i) and (j). Why are the answers different?

2. A special deck of cards has three suits (A, B, and C). Suit A has cards 1 through 10. However, suit B has only cards 1 through 8, and suit C has only cards 1 through 7.

   a. **How many cards** are in this deck?
      (you may want to draw the whole deck:)

   Suppose we draw a card at random. Find the following probabilities (leave your answer as fractions; no need to reduce).

   b. The probability the card is not an eight:

   c. The probability that the card has suit B **and** the number 8:

   d. The probability the card has suit B, **or** is the number 8 (or both):

   e. The probability that the card is suit A, **given that** we know the card is an 8:

   f. The probability that the card is an 8, **given that** we know the card is suit A:

   g. The probability the card has an even number, **given that** we know the suit is **not** A:

   h. Suppose we know the card has the number 6. Find the probability that the card is suit A:

   i. Suppose someone drew a card and got B3, and ate it. Find the probability that the *second* card drawn is suit A.