4.3 Finding Probability Using Sets (pg221)

Example 3

- a) What is the number of cards that are either red cards or face cards?
- Let R be the set of red cards, F the set of face cards
- If we have "or" we are looking at union
- $n(R \cup F) = n(R) + n(F) - n(R \cap F)$
- $= n(\text{red}) + n(\text{face}) - n(\text{red face})$
- $= 26 + 12 - 6$
- $= 32$
- b) What is the probability of picking a red card or a face card from a standard deck?
- $P(R \cup F) = 32/52 = 8/13$ or 0.62

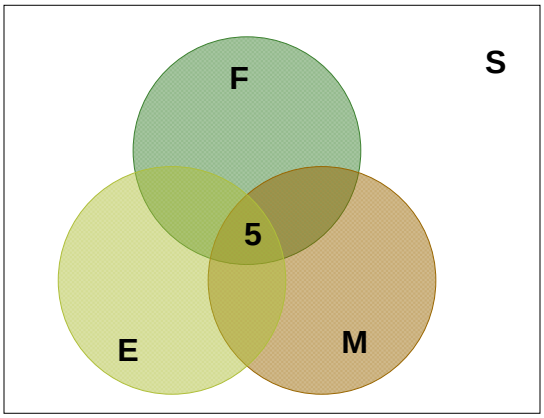
Example 4

- A survey of 100 students
- How many students study
  a) English only?
  b) French only?
  c) Math only?
- We need to draw a Venn diagram

Course Taken	No. of students
English	80
Mathematics	33
French	68
English and Mathematics	30
French and Mathematics	6
English and French	50
All three courses	5

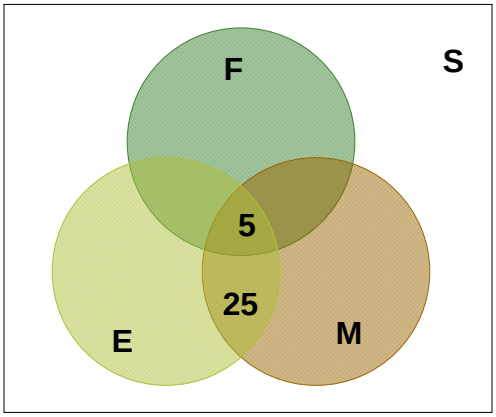
Example 4: what do we know?

- $n(E \cap M \cap F) = 5$



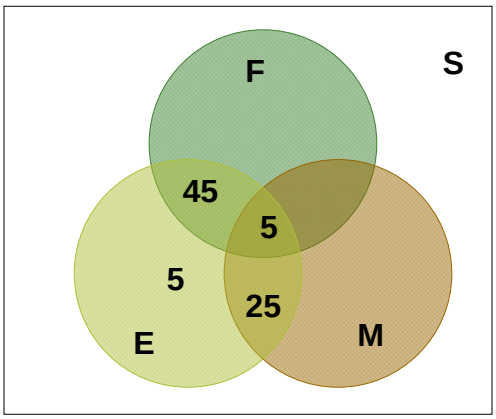
Example 4: what else do we know?

- $n(E \cap M \cap F) = 5$
- $n(M \cap E) = 30$
- Therefore, the number of students in E and M, but not in F is 25.

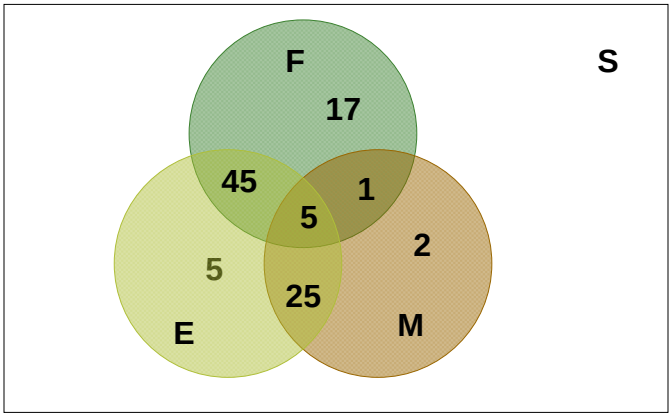


Example 4 (continued)

- $n(F \cap E) = 50$
- Therefore, the number of students who take English and French, but not in Math is 45.
- $n(E) = 80$



Example 4 – completed Venn Diagram



Ex4 d) Are any of the 100 students surveyed not enrolled in these courses?

Ex4e) what is the probability that a randomly selected student is enrolled in english or french?

Union

n(E U F)=80+68-50=148-50=98

P(E U F)=98/100

Ex4f) what is the probability that a randomly selected student is enrolled only in english or only in french?

n(only english) = 5

n(only french) = 17

n(Y = only e or only f) = 22

P(Y)=22/100

4.3 Classwork/Homework Assessment:

- 4.3 pg 228 #2 to 12.
- RAMN 4.4
- Friday Quiz