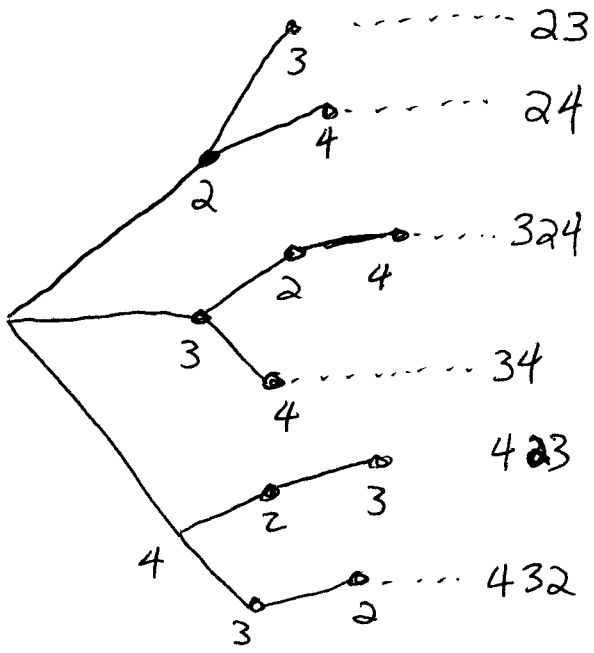
M118
FALL 2000

QUIZ 2

NAME Key

1) a) (25 PTS.) A three card deck consists of the 2, 3, and 4 of hearts. One card after another is drawn from the deck, and the values of the cards is recorded in the order that they are drawn. The process terminates when the recorded value is higher than that of the previous record OR when all three cards have been drawn and recorded. How many elements are in the sample space? Draw a tree representing the sample space.

Example: One outcome in the sample space is 423 (draw a 4, then a 2, then a 3). Another is 23 (this terminates because 3 is higher than 2).



Answer: $n(S) =$ 6

b) (5 PTS.) Let E be the event that a 2♡ and 3♡ are both drawn (the 4♡ may or may not be drawn). What is $n(E')$?

$E = \{23, 324, 423, 432\}$

$E' = \{24, 34\}$

Answer: $n(E') =$ 2

SEE OTHER SIDE

2) One hundred people belong to a garden club. 43 of the club members grown zinnias and 38 grow gladiolus. 41 club members don't grow either zinnias or gladiolus (i.e. you won't see and any zinnias or gladiolus in their gardens).

a) (10 PTS.) How many of the club members grow both zinnias and gladiolus?

Since $n(U) = 100$ & $n((Z \cup G)') = 41$,

then $n(Z \cup G) = 59$.

Since $n(Z \cup G) = n(Z) + n(G) - n(Z \cap G)$

or $59 = 43 + 38 - n(Z \cap G)$

we have $59 = 81 - n(Z \cap G)$

or $n(Z \cap G) = 81 - 59 = 22$

Answer: Number that grow BOTH = 22

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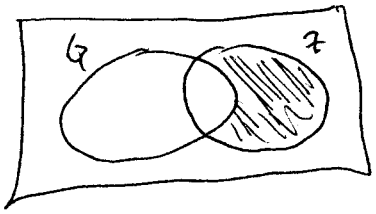
b) (10 PTS.) How many people grow zinnias but **not** gladiolus?



$n(Z \cap G') = n(Z) - n(Z \cap G)$

$= 43 - 22$

$= 21$

Answer: Number that grow Z's but not G's = 21