MATH 3

302 COMPOUND PROBABILITIES

EXAMPLE 1: TWO EVENTS

You pick two cards from a standard deck of cards (you pick one card, then a second, without putting the first card back). What is the probability that the first card is a king and the second card is an ace?

MORE COMPLEX SITUATIONS: LOTTERY GAMES

Example 2 - Pick 4: One of the simplest lottery games offered by many states is a "Pick Three" or "Pick Four" game. In the Oregon Lottery's Pick Four game, you choose four numbers, from 0 to 9; you may repeat the same digit more than once. You may "wager" $0.50 or $1.00 per ticket, and prizes are awarded as follows:

	$0.50 ticket	$1.00 ticket
all 4 digits match, exact order	$1000	$2000
1st 3 digits match, exact order	$75	$150
last 3 digits match, exact order	$75	$150
1st 2 digits match, exact order	$3	$6
middle 2 digits match, exact order	$3	$6
last 2 digits match, exact order	$3	$6

Compute the following probabilities related to the Pick Four game:

- p(matching all four digits) =
- p(matching last three digits) =
- p(matching no digits) =

Example 3 - Powerball: In Powerball, five white balls are drawn from a set of 69 balls, and a special "powerball" is drawn from a separate set of 26 red balls. Prizes are awarded as follows:

# of white matches	powerball match?	prize
5	y	jackpot ($10 mil +)
5	n	$1,000,000
4	y	$50,000
4	n	$100
3	y	$100
3	n	$7
2	y	$7
1	y	$4
0	y	$4

Find the following probabilities based on the Powerball game:

p(winning the jackpot) =

p(winning $1,000,000) =

p(matching only the powerball) =

p(not winning) =