Name:

Please try to show your work and give justifications for your answers. It is permitted to use calculators on the quiz. Try not to spend too much time on any single problem; if you get stuck on a problem leave a partial answer and move on to the next.

(1) (15 points) Suppose that $E$ and $F$ are independent events, and that $P(E) = 0.3$ and $P(F) = 0.5$. What is $P(E \text{ and } F)$?

(2) (20 points) A standard deck of 52 cards contains 12 face cards. What is the probability that a card drawn at random from the deck is not a face card?

(3) Consider an experiment in which you roll two dice watching for the following two outcomes:

$E =$ One of the two dice shows the number 5
$F =$ The sum of the numbers shown on the dice is 7

a) (15 points) Assuming the sum of the numbers on the dice is 7, what is the probability that a 5 is showing? In other words, what is $P(E|F)$?

b) (15 points) Are the two events $E$ and $F$ dependent or independent? Why?

c) (15 points) What is $P(E \text{ or } F)$?

(4) (20 points) What is the expected value of the following game: You pay $1 to roll a pair of six sided dice. If the sum of the numbers shown on the dice is 12, you win $25. For any other sum you win nothing.

(5) (5 points extra credit) What is the probability of being dealt 4 of a kind in a 5 card poker hand?