

NAME: _____

(1) Three friends (A,B, and C) will participate in a round-robin tournament in which each one plays both of the others. Suppose that $P(\text{A beats B})=.7$, $P(\text{A beats C})=.8$, and $P(\text{B beats C})=.6$, and that the outcomes of the three matches are independent of one another.

(a) What is the probability that A wins both her matches and B beats C?

(b) What is the probability that A wins both her matches?

(c) What is the probability that A loses both her matches?

(d) What is the probability that each person wins one match? (HINT: There are two different ways for this to happen.)

(2) This table represents the probability distribution of a discrete random variable X .

x	$p(X = x)$
-10	.3
5	.05
135	

(a) Fill in the missing cell in the table to make the probability distribution valid.

(b) Find the expected value of X . Show your work.

- (3) Suppose that an urn contains three red marbles and one blue marble. Draw marbles (without replacement) until you have drawn EXACTLY TWO red marbles.
- (a) Draw a tree diagram that shows all possible outcomes.

- (b) Define the random variable X = number of draws until you get exactly two red marbles. In the table below, write the probability distribution of X .

x	$p(X = x)$