This quiz covers material from section 7.5. Show your work.

1. (4 points) Suppose $P(A) = .5$, $P(B^c) = .4$, and $P(A \cap B) = .3$. Use the proper formulas to get full credit.
   
   a. (2 pts) Determine $P(B|A)$.
   
   b. (2 pts) Determine if the events $A$ and $B$ are independent.

2. (2 points) In a two-child family, what is the probability that both children are girls given that at least one child is a girl? (Assume that the probability of a boy being born is the same as the probability of a girl being born.)

3. (2 points) Suppose the events ”you eat an ice-cream sundae today” and ”you hit the bullseye of a target” are independent events. If the probability that you eat an ice-cream sundae today is .1 and the probability that you both eat an ice-cream sundae today and hit the bullseye of a target is .05, then what is the probability that you hit the bullseye of a target?