M463 Homework 3

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(1) A family has two children, of whom the oldest is a girl. What is the probability both children are girls?

Solution: Let $\Omega = \{(G,B),(G,G)\}$, where G denotes the girl and B boy and the pairs are orderer (Older, Younger). Consider the following event: $E =$ "Both children are girls" $= \{(G,G)\}$.
Then, assuming E.L.O:

$$P(E) = \frac{\#E}{\#\Omega} = \boxed{\frac{1}{2}}$$

(2) A family has two children, of whom at least one is a girl. What is the probability both children are girls?

Solution: Let $\Omega = \{(G,B),(B,G),(G,G)\}$, where G denotes the girl and B boy and the pairs are orderer (Older, Younger). Consider the following event: $E =$ "Both children are girls" $= \{(G,G)\}$.
Then, assuming E.L.O:

$$P(E) = \frac{\#E}{\#\Omega} = \boxed{\frac{1}{3}}$$