Homework 1.3

1. The sample space of the experiment will have $2^3 = 8$ elements. This sample space is {HHH, HHT, HTH, THH, HTT, THT, TTH, TTT}, where H = heads and T = tails is the outcome of one of the coin tosses.

2. There are 3 outcomes in the sample space that have exactly two heads.

3. If A is the event of exactly two heads and B is the event of exactly two tails, then A ∪ B is the set of all outcomes that have two heads *or* two tails: {HHT, HTH, THH, HTT, THT, TTH}. We then see that A ∩ B is the set of all outcomes that have two heads *and* two tails, which is of course the empty set, since we only tossed three coins. Hence, A ∩ B = ∅.