Math 107 Quiz #7 Answers

1. (a) $P(2) = \boxed{\frac{1}{6}}$

   (b) $P(\text{Q, K, or } \heartsuit) = P(\text{Q}) + P(\text{K}) + P(\heartsuit) - P(\text{Q and } \heartsuit) - P(\text{K and } \heartsuit)$
   $= \frac{4}{52} + \frac{4}{52} + \frac{13}{52} - \frac{1}{52} - \frac{1}{52}$
   $= \boxed{\frac{19}{52}}$

2. (a) Number of outcomes $= (6)(6)(6) = \boxed{216}$

   (b) $P(1, 1, 1) = (\frac{1}{6})(\frac{1}{6})(\frac{1}{6}) = \boxed{\frac{1}{216}}$

   (c) There are three ways to get a sum of 4: 1, 1, 2 or 1, 2, 1, or 2, 1, 1
   So, $P(\text{sum of 4}) = \boxed{\frac{3}{216}}$

3. (a) $P(\text{No rain}) = 1 - P(\text{rain}) = 1 - 0.6 = \boxed{0.4 \text{ or } 40\%}$

   (b) $P(\text{Rain for 5 days}) = (0.6)(0.6)(0.6)(0.6)(0.6) = \boxed{0.07776}$

4. (a) There are 12 total marbles, so the probability that the first marble is green is $\frac{7}{12}$. Without replacing the marble, the probability that the second marble is green is $\frac{6}{11}$.
   So, $P(\text{both marbles are green}) = (\frac{7}{12})(\frac{6}{11}) = \boxed{\frac{42}{132} \text{ or } 0.3181\overline{8}.}$

   (b) If a marble is red or blue, it is not green. The probability that the first marble is red or blue is $\frac{5}{12}$. Without replacing the marble, the probability that the second marble is red or blue is $\frac{4}{11}$.
   So, $P(\text{both marbles are not green}) = (\frac{5}{12})(\frac{4}{11}) = \boxed{\frac{20}{132} \text{ or } 0.\overline{15}}$