

Drill Quiz for Chapter 12 Sections 1 and 2

1. (1 point each) Fill in the blanks with one of the symbols listed, to make the expression correct.
 - a. Symbols: \subseteq or $\not\subseteq$
 - i. $\{2,3\} \not\subseteq \{1,3\}$
 - ii. $\{1,3\} \subseteq \{1,2,3\}$
 - b. Symbols: \cap or \cup
 - i. $\{1,2,3\} \cap \{3,4\} = \{3\}$
 - ii. $\{1,2,3\} \cup \{3,4\} = \{1,2,3,4\}$
2. (1 point each) Let $U = \{2,3,4,5,7,9\}$ be the universe. Let $X = \{2,3,4,5\}$, $Y = \{3,5,7,9\}$, and $Z = \{2,4,5,7,9\}$. List the members of each of the following sets, using set braces.
 - a. $X \cap Y$
 $\{3,5\}$
 - b. $X \cup Y$
 $\{2,3,4,5,7,9\}$
 - c. X'
 $\{7,9\}$
3. (3 points) What is a sample space?
A sample space is the set of all possible outcomes of an experiment.
4. (1 point each) You roll a fair die. What is the probability of each of the following events:
 - a. Getting a 4
The event $E = \{4\}$ and the sample space $S = \{1,2,3,4,5,6\}$.
So $P(E) = n(E)/n(S) = 1/6$.
 - b. Getting a number less than 5 ("less than" means less than and not equal to)
The event $E = \{1,2,3,4\}$ and the sample space $S = \{1,2,3,4,5,6\}$.
So $P(E) = n(E)/n(S) = 4/6 = 2/3$.
5. (1 point each) A jar contains 3 orange marbles, 4 red marbles, and 2 blue marbles. You choose one marble at random. What is the probability of each of the following events:
 - a. Getting an orange marble
The event $E = \{o1, o2, o3\}$ and the sample space $S = \{o1, o2, o3, r1, r2, r3, r4, b1, b2\}$.
So $P(E) = n(E)/n(S) = 3/9 = 1/3$.
 - b. Getting a marble that is not orange
The event $E = \{r1, r2, r3, r4, b1, b2\}$ and the sample space $S = \{o1, o2, o3, r1, r2, r3, r4, b1, b2\}$.
So $P(E) = n(E)/n(S) = 6/9 = 2/3$.
 - c. Getting a marble that is orange or blue
The event $E = \{o1, o2, o3, b1, b2\}$ and the sample space $S = \{o1, o2, o3, r1, r2, r3, r4, b1, b2\}$.
So $P(E) = n(E)/n(S) = 5/9$.