

Chapter 6 Probability Worksheet (Version Alpha)

1. Let E and F be events such that $\Pr(E) = .6$, $\Pr(F^c) = .3$, and $\Pr(E \cup F) = .8$. Find $\Pr(E \cap F)$.

2. Let $S = \{s_1, s_2, s_3, s_4, s_5\}$ be the sample space associated with an experiment having the following probability distribution.

Outcome	$\{s_1\}$	$\{s_2\}$	$\{s_3\}$	$\{s_4\}$	$\{s_5\}$
Probability	0.19	0.23	0.36	0.12	0.10

Given $E = \{s_1, s_2, s_3\}$, $F = \{s_1, s_2, s_4, s_5\}$ and $G = \{s_2, s_3, s_5\}$, determine $\Pr[(E \cap F) \cup (F \cap G)]$.

3. While watching out their kitchen window, Hypatia and Bastet notice all the different birds using the birdbath over a period of an hour. Out of 143 birds, they count the following birds.

Type of Bird	Starlings	Cedar Waxwings	Purple Finches	Sparrows	Juncos
Frequency	39	31	18	33	22

If a bird is chosen at random, find the probability that it is

- a junco
- a starling, a cedar waxwing or a purple finch
- not a starling

4. A hand of 9 cards is dealt from a well-shuffled deck of 54 cards (it includes the jokers). Find the probability that the hand contains 1 joker, 3 red cards, 4 clubs and 1 spades.

5. A hand of 10 cards is dealt from a well-shuffled deck of 52 cards. Find the probability that the hand contains at least 2 black cards.

6. A used car dealer has 150 used cars on his lot. The dealer knows that 30 of the cars are defective. If one of the 150 cars is selected at random, what is the probability that it is defective?

7. A new apartment complex advertises that it will give away three mopeds by a drawing from the first 50 students that sign a lease. Four friends are among the first 50 to sign. What is the probability that at least one of them will win a moped?