

**Problem 1:** Mark the following True or False:

- (a) \_\_\_\_\_ One need only record a few trials to be able to create a chart of probabilities and make accurate predictions.
- (b) \_\_\_\_\_ Random phenomenon are outcomes that one cannot use probability arguments to predict possible outcomes.
- (c) \_\_\_\_\_ Independent trials are events where one outcome does not influence any of the others.
- (d) \_\_\_\_\_ All probabilities are between 0 and 1.
- (e) \_\_\_\_\_ Disjoint events are events which are independent.

**Problem 2:** Krystina likes to cheat at dice games so she always brings a weighted dice. Her foul dice has the following probabilities:

Value	1	2	3	4	5	6
Probability	0.1	.25	.20	?	.15	0.25

- (a) What is the probability of rolling a 4?
  
  
  
  
  
  
  
  
  
  
- (b) What is the probability of rolling a 1 or a 4? What is the probability of rolling a 2 or a 6? What is the probability of *not* rolling a 3?
  
  
  
  
  
  
  
  
  
  
- (c) What is the probability of rolling a 7? The probability of the sum of two rolls being 7?

**Problem 3:** Given that  $A$  and  $B$  are independent events with  $P(A) = 0.7$  and  $P(B) = 0.4$ , find:

(a)  $P(A \text{ and } B)$

(b)  $P(B|A)$

(c)  $P(A \text{ or } B)$

**Problem 4:** Real estate ads suggest that 64% of homes for sale have garages, 21% have swimming pools, and 17% have both features.

(a) Find the probability that a home for sale has a swimming pool or a garage.

(b) Find the probability that it has neither a swimming pool nor a garage.

**Problem 5:** There are three airlines to get from Mayberry to Pawnee: Artin Lines, Stewart Air, or Albowitz Flights. If you take Artin, there is a 60% chance your flight will be late, 50% if you take Stewart, and a 20% chance that you will be late if you take Albowitz. However, Artin services 50% of the flights from Mayberry to Pawnee, Stewart handles 40% of the flights, while Albowitz handles only 10% of the flights.

- (a) Draw a diagram illustrating the possible outcomes.
- (b) If you were to take a flight from Mayberry to Pawnee and were late, what is the probability that you took Artin? The probability that you took Albowitz?
- (c) If you took a flight from Pawnee to Mayberry and the flight was on time, what was the probability that it was Stewart? The probability that it was Albowitz?