

## Probability #3

Name \_\_\_\_\_ Date \_\_\_\_\_

### Independent and Dependent Events

	25 to 34	35 to 54	55 and over	Total
Did not complete high school	5325	9152	16,035	30,512
Completed high school	14,061	24,070	18,320	56,451
1 to 3 years of college	11,659	19,926	9662	41,247
4 or more years of college	10,342	19,878	8005	38,225
Total	41,387	73,026	52,022	166,435

In Exercises 1–4, use your knowledge of probability to analyze the table about years of education completed by age. If a person is chosen at random from this population:

1. What is the probability that the person is in the 25 to 34 age range and in the 55 and over age range?
2. What is the probability that a person is between 25 and 34 years of age and they have completed 1 to 3 years of college?
3. If the person is in the 55 and over age range, what is the probability that they completed 1 to 3 years of college?
4. If the person has completed high school, what is the probability that they are 35 to 54 years old?
5. If a person is vaccinated properly, the probability of his/her getting a certain disease is 0.05. Without a vaccination, the probability of getting the disease is 0.35. Assume that  $\frac{1}{3}$  of the population is properly vaccinated.
  - a. If a person is selected at random from the population, what is the probability of that person's getting the disease?
  - b. If a person gets the disease, what is the probability that he/she was vaccinated?
6. Suppose a test for diagnosing a certain serious disease is successful in detecting the disease in 95% of all persons infected, but that it incorrectly diagnoses 4% of all healthy people as having the serious disease. If it is known that 2% of the population has the serious disease, find the probability that a person selected at random has the serious disease if the test indicates that he or she does.
7. The probability that a football player weighs more than 230 pounds is 0.69, that he is at least 75 inches tall is 0.55, and that he weighs more than 230 pounds and is at least 75 inches tall is 0.43. Find the probability that he is at least 75 inches tall if he weighs more than 230 pounds.

### Probability #3

## What Do You Put In A Barrel To Make It Lighter?

Write the letter of each answer in the box containing the exercise number.

**Tell whether the events are dependent or independent.**

1. You roll number cube and select a card from a standard deck of cards.

**Event A:** You roll a 3.

**Event B:** You select a face card.

2. A bag of marbles contains 3 red marbles, 2 yellow marbles, and 4 blue marbles. You randomly choose a marble, and without replacing it, you randomly choose another marble.

**Event A:** You choose a red marble first.

**Event B:** You choose a blue marble second.

**Find the probability.**

3. A container contains 13 almonds, 8 walnuts, and 19 peanuts. You randomly choose one nut and eat it. Then you randomly choose another nut. Find the probability that you choose a walnut on your first pick and an almond on your second pick.

4. The letters M, A, R, B, L, and E are each written on a card and placed into a hat. You randomly choose a card, return it, and then choose another card. Find the probability that you choose a vowel on your first pick and a consonant on your second pick.

5. A bag contains 3 red chips, 4 blue chips, 5 yellow chips, and 3 green chips. You randomly choose a chip, and without replacing it, you randomly choose another chip. Find the probability that you choose a yellow chip on your first pick and a blue chip on your second pick.

#### Answers

L.  $\frac{2}{9}$

H. dependent

E.  $\frac{2}{21}$

O.  $\frac{1}{15}$

A. independent

1		2	3	4	5
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