Statistics Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Independence

1. Suppose you know that in a class of 30 students, 10 have blue eyes and 20 have brown eyes. Twenty-four of the students are right-handed and 6 are left-handed. Of the left-handers, 2 have blue eyes. Make and fill in a table showing this situation. Then find the probability that a randomly selected person from this classroom is right-handed, given that they have brown eyes.
2. The display below gives a breakdown of the U.S. population by race

and age as given by the U.S. Bureau of the Census.

Race

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Age | White | Black | American Indian, | Asian, Pacific | Total |
|  |  |  | Eskimo | Islander |  |
| Under 5 | 15184 | 2892 | 202 | 872 | 19150 |
| 5-9 | 15560 | 3147 | 226 | 805 | 19738 |
| 10-14 | 15093 | 2937 | 239 | 770 | 19040 |
| 15-19 | 15151 | 2963 | 219 | 735 | 19068 |
| 20-24 | 13970 | 2598 | 186 | 758 | 17512 |
| 25-29 | 15163 | 2615 | 191 | 900 | 18869 |
| 30-34 | 16903 | 2762 | 184 | 892 | 20741 |
| 35-39 | 18710 | 2858 | 183 | 874 | 22625 |
| 40 or older | 95600 | 11175 | 692 | 3427 | 110893 |
| Total | 221334 | 33947 | 2322 | 10033 | 267636 |

You are working for a polling organization that is about to select a random sample of U.S. residents. What is the probability that the first person selected will be

1. age 40 or older, given that the person is Asian/Pacific Islander?
2. Black, given that the person is under the age of 10?
3. under the age of 10, given that the person is white?
4. Black or under the age of 10, given that the person is under the age of 30?
5. Joseph Lister (British, 1827-1912), surgeon at the Glasgow Royal Infirmary, was one of the first to believe in Pasteur’s germ theory of infection. He experimented with using carbolic acid to disinfect operating rooms during amputations. When carbolic acid was used, 34 of 40 patients lived. When carbolic acid was not used, 19 of 35 patients lived. If a patient is selected at random, find
   1. P(patient died| carbolic acid used) =
   2. P(carbolic acid used| patient died) =
   3. P(carbolic acid used and patient died) =
   4. P(carbolic acid used or patient died) =
6. Suppose you choose a student at random from your school. In each case, does knowing that event A happened increase the probability of event B, decrease the probability of event B, or leave the probability of event B unchanged?
   1. A: The student is a football player.

B: The student weighs less than 120 pounds.

* 1. A: The student has long fingernails.

B: The student is a female.

* 1. A: The student is a freshman.

B: The student is male.

* 1. A: The student is a freshman.

B: The student is a senior.