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

**Conditional Probability Homework**

1. A random survey was taken to gather information about grade level and car ownership status of students at a school. This table shows the results of the survey.

|  |  |  |  |
| --- | --- | --- | --- |
| **Car Ownership by Grade** | | | |
|  | **Owns a Car** | **Does Not Own a Car** | **TOTAL** |
| **Junior** | 6 | 10 | 16 |
| **Senior** | 12 | 8 | 20 |
| **TOTAL** | 18 | 18 | 36 |

1. Find the probability that a randomly selected student will be a junior, given that the student owns a car.
2. Find the probability that a randomly selected student will own a car, given that the student is a senior.
3. The table below shows numbers of registered voters by age in the United States in 2004 based on the census. Find each probability in decimal form.

|  |  |  |
| --- | --- | --- |
| **Age** | **Registered Voters  (in thousands)** | **Not Registered to Vote  (in thousands)** |
| 18–24 | 14,334 | 13,474 |
| 25–44 | 49,371 | 32,763 |
| 45–64 | 51,659 | 19,355 |
| 65 and over | 26,706 | 8,033 |

1. Find the probability that a randomly selected person is registered to vote, given that the person is between the ages of 18 and 24.
2. Find the probability that a randomly selected person is not registered to vote, given that they are 65 and over.
3. Find the probability that a randomly selected person is between the ages of 45 and 64 and is not registered to vote.
4. A faculty advisor at Ridge High School surveyed 100 students about their preference for a social event. Of the 100 students surveyed, 50 were tenth graders and 50 were eleventh graders. Of the tenth graders, 30 chose a bowling party and 20 chose a dance. Of the eleventh graders, 20 chose a bowling party and 30 chose a dance.

a) Make a two way frequency table to represent the data.

b) Let T = 10th graders, E = 11th graders, B = Bowling, and D = Dance

Find P(B).

Find P(B|T).

Do you think that the probability of liking bowling is dependent on whether a student is in the 10th or 11th grade?