**§6-5 Contingency Tables**

For each question, **use probability notation** to describe the situation and then compute the answer, showing the fraction first and then the decimal equivalent. Totals in each table need to be calculated first.

1. **Emergency Savings**: The table shows the results of a survey in which 142 men and 145 women workers ages 25 to 64 were asked if they have at least one month’s income set aside for emergencies.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Men** | **Women** | **TOTAL** |
| **< 1 month’s income**  | 66 | 83 |  |
| **≥ 1 month’s income saved** | 76 | 83 |  |
| **TOTAL** |  |  |  |

1. Find the probability that a randomly selected worker has one month’s income or more set aside for emergencies.
2. Given that a randomly selected worker is a male, find the probability that the worker has less than one month’s income.
3. Given that a randomly selected worker has one month’s income or more saved, find the probability that the worker is a female.
4. Are the events of having less than one month’s income or more saved and being male independent or dependent? Explain.
5. **Health Care for Dogs**: The table shows the results of a survey in which 90 dog owners were asked how much they have spent in the last year for their dog’s health care, and whether their dogs were purebred or mixed breeds.

|  |  |  |
| --- | --- | --- |
|  |  | **Type of Dog** |
| **Health Care** |  | **Purebred** | **Mixed Breed** | **TOTAL** |
| **< $100**  | 19 | 21 |  |
| **≥ $100** | 35 | 15 |  |
| **TOTAL** |  |  |  |

1. Find the probability that $100 or more was spent on a randomly selected dog’s health care in the last year.
2. Given that a randomly selected dog owner spent less than $100, find the probability that the dog was a mixed breed.
3. Find the probability that a randomly selected dog owner spent $100 or more on health care and the dog was a mixed breed.
4. Are the events “spending $100 or more on health care” and “having a mixed breed dog” independent or dependent? Explain.
5. **Summer Vacation**: The table shows the results of a survey in which 146 families were asked if they own a computer and if they will be taking a summer vacation this year.

|  |  |  |
| --- | --- | --- |
|  |  | **Summer Vacation This Year** |
| **Own a Computer** |  | **Yes** | **No** | **TOTAL** |
| **Yes**  | 46 | 11 |  |
| **No** | 55 | 34 |  |
| **TOTAL** |  |  |  |

1. Find the probability a randomly selected family is taking a summer vacation this year given that they own a computer.
2. Find the probability a randomly selected family is taking a summer vacation this year and owns a computer.
3. Are the events of owning a computer and taking a summer vacation this year independent or dependent events? Explain.
4. **Nursing Majors**: The table shows the number of male and females students enrolled in nursing at the University of Oklahoma Health Sciences Center. (Source: University of Oklahoma Health Center Office of Admissions & Records)

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Nursing Majors** | **Non-nursing Majors** | **TOTAL** |
| **Males**  | 65 | 971 |  |
| **Females** | 571 | 1393 |  |
| **TOTAL** |  |  |  |

1. Find the probability that a randomly selected student is a nursing major given that the student is male.
2. Find the probability that a randomly selected student is a nursing major and male.
3. Are the events being a male student and being a nursing major independent or dependent events? Explain.
4. a) 0.4808 b) 0.4648 c) 0.4493 d) D – explain showing P(A) \*P(B) ≠ P(A ∩ B) using chart;
5. a) 0.5556 b) 0.525 c) 0.1667 d) D -- 2/9 ≠ 1/6
6. a) 0.8070 b) 0.3154 c) D – 0.3154 ≠ 0.2701
7. a) 0.0627 b) 0.0217 c) D – 0.0217 ≠ 0.0732