

Name: Key Date: _____

Conditional Probability

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. Write your answer as a reduced fraction.

| | Owens a Car | Does Not Own a Car | TOTAL |
|--------|-------------|--------------------|-------|
| Junior | 6 | 10 | 16 |
| Senior | 12 | 8 | 20 |
| TOTAL | 18 | 18 | 36 |

1/3 1. Find the probability that a randomly selected student will be a junior, given that the student owns a car. $P(\text{Junior} | \text{owns car})$

3/5 2. Find the probability that a randomly selected student will own a car, given that the student is a senior. $P(\text{owns car} | \text{senior})$

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, 2 places.

| Age | Registered Voters (in thousands) | Not Registered to Vote (in thousands) | |
|-------------|----------------------------------|---------------------------------------|---------|
| 18-24 | 14,334 | 13,474 | 27,808 |
| 25-44 | 49,371 | 32,763 | 82,134 |
| 45-64 | 51,659 | 19,355 | 71,014 |
| 65 and over | 26,706 | 8,033 | 34,739 |
| | 142,070 | 73,625 | 215,695 |

.52 3. Find the probability that a randomly selected person is registered to vote, given that the person is between the ages of 18 and 24.

$$P(\text{registered} | 18-24) = \frac{14,334}{27,808}$$

.23 4. Find the probability that a randomly selected person is not registered to vote, given that they are 65 and over.

$$P(\text{not registered} | 65+) = \frac{8,033}{34,739}$$

.09 5. Find the probability that a randomly selected person is between the ages of 45 and 64 and is not registered to vote.

$$P(45-64 \text{ and not reg}) = \frac{19,355}{215,695}$$

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.

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

| | Bowling (B) | Dance (D) | |
|------------------------------|-------------|-----------|-----|
| 10 th graders (T) | 30 | 20 | 50 |
| 11 th graders (E) | 20 | 30 | 50 |
| | 50 | 50 | 100 |

- 1/2 7. Find $P(B)$. Write your answer as a reduced fraction.

$$50/100$$

- 3/5 8. Find $P(B | T)$. Write your answer as a reduced fraction.

$$30/50$$

- yes 9. Based on your answers on #7 & 8, do you think that the probability of liking bowling is dependent (different answers) on whether a student is in the 10th or 11th grade?

After growing tired of squinting while driving, Dwayne went shopping for a pair of sunglasses. He tried on glasses with different frames and lenses. He tried on 15 pairs of glasses, 8 that were cat eye frames and 7 that were browline frames. 2 of the cat eye frames were polarized lenses. He also tried on 10 regular lenses.

10. Make a two-way frequency table to represent the data.

| | Polarized (P) | Regular (R) | |
|--------------|---------------|-------------|----|
| Cat Eye (C) | 2 | 6 | 8 |
| Browline (B) | 3 | 4 | 7 |
| | 5 | 10 | 15 |

- 3/4 11. What is the probability that a randomly selected pair of sunglasses has regular lenses, given that the pair of sunglasses has cat eye frames?

$$P(\text{reg lense} | \text{cat eye})$$

$$6/8$$