



Name _____
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Date _____
Algebra II

Determining Independence

1. The results of a poll of 200 students are shown in the table below:

| | Preferred Music Style | | |
|--------|-----------------------|-----|---------|
| | Techno | Rap | Country |
| Female | 54 | 25 | 27 |
| Male | 36 | 40 | 18 |

For this group of students, do these data suggest that gender and preferred music styles are independent of each other? Justify your answer.

2. At a local mall, 125 people were asked how they choose to pay for their merchandise. The data is shown in the table below:

| | Credit Card | Cash |
|--------|-------------|------|
| Male | 40 | 10 |
| Female | 60 | 15 |

Does the data suggest that the gender and type of payment are independent of each other? Explain your answer.

3. One-hundred employees of a company were asked their opinion on paying high salaries to the CEO. Their responses are summarized in the following contingency table.

| | In Favor | Against |
|--------|----------|---------|
| Male | 15 | 45 |
| Female | 4 | 36 |

Based on the data, are gender and opinion on salaries independent of each other? Justify your answer.

4. Juan and Felipe practice at the driving range before playing golf. The number of wins and corresponding practice times for each player are shown in the table below.

| | Juan Wins | Felipe Wins |
|---------------------|-----------|-------------|
| Short Practice Time | 8 | 10 |
| Long Practice Time | 15 | 12 |

Given that the practice time was long, determine the exact probability that Felipe wins the next match. Determine whether or not the two events “Felipe wins” and “long practice time” are independent. Justify your answer.

5. The results of a survey of the student body at Central High School about television viewing preferences are shown below.

| | Comedy Series | Drama Series | Reality Series | Total |
|---------|---------------|--------------|----------------|-------|
| Males | 95 | 65 | 70 | 230 |
| Females | 80 | 70 | 110 | 260 |
| Total | 175 | 135 | 180 | 490 |

Are the events “student is a male” and “student prefers reality series” independent of each other? Justify your answer.

6. The following table represents the food preferences of students in a high school. Are the events “a student prefers chicken nuggets” and “a student is in 10th grade” independent of each other? Justify your answer.

| | Pizza | Chicken Nuggets | Cheeseburger |
|------------------|-------|-----------------|--------------|
| 9 th | 112 | 87 | 93 |
| 10 th | 140 | 52 | 43 |
| 11 th | 100 | 82 | 71 |
| 12 th | 119 | 102 | 72 |

7. The relative frequency table shows the proportion of a population who have a given eye color and the proportion of the same population who wear glasses. Given the data, are the events of having blue eyes and wearing glasses independent? Justify your answer.

| | Wear Glasses | Don't Wear Glasses |
|-------------------|---------------------|---------------------------|
| Blue Eyes | 0.14 | 0.26 |
| Brown Eyes | 0.11 | 0.24 |
| Green Eyes | 0.10 | 0.15 |

8. A study was done at West Apple High School analyzing the student lateness and Regents Exam results. It was found that 32% of the students arrive to school late and 72% pass their Regents Exams. 14% of the students arrive late and pass their Regents Exams. Are the events “student is late” and “student passes Regents Exams” independent of each other? Justify your answer.