

Assignment

Write

1. A _____ is a table that shows the relationship between two data sets, one organized in rows and one organized in columns.
2. A _____ is a table that shows the frequency of an item, number, or event appearing in a sample space.
3. A _____ or a _____ shows the number of data points and their frequencies for two variables.
4. Data that can be grouped into categories is called categorical data or _____.
5. A _____ is the ratio of occurrences within a category to the total number of occurrences.
6. A table that displays the relative frequencies for two categories of data is called a _____.

Remember

Two-way tables can be used to determine the probabilities of compound events. The converse of the multiplication rule states: "If the probability of two events A and B occurring together is $P(A) \cdot P(B)$, then the two events are independent."

Practice

Jermaine rolls two number cubes.

1. Complete a two-way table to represent all the possible products of the numbers rolled on two number cubes.
2. Create a frequency table with the product of the numbers rolled on the two number cubes and their frequency.
3. Use your two-way table and frequency table to answer each question.
 - a. What is the probability of rolling an odd product?
 - b. What is the probability of rolling a product less than 10?
4. Use the converse of the multiplication rule to determine whether the events are independent. Explain your reasoning.
 - a. Rolling a 2 on the first number cube and rolling a 6 on the second number cube
 - b. Rolling a 3 on the first number cube and a product equal to 20

A survey was taken of 24 households on Oak Street to compare the number of cars registered to the household and the number of people who live in the house. The responses are shown in the table.

5. Complete the table. Write each result as a fraction and a percent rounded to the tenths place.

		Number of People in Household								Total	Rel. Freq.
		2		3		4		5			
		Freq.	Rel. Freq.	Freq.	Rel. Freq.	Freq.	Rel. Freq.	Freq.	Rel. Freq.		
Number of Cars	1	1		1		1		0			
	2	4		3		5		3			
	3	0		1		3		1			
Total											

6. Suppose a house on Oak Street is randomly chosen. Determine each probability.

- The house has two cars.
- The house has 3 people in the household.
- The house has 4 people in the household and 3 cars.
- The house has 5 people in the household and 2 cars.

Stretch

- An amusement park randomly surveyed 130 guests about the type of ride they preferred between three types of rides; roller coaster, ferris wheel, and pirate ship. The guests were also asked their ages. The responses and totals are shown in the table.

		Type of Ride			Total
		Roller Coaster	Ferris Wheel	Pirate Ship	
Age	< 30	36	4	1	41
	30-39	25	6	8	39
	40-49	12	12	5	29
	50-59	4	10	7	21
Total		77	32	21	130

- What is the probability that a randomly chosen guest prefers the ferris wheel?
- What is the probability that a randomly chosen guest is aged 40–49 and prefers the roller coaster?
- What number for the probabilities from parts a) and b) denotes the sample space?
- Suppose a guest is randomly chosen and it is known that they preferred the pirate ship. How many guests would be included in the sample space? Explain your reasoning.
- What is the probability that out of the guests who preferred the pirate ship, the guest was younger than 30 years old?

Review

- A game includes a deck of cards with a shape on each card. The table shows the number of each type of card. Suppose each time a card is chosen, the card is replaced before another card is chosen. A player draws three cards. What is the probability the first card will have a square on it and the last card will have a star on it?

Number of Cards	Shape on Card
5	triangle
15	square
4	rectangle
6	circle
12	star

2. A school is giving out prizes at a pep rally to random students whose names are picked out of a hat. The table shows the number of students in each grade. Suppose each time a student's name is chosen, the student's name does not go back into the hat. The principal draws two names. What is the probability that the first student is in twelfth grade or the second student is in tenth grade?

Number of Students	Grade of Student
25	ninth
32	tenth
28	eleventh
25	twelfth

3. A bag contains a red marble, a blue marble, a yellow marble, a green marble, an orange marble, and a purple marble. Jeanine randomly picks a marble from the bag, without replacing it, and then she chooses another marble from the bag. Sketch a tree diagram that represents the sample space.
4. Kamau randomly chooses a card from a deck of eight cards without replacing it. The cards are numbered 1 through 8.
- Identify the sample space.
 - Determine the probability of picking a card that has a number less than 6, $P(\text{less than } 6)$.
 - Determine the probability of picking a card that has a number that is a prime number, $P(\text{prime number})$.
5. Use a trigonometric ratio to solve for the value of x . Round your answer the nearest tenth.

