

Lesson 4-1

Example 1

SURVEY A polling company conducted a survey of registered voters last week to estimate support for a local issue. The table shows the number of people who said that they are in favor of the issue passing.

	Voters Surveyed	Support Issue 7
Monday	124	75
Tuesday	180	135
Wednesday	156	112
Thursday	225	150
Friday	210	143

- What is the experimental probability that a voter who was surveyed on Tuesday supports Issue 7?
- What is the experimental probability that a voter who was surveyed on Thursday supports Issue 7?

Solution

Use the experimental probability formula.

$$P(\text{voter supports Issue 7}) = \frac{\text{number of voters who support Issue 7}}{\text{total number of voters surveyed}}$$

$$\text{a. } P(\text{voter surveyed on Tuesday supporting Issue 7}) = \frac{135}{180} = 0.75$$

The probability that a voter who was surveyed on Tuesday supports Issue 7 is 0.75, or $\frac{3}{4}$.

$$\text{b. } P(\text{voter surveyed on Thursday supporting Issue 7}) = \frac{150}{225} = 0.\bar{6}$$

The probability that a voter who was surveyed on Thursday supports Issue 7 is $0.\bar{6}$, or $\frac{2}{3}$.

Example 2

According to the table, what is the probability that a customer on Tuesday was driving a truck or a sports car?

	Sedan	Truck	Minivan	Sports Car	SUV
Monday	112	83	140	49	75
Tuesday	123	79	84	53	101
Wednesday	161	103	105	34	81

Solution

To find the experimental probability, find the total number of customers on Tuesday and the number of Tuesday customers who were driving a truck or a sports car.

$$\begin{aligned}P(\text{truck or sports car}) &= \frac{\text{number of trucks and sports cars on Tuesday}}{\text{total number of cars on Tuesday}} \\ &= \frac{79 + 53}{123 + 79 + 84 + 53 + 101} \\ &= \frac{132}{440} \\ &= 0.3\end{aligned}$$

The probability that a customer on Tuesday was driving a truck or a sports car is 0.3.

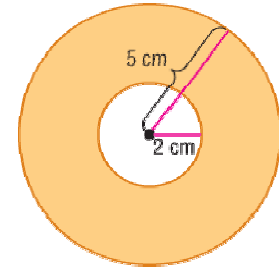
Example 3

What is the probability that a point selected at random lies in the shaded region?

Solution

Find the area of the shaded region and the entire region and divide.

$$\begin{aligned}
 P(\text{shaded region}) &= \frac{\text{area of shaded region}}{\text{area of entire region}} \\
 &= \frac{\pi 5^2 - \pi 2^2}{\pi 5^2} \\
 &= \frac{25\pi - 4\pi}{25\pi} \\
 &= \frac{21\pi}{25\pi} \\
 &= \frac{21}{25}
 \end{aligned}$$



The probability that a point selected at random lies in the shaded region is $\frac{21}{25}$.