Solutions

Algebra II Journal

Module 5: Probabilities of Compound Events

Fan Appreciation Night, Part 3

This journal belongs to:

Module 5: Probabilities of Compound Events

Algebra II Journal: Reflection 1

Record your data in the two-way table below.

Answer:

Answers will vary based on the data collected. A sample is shown below:

	Mascot Choice A Tiger	Mascot Choice B Mustang	Mascot Choice C Raven	Total
Female Freshmen	7	2	11	20
Male Freshman	8	8	4	20
Female Sophomores	10	0	10	20
Male Sophomores	4	6	10	20
Female Juniors	12	6	2	20
Male Juniors	5	10	5	20
Female Seniors	10	4	6	20
Male Seniors	2	10	8	20
Total	58	46	56	160

Respond to the following reflection questions and submit to your teacher.

Test and Confirm

What is the probability that a randomly selected student would prefer the Mascot Choice A?

Answer:

Based on the table above, $\frac{58}{160}$.

What is the probability that a randomly selected student is a freshman that prefers Mascot Choice B?

Answer:

Based on the table above, $\frac{10}{160}$.

What is the probability that a randomly selected student is a junior that would not prefer Mascot Choice C?

Answer:

Based on the table above, $\frac{33}{160}$.

What is the probability that a randomly selected student is a senior that would prefer Mascot Choice A or C?

Answer:

Based on the table above, $\frac{26}{160}$.

What is the probability that a randomly selected student is a female that would prefer Mascot Choice B?

Answer:

Based on the table above, $\frac{12}{160}$.

Apply the Model

Based on the data, which mascot choice would you recommend to the principal? Why?

Answer:

Answers will vary.

Algebra II Journal: Reflection 2

In this lesson, you learned how to calculate probabilities of compound events using a two-way table. Respond to the following reflection questions and submit to your teacher.

What strategies do you use to find probabilities with a two-way table?

Answer:

Answers will vary. Look for students to use appropriate cells of the table or columns/row totals as well as the total number surveyed.

How do you calculate $P(A \text{ and } B)$ using a two-way table?

Answer:

Sample Response: To calculate $P(A \text{ and } B)$ find the intersecting cell in the table, then find the total in the sample population and divide.

How do you calculate $P(A \text{ or } B)$ using a two-way table?

Answer:

Sample Response: To calculate $P(A \text{ or } B)$ you need to find the appropriate row and/or column in the two-way table. In the example, "If one of the fans is randomly selected for the grand prize, what is the probability that this fan has already won a t-shirt **OR** a hat?" three cells were highlighted.

Seating Sections	Number of Fans born in March	Number of Fans not born in March	Total
Section 109	8	107	115
Not in Section 109	404	4481	4885
Total	**412**	**4588**	**5000**

In general $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$.

Summarize your new learning for this module. What were the big ideas? Describe at least one big idea in depth.

Answer:

Answers will vary. Students should address how to use two-way tables to calculate probabilities of compound events. Students may also revisit ideas of independence, dependence, and whether events are mutually exclusive or mutually inclusive.