Review for M2 10.1 & 10.2

NAME DATE PERIOD

Lesson 4

Go

12. Complete the table and find the conditional probabilities, then interpret the data and probabilities to respond to the problem.

	Biking	Swimming	Total
10th Grade	100−50 50	50	176−76 100
11th Grade	35	76−35 41	76
Total	85	50+41 91	85+91 176

$P(\text{10th}|\text{Biking}) = \frac{50}{85} \approx 59\%$

$P(\text{Swimming}|\text{11th}) = \frac{41}{76} \approx 54\%$

Are the 11th grade students more into biking or swimming?

it's close, but swimming is more popular, with 41 votes vs. 35 votes for biking

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13. Complete the table about preferred genre of reading and dessert preference. Find the conditional probabilities, then interpret the data and probabilities to respond to the problem.

	Ice Cream	Cake	Total
Teen	75	20	95
Adult	10	50	60
Total	85	70	155

$P(\text{Teen}|\text{Cake}) = \frac{20}{70} \approx 0.29$

$P(\text{Adult or Ice Cream}) = \frac{135}{155} \approx 0.87$

Who prefers eating ice cream most, adults or teens?

Teens prefer ice cream the most. Ice cream wins among teens, but cake wins among adults.

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14. Fill in the missing values for the frequency table containing data from a sample of adults. The table shows voting turnout and household income for a recent election. Find the indicated probabilities, then interpret the data and probabilities to respond to the problem.

	Voted	Didn't Vote	Total
Income Over $67,500	340	70	410
Income Under $67,500	244	186	430
Total	584	256	840

$P(\text{Voted}|\text{Income Over \$67,500}) = \frac{340}{410} \approx 0.829$

$P(\text{Voted and Income Under \$67,500}) = \frac{244}{840} \approx 0.29$

$P(\text{Didn't Vote or Income Under \$67,500}) = \frac{500}{840} \approx 0.595$

Based on the sample of data, are all income levels participating in the election equally?

No, about 83% of the higher income bracket voted, but only about $\frac{244}{430} \approx 57\%$ of the lower income bracket voted.

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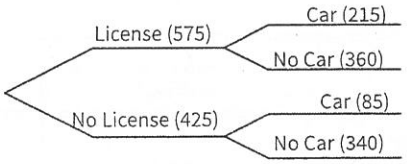
Quick Quiz 1: Lessons 1–4

$575 + 425 = 1000$

1. Data was collected from students about whether they had a driver's license and/or access to a car.



Use the data shown in the table to find the probabilities in a-e.

   a. Probability a student has a license. $P(\text{license}) = \frac{575}{1000} = 57.5\%$

   b. Probability a student has a car. $P(\text{car}) = \frac{215+85}{1000} = \frac{300}{1000} = 30\%$

   c. Probability of having a license or a car. $P(\text{license or car}) = \frac{575+85}{1000} = 66\%$

   d. Probability of a student having a car, given that they have a license. $P(\text{car}|\text{license}) = \frac{215}{575} \approx 37\%$

   e. Probability of having a license and a car. $P(\text{license and car}) = \frac{215}{1000} = 21.5\%$

2. Use the data in problem 1 to make a two-way frequency table and use it to find the probability that a student will have a license, given that they have access to a car. Give a reason why this probability is reasonable.

	car	no car	total
license	215	360	575
no license	85	340	425
total	300	700	1000

$P(\text{License}|\text{Car}) = \frac{215}{300} \approx 72\%$

This is a high probability. Why would you have access to a car if you didn't have a license?