Representing a Categorical Variable with Graphs Quiz

1. A market researcher asked a group of men and women to choose their favorite color design from a sample of advertisements. The results are shown in the following table.

	Red with Black	Green with Black	Yellow with Black	Red with Blue	Green with Blue	Yellow with Blue
Men	21	15	8	12	35	9
Women	15	3	11	31	24	16

Which of the following statements is not supported by the table?

(A) More men than women chose the color design red with black.

(B) More women than men chose the color design yellow with black.

(C) For men, the number who chose a design with black was greater than the number who chose a design with blue. ✓

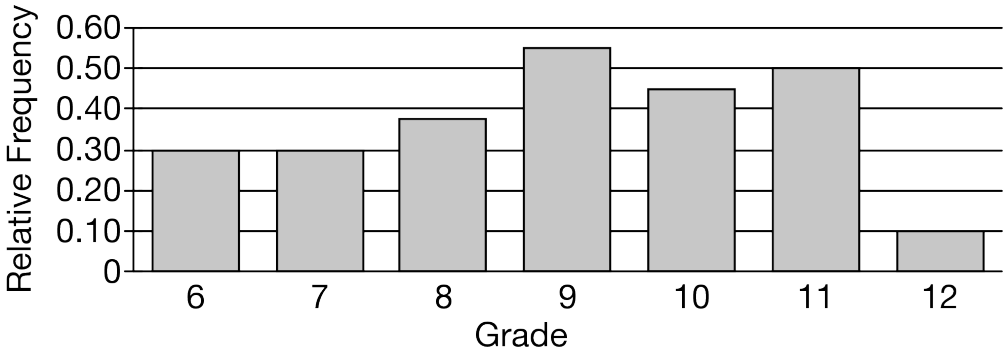
(D) The color design chosen by the most people was green with blue.

(E) The total number of men surveyed by the market researcher was equal to the total number of women surveyed by the market researcher.

Answer C

Correct. The statement is not supported. The number who chose a design with black was 44, but 56 chose a design with blue.

2. In a certain school district, students from grade 6 through grade 12 can participate in a school-sponsored community service activity. The following bar chart shows the relative frequencies of students from each grade who participate in the community service activity.



Which of the following statements is supported by the bar chart?

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(A) The greatest number of participating students was in grade 9.

(B) The number of participating students in grade 6 was equal to the number of participating students in grade 7.

(C) The relative frequency of all participating students in grades 6 and 7 combined was 0.60.

(D) Grade 12 had the least relative frequency of participating students. ✓

(E) Grade 11 had the greatest relative frequency of participating students.

Answer D

Correct. The least relative frequency on the bar chart is 0.10, which corresponds to grade 12.

3. A child psychologist asked 100 five year olds and 50 ten year olds to name their favorite color. Their results are shown in the following table.

	Red	Orange	Yellow	Green	Blue	Purple
Five year olds	21	15	8	10	35	11
Ten year olds	7	2	6	15	12	8

Which of the following statements is supported by the table?

(A) The percentage of five year olds who selected red or blue as their favorite color is greater than the percentage of ten year olds who selected red or blue as their favorite color. ✓

(B) The percentage of five year olds who selected yellow as their favorite color is greater than the percentage of ten year olds who selected yellow as their favorite color.

(C) The percentage of children who selected red, yellow, or blue as their favorite color was equal for both ages.

(D) Less than half of the five year olds selected red, yellow, or blue as their favorite color.

(E) Less than half of the ten year olds selected red, yellow, or blue as their favorite color.

Answer A

Correct. The statement is supported by the table. The percentage of five year olds who selected red or blue as their favorite color is $\frac{21+35}{100} = 56\%$, while the percentage of ten year olds who selected red or blue as their favorite color is $\frac{7+12}{50} = 38\%$.

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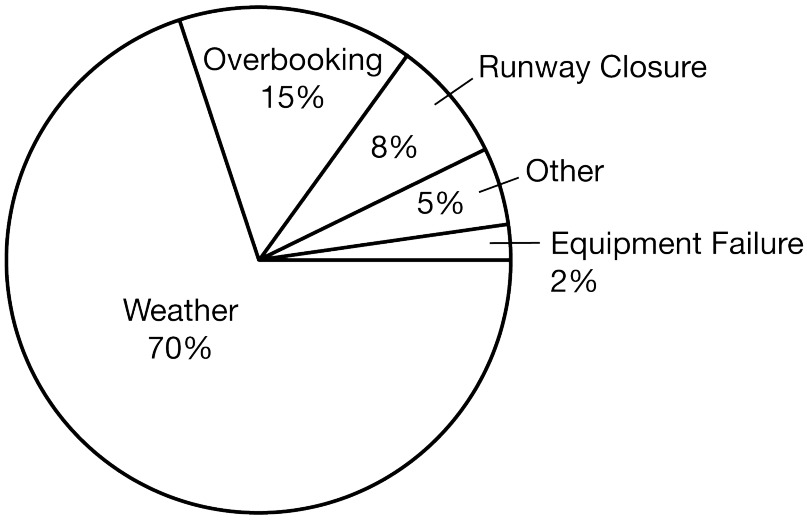
4. The following pie chart summarizes the results of a survey given to airlines about the primary reason for flight delays.



Which of the following statements is supported by the pie chart?

(A) The reason given most frequently was runway closure.

(B) More delays were caused by weather than by all other reasons combined. ✓

(C) More delays were caused by runway closure than were caused by overbooking.

(D) Overbooking and runway closure accounted for greater than one-fourth of the reasons given for flight delays.

(E) The combined percentage for other and runway closure was equal to the percentage for overbooking.

Answer B

Correct. The percentage for weather is greater than 50%.

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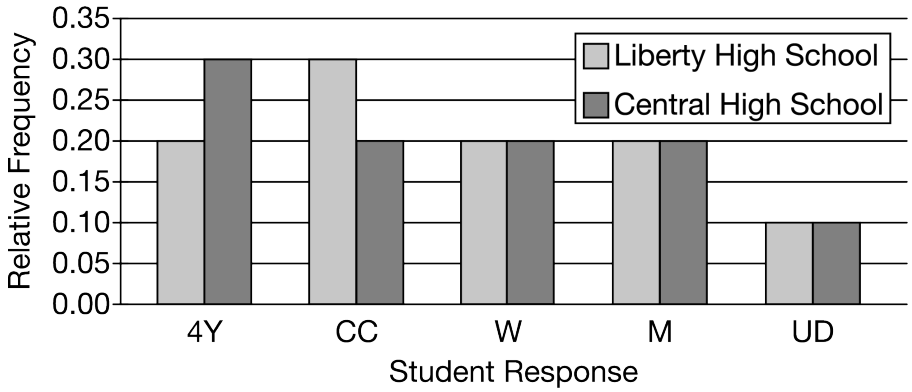
5. A sample of 100 students from Liberty High School and a sample of 60 students from Central High School were asked what they planned to do after graduation. Responses fell into five categories: four-year university $(4Y)$, community college (CC), join the workforce (W), join the military (M), or undecided (UD). The results are shown in the following bar chart.



Which of the following statements is supported by the bar chart?

(A) For the category four-year university, the number of students from Central High School was 10 greater than the number of students from Liberty High School.

(B) At Liberty High School, more students selected a four-year university than any other activity.

(C) For the category join the workforce, the number of students from each school was equal.

(D) At Central High School, the same number of students selected four-year university and military.

(E) For the category undecided, the number of students from Liberty High School was 4 greater than the number of students from Central High School. ✓

Answer E

Correct. Both bars reach to the 0.10 line, indicating 10% of the students. For Liberty High School, 10% of 100 is 10 students and for Central High School, 10% of 60 is 6 students. So for the category undecided, Liberty High School has 4 more students than Central High School.

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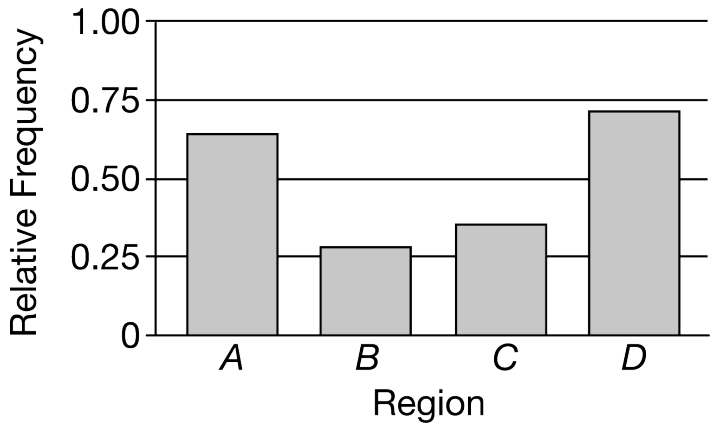
6. The following bar chart shows the relative frequency of days of rain for 30 days in four regions of a certain state.



Which of the following statements is not supported by the bar chart?

(A) Region *D* had the greatest percentage of days of rain.

(B) Region *B* had the least percentage of days of rain.

(C) Region *A* had more than 15 days of rain.

(D) Region *C* had more than 25 days of rain. ✓

(E) Region *D* had less than 23 days of rain.

Answer D

Correct. The statement is not supported by the bar chart. On the bar chart, 25 is the percent of days, not the number of days. If Region *C* had more than 25 days of rain out of the total 30 days, then that bar would reach approximately 0.83, but it doesn't even reach 0.50.