

AP Statistics - Variables and Categorical Data Displays - Quiz

Common Core AP STAT 1.1, AP STAT 1.2, AP STAT 1.3, HSS-ID.A.1 · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

Ten multiple-choice questions check the vocabulary and the calculations of categorical data. Read each explanation, especially for questions you miss.

AP Statistics · Common Core State Standards: **AP STAT 1.1, AP STAT 1.2, AP STAT 1.3, HSS-ID.A.1**

Questions

Question 1

Which variable is quantitative?

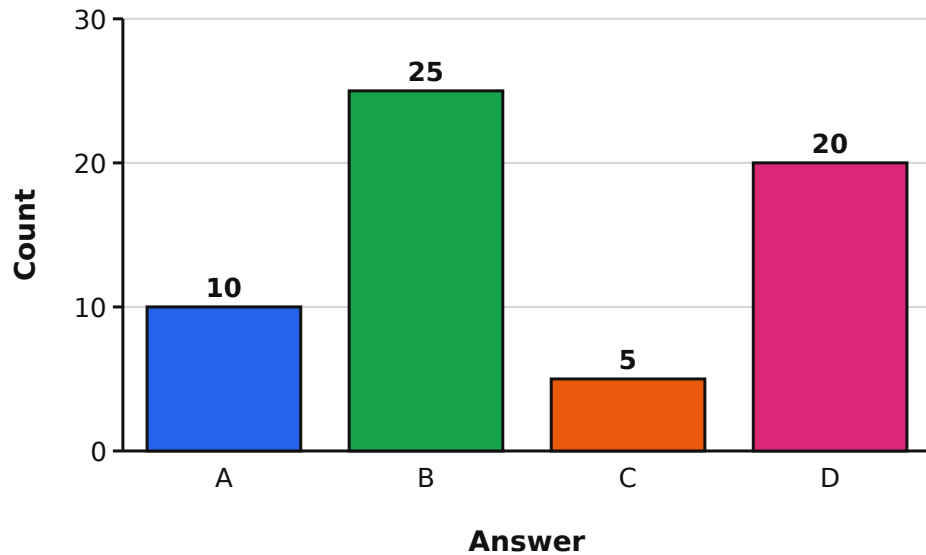
- A. Favorite book genre
- B. Library card color
- C. Number of books read this year
- D. Zip code of the library

Question 2

A survey of 80 students finds 28 prefer math as favorite subject. What is the relative frequency?

- A. 0.28
- B. 0.35
- C. 2.86
- D. 0.80

Question 3



Responses A to D.

How many responses are in category B as a percent of all responses?

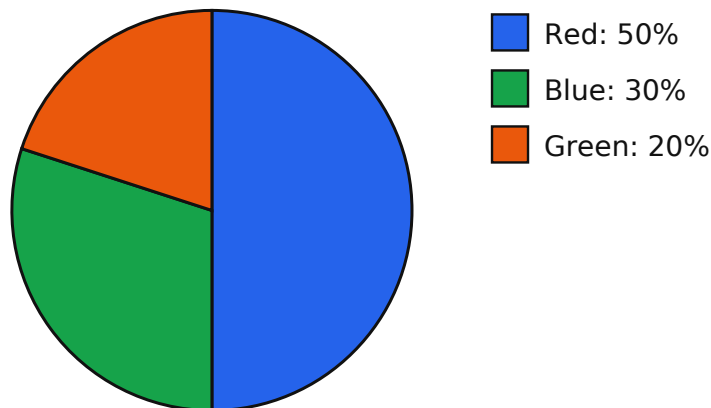
- A. 25%
- B. About 33.3%
- C. About 12.5%
- D. About 41.7%

Question 4

Percents in a poll add to 106%. What is the most likely explanation?

- A. Respondents could choose more than one answer
- B. The sample was too small
- C. The data are quantitative
- D. The graph was drawn incorrectly

Question 5



Favorite color.

What is the central angle for the Blue slice?

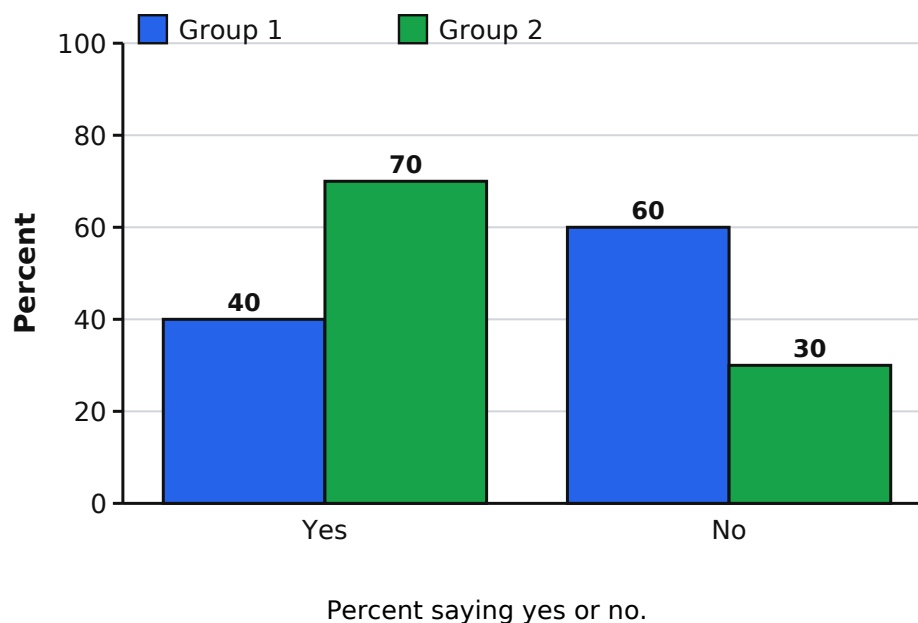
- A. 108 degrees
- B. 30 degrees
- C. 54 degrees
- D. 180 degrees

Question 6

Why should a bar graph for a categorical variable start at zero?

- A. Zero is the mode
- B. Bar heights must be proportional to the counts
- C. Categories must be ordered
- D. Quantitative data need it

Question 7



Group 1 has 50 people and Group 2 has 200 people. Which statement is true?

- A. More people in Group 1 said yes, because 40 is below 70
- B. Group 1 has 70 yes responses
- C. A larger share of Group 2 said yes, and 140 Group 2 members said yes
- D. Group 2 has 70 yes responses

Question 8

Which is an appropriate display for the percent of students in each of four grade levels?

- A. A dotplot only
- B. A histogram only
- C. A scatterplot

D. A bar graph or a pie chart

Question 9

Which statement correctly describes a categorical distribution?

- A. The mean lunch choice was pizza
- B. Pizza was chosen by 35% of the 120 students, the most common choice
- C. Lunch choices are skewed right
- D. The median lunch was tacos

Question 10

In a table, 45 of 150 students are seniors. What percent is this?

- A. 30%
- B. 33.3%
- C. 3.3%
- D. 70%

Answers

1. **C** – Only the number of books is a numerical measurement for which averages make sense. The other three are labels.
2. **B** – Divide the count by the total: $28/80 = 0.35$. The usual mistake is to divide the total by the count (2.86) or to use the count as a proportion.
3. **D** – The total is $10 + 25 + 5 + 20 = 60$, and $25/60$ is about 41.7%. Using the count 25 as a percent is a common error.
4. **A** – A distribution of one choice per person must total 100%. Totals above 100% mean that people chose several categories.
5. **A** – Blue is 30% of 360 degrees, which is 108 degrees. Reporting the percent as the angle (30) is the usual slip.
6. **B** – If the axis starts above zero, a small difference looks huge. Heights only represent counts honestly when the baseline is 0.
7. **C** – Group 2 said yes at 70% of 200, which is 140 people. Group 1 had 40% of 50, which is 20. The graph shows percents, not counts.
8. **D** – Grade level is categorical and each student belongs to exactly one grade, so the percents form a whole.
9. **B** – Describe categorical data with the categories and percents. Means, medians, and skewness are for quantitative data.
10. **A** – $45/150 = 0.30 = 30\%$. Dividing 150 by 45 gives 3.33, and 70% is the share who are not seniors.

Remember

- Individuals are the objects described by data; a variable is a trait that varies among them.
- Categorical variables name groups; quantitative variables are measured with numbers.
- Relative frequency = category count divided by total, and relative frequencies add to 1.
- Bar graphs have a zero baseline and gaps between bars; pie charts need parts of one whole.
- Compare different-sized groups with percents, not raw counts.