Statistical Questions

Statistical questions: Mistakes and missing information

Name _____ **Date** _____ **Score** _____ / 6

QUICK REVIEW

A statistical question anticipates variability in data collected about a group or repeated events. How many minutes do our classmates read daily? may give $10, 20, 35$ minutes. How many minutes did Jo read yesterday? asks for one fixed value, such as 20. A sample can happen to contain equal values and still answer a statistical question.

Worked example

Classify the question and explain. “How many books do students in this class read each month?” Use observations $1, 3, 5, 2$.

1. The stated data are $1, 3, 5, 2$. There are 4 observations from a group or repeated events.

2. Observed spread $= 5 - 1 = 4$; the question allows different values, even if this sample happens to have no spread.

Answer: Statistical.

Practice Problems

Show your thinking.

1. Rewrite this as a statistical question. “How much did my one lunch cost today?” Use observations 5.

2. A student calls this non-statistical because it asks one question. Correct the classification. “How long do these students take to walk home?” Use observations $8, 13, 20$.

3. Revise the question to anticipate variability. “What is the score in this one completed game?” Use observations 24.

4. A student says equal sample values make this non-statistical. Correct the claim. “How many pages do classmates read each night?” Use observations $12, 12, 12$.

5. Design a statistical version. “How many wheels does this bicycle have?” Use observations 2.

6. Explain the measured variable and expected variability. “What is the mass in grams of each apple in this basket?” Use observations $120, 135, 150$.

Answer Key

1. Not statistical. How much do students spend on lunch each day?
2. Statistical.
3. Not statistical. What scores does the team earn across its games?
4. Statistical.
5. Not statistical. How many bicycles does each household on our street own?
6. Statistical: mass in grams per apple; it can differ from apple to apple.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The stated data are 5. There is one fixed observation about the specified case.
2. Observed spread $= 5 - 5 = 0$; the question requests one fixed result, not a variable group distribution.
3. A group-based revision is: How much do students spend on lunch each day?

Problem 2

1. The stated data are $8, 13, 20$. There are 3 observations from a group or repeated events.
2. Observed spread $= 20 - 8 = 12$; the question allows different values, even if this sample happens to have no spread.

Problem 3

1. The stated data are 24. There is one fixed observation about the specified case.
2. Observed spread $= 24 - 24 = 0$; the question requests one fixed result, not a variable group distribution.
3. A group-based revision is: What scores does the team earn across its games?

Problem 4

1. The stated data are $12, 12, 12$. There are 3 observations from a group or repeated events.
2. Observed spread $= 12 - 12 = 0$; the question allows different values, even if this sample happens to have no spread.

Problem 5

1. The stated data are 2. There is one fixed observation about the specified case.
2. Observed spread $= 2 - 2 = 0$; the question requests one fixed result, not a variable group distribution.
3. A group-based revision is: How many bicycles does each household on our street own?

Problem 6

1. One observation is the mass of one apple, in grams.
2. Apples grow to different sizes and can have different masses: these three weigh 120, 135, and 150 grams.
3. The masses span $150 - 120 = 30$ grams. The question expects differences across apples, so it is statistical.

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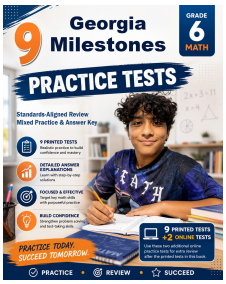

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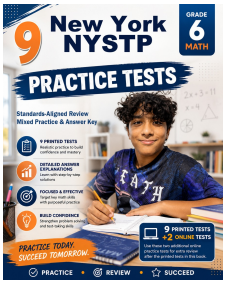

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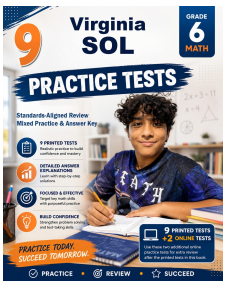

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