Indicator 33 Class Notes by Mrs. Joshi

Statistical Question-(6.SP.1)

Which of the following are statistical questions? (A statistical question is one that can be answered by collecting data and where there will be variability in that data.)

a. How many days are in March?

b. How old is your dog?

c. On average, how old are the dogs that live on this street?

d. What proportion of the students at your school like watermelons?

e. Do you like watermelons?

f. How many bricks are in this wall?

g. What was the temperature at noon today at City Hall?

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Solution

a. Not statistical. This question is answered by counting the number of days in March. This produces a single number. This question is not answered by collecting data that vary.

b. Not statistical. This question is answered by a single number. It is not answered by collecting data that vary.

c. Statistical. This question would be answered by collecting data, and there would be variability in that data.

d. Statistical. This question would be answered by collecting data, and there would be variability in that data.

e. Not statistical. This question is answered by a single response. It is not answered by collecting data that vary.

f. Not statistical. This question would be answered by counting the bricks. This produces a single number. This question is not answered by collecting data that vary.

g. Non-statistical (there is one temperature).

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Statistical Questions

A question is statistical question if it can be answered with data that vary. The answer is a percent, range, or an average.

Example of Statistical Questions

What do 7th graders prefer to eat for lunch?
What time did the students in this class get up this morning?
What is the typical number of pets owned by students in my class?

Example of Non-Statistical Questions

What did Tom eat for lunch?
Did you get up on time this morning?
How many brothers does Martha have?

A statistical question is a question that should have different answers.
How to recognize a statistical question?

- A question is not a statistical question if it has an exact answer. For example "How old are you?"
- A question is a statistical question if the answer is a percent, range, or an average. For example "How old are the students in this room"

Examples:

1. Identify which questions are statistical and which questions are not statistical.
   - What is the favorite menu item for customers in the local restaurant?
   - What time do most people eat their lunches?
   - What did my dad eat for lunch today?
   - What do 7th graders prefer to eat for lunch?

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What is a Statistical Question?

Definition: A statistical question has answers that will probably vary. Usually a statistical question will ask about a population of multiple people, events or things.

Examples of statistical questions

- What time did the students in this class get up this morning?
- How many votes did the winning candidate for the Presidents of the Student Body receive in each of the past 20 years?
- What were the high temperatures in all of the Latin American capitals today?

Examples of not statistical questions.

- What time did I get up this morning?
- How many votes did the winning candidate for the Student Body receive this year?
- What was the high temperature in Mexico City today?

Statistical and non statistical questions

Examples:

Which of the following are statistical questions?

- How old are the people who have watched this video in 2013?
- Do dogs run faster than cats?
- Do wolves weigh more than dogs?
- Does your dog weigh more than that wolf?
- Does it rain more in Seattle than Singapore?
- What was the difference in rainfall between Singapore and Seattle in 2013?
- In general, will I use less gas driving at 55 mph than 70 mph?
- Do English professors get paid less than math professors?
- Does the most highly paid English professor at Harvard get paid more that the most highly paid math professor in MIT?

Answer:

- In the second question "How old are the people who have watched this video in 2013?' Are the people who have

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watched the video 10 years old, 15 years, old, 50 years old? So there is definitely variability in age and this makes it a statistical question.

- In the third question, "Do dogs run faster than cats?' There are many dogs and many cats. There are many different speeds. Some dogs run really fast and some do not. Some dogs run faster than some cats and some cats run faster than some dogs. We would need some statistics to figure out on average how fast do dogs run and an average of how fast do cats run? Then we would need to compare those averages or medians in some way. Therefore, this is definitely a statistical question.
- Do wolves weigh more than dogs is a statistical question too since there are a lot of different dog weights and it is difficult to compare to the mean weight of a wolf since wolves come in different sizes too.
- Does it rain more in Seattle or Singapore? Are we talking about in a month, a year, a decade…what timeline? There is definitely a variability. We need to come up with an average of a timeline of the rainfall that we can compare the two places. Therefore, this is definitely a statistical question.

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- In general, will I use less gas driving at 55 mpg than 70 mpg is a statistical question. This has an element of variability. It depends on the kind of car you are driving. It depends on whether you had an oil change or not. It depends on the road conditions. It also depends on the weather conditions such as if it is windy or rainy, or are you driving straight or on curvy roads, etc.
- Do English professors get paid less than Math professors? This is again a statistical question. Some English professors may get paid more than Math professors and some Math professors may get paid more. So there has got to be some form of mean that has to be created to compare both salaries.
- The rest of the questions on the list are NOT statistical questions.

Source: https://www.illustrativemathematics.org/content-standards/tasks/703

https://www.onlinemathlearning.com/statistical-questions-6sp1.html