

Name: \_\_\_\_\_

Teacher: \_\_\_\_\_

## M111: Modeling with Data: One-Variable Measurement Data Pre-Badge Task

### New Badge Alert!

This task will provide a preview of what we will be learning during the M111 - Modeling with Data: One-Variable Measurement Data. You already know so much math, so use this task to share any understanding that you have before we start our learning. You will have a chance to do the same task at the end of the badge to see how your thinking has evolved.

### The Task

#### QUESTION 1

Amber and Stevie learned the following information during a discussion about the importance of sleep and took the following notes:

- Teens need 9 to 9½ hours of sleep per night
- Teenagers are going through a second developmental stage of cognitive maturation. Additional sleep supports their developing brain, as well as physical growth spurts.
- Chronic sleep deprivation in teenagers leads to cognitive impairments, including poor memory, concentration difficulties, and decreased ability to problem-solve
- Inadequate sleep has been linked to a range of long-term health issues, such as obesity, cardiovascular problems, and weakened immune systems
- Sleep issues in teens have been shown to increase the risk of developing mood disorders, while mental health challenges can also make it harder for teens to fall asleep or stay asleep

As you read through their notes, what comes to mind for you? What is a question that surfaced for you?



## QUESTION 2

Amber and Stevie decide to put together a series of informational posts on social media to raise awareness about the importance of sleep. They decide to conduct a survey of students at their school.

As they brainstorm questions for their survey, Amber offers the following question: *How many hours of sleep did you get last night?*

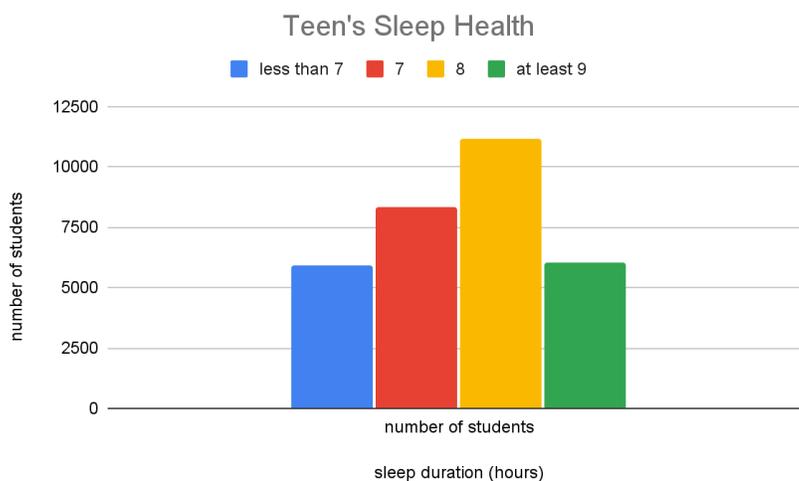
Stevie offers the following question: *What is your favorite way to wind down before going to bed?*

What makes these questions **statistical questions**? How are the questions different?



**QUESTION 3** The recommended amount of sleep for teens ages 13-18 is 9-9 ½ hours per night. In a 2017 article on sleep published in the Journal of Adolescent Health, a group of 33,000 students were asked how much sleep they typically get.

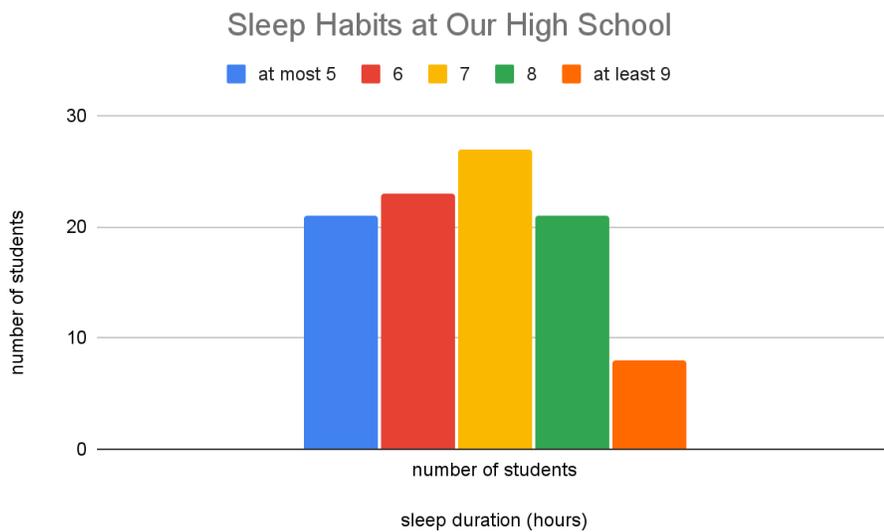
Based on the data from this study, shown below, what percentage are not getting the recommended amount of sleep? Why do you think this result is the way it is?



#### QUESTION 4

Amber and Stevie surveyed 100 classmates about their sleep habits. One question they posed is, *how many hours of sleep did you get last night?* The results are shown in the graph below.

Based on Amber and Stevie's survey results, what would you say is the typical number of hours of sleep this group of students gets? How much variation do you see in the data?



**QUESTION 5** Amber and Stevie surveyed 100 classmates at their school.

Based on what you know about their work so far, what feedback would you give them about their survey design to inform their future studies?

