Sleep vs. Memory
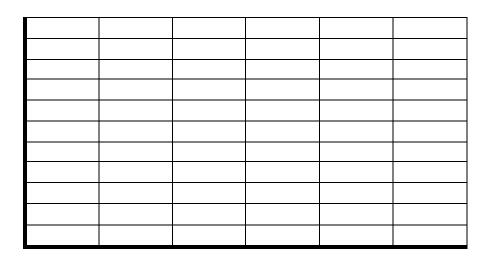
Researchers have determined that teenagers' memories are negatively affected by getting less than 10 hours of sleep. Being good scientists, the math students at North Middle School were skeptical, so they did their own study. They asked 300 students to memorize 10 objects. The next day, each student was asked how much sleep he or she got and then was asked to list the ten items. The results are below.

	Remembered all 10 items	**Did NOT remember all 10 items**	**Total**
Less than 7 hours of sleep	6	149	155
7 to 9 hours of sleep	11	109	120
10 or more hours of sleep	5	20	25
Total	22	278	300

a) What is the independent variable?

b) Out of all 300 students, what percentage gets less than 10 hours of sleep?

c) Out of all 300 students, what percentage could remember all 10 items?

d) What percentage of students who get less than 7 hours of sleep remember all 10 items?

e) What percentage of students who get between 7 and 9 hours of sleep remember all 10 items?

f) What percentage of students who get at least 10 hours of sleep remember all 10 items?

g) Make a segmented bar graph with hours of sleep on the horizontal axis and each bar segmented by memory (yes/no).

h) Make a segmented bar graph with memory (yes/no) on the horizontal axis and each bar segmented by hours of sleep.

i) Does there appear to be an association between the hours of sleep and memory? Use clear, complete sentences to state and justify your answer.