Probability: Everyday Decisions Based on Probabilities (Group Project)
<u>Driving and Risk</u>

Javier will be a high school senior next year. He wants to get a vehicle to celebrate his graduation. Javier's mother researched vehicle safety and found that 17% of teenagers are involved in some kind of accident. While talking to his math teacher, Javier mentioned that he did not think the risk was high enough to be concerned. Javier decided to survey 500 students, 46% of whom were male, to help him convince his mother to allow him to get a vehicle. No student has both a car and a motorcycle.

The following are the data from Javier's survey:

- 65% of males had a car, 25% of males had no vehicle, and 10% of males had a motorcycle.
- 83% of females had a car, 13% of females had no vehicle, and 3.7% of females had a motorcycle.
- 27% of males with a car had an accident.
- 26% of males with a motorcycle had an accident.
- 7% of females with a car had an accident.
- 40% of females with a motorcycle had an accident.

1.) Draw a tree diagram of the data.

2.) If a person from the survey is chosen at random, what is the probability that they are a female with a car that had NOT been in an accident?

3.) If a person from the survey is chosen at random, what is the probability that they are a male with a car that had NOT been in an accident?

4.) What percent of males had no vehicle?

5.) What percent of females had no vehicle?

6.) Using the data, what is the probability that Javier will be involved in an accident if he gets a motorcycle?

7.) Using the data, what is the probability that Javier will be involved in an accident if he gets a car?

8.) Based on these survey data, Javier told his mother that he only have a 1% chance of getting in an accident. Is he correct? Why or why not?

9.) Use your tree diagram to write three facts that would help Javier convince his mother to let him get a vehicle.

10.) Based on the survey results, what percent of teenagers are involved in some kind of accident?

Was Javier's mother correct?