**Bike vs. Sprinter Pre-lab Questions Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_**

Keep this sheet to attach to your lab report when you hand it in.

We will go out on the track and have a student do a 100 meter dash, recording their time at every 5 meter interval. (Have one person stand at each 5 meter mark and use their stopwatch.)

We will repeat that experiment, but with a bicycle starting from rest, in the highest (hardest to push) gear, and pushing with maximum force on the pedals.

1. What do you estimate will be the final speed of the student who sprints 100 meters?
2. What do you predict will be the final speed of the bicycle after 100 meters?
3. Do you think the bike or the runner will win the 100 m race?
4. Who do you think would win if the race were 400 meters (a whole lap around the track.) Explain why.
5. What is the definition of acceleration, in words?
6. What is the formula for acceleration?
7. What are the units we use for acceleration in physics class?

After we collect the data, make one correctly labeled position vs. time graph which includes a curve representing the motion of each racer.

1. If the bike and the sprinter had started at the same time (in different lanes), explain what we would have seen. Give details such as times and positions.