Name:_____Class period:_____Date:_____

Measuring Wind Speed

1) Define the Problem or Need:

To design a method to measure wind speed

2) Identify 3 Criteria (Standards on Which To Judge Success):
a) It is assumed students will have limited ideas about criteria for measurement at this point— expected answers might be similar to the need of “measure wind speed”, possibly accuracy
b)
c)

3) Identify 3 Constraints (limitations on possible solutions or problems with design ):
a)Student answers will vary depending on how the scenario is structured for your class situation, possible answers:
50 minutes of time, only access to materials in this room (stopwatch, rulers, etc.), need to carry out the process on the football field, only three people can assist in data collection, etc.
b)
c)

4) Describe 2 trade-offs your group had to weigh to choose an approach:
a)
b)

5) Describe your group’s chosen approach using words & labeled diagrams:

6) Describe your calibration process:

7) Record your calibration results:

Be sure you check in with students during this process to ensure they have realistic significant figures to reflect their relative precision or lack there of for their method.

8) Record your measurements of 3 unknown wind speeds from the “unknown” fan in m/s

a) _____ b) _____ c) _____

9) The actual wind speeds were

a) _____ b) _____ c) _____

10) Evaluate your results (discuss error).

Name:_____Class period:_____Date:_____

11) Suggest improvements—be sure to address any additional trade-offs prompted by these improvements.

12) Record your proposed changed criteria for the Track and Field (Legal) Wind application.
Explain each change in criteria.

Possible answers:
Need instantaneous wind speeds—not averages
Need a high sampling rate (ex. every 0.5 seconds)
Need to have a degree of precision to evaluate the 2.0 m/s limit (ex ± 0.05 m/s)
Need to record only in the direction of the tailwinds
Need to record wind speeds at chest height of the typical runner
Need to be accurate (students could suggest possible means they could assess the accuracy of method)