

NAME _____

DATE _____

Scenario

Angela and Blake are given a spring and asked to determine its force/spring constant. Both students are given a stand on which the spring may be attached, different known masses that can be attached to the spring, and an electronic balance.

Experimental Design

PART A: Angela, in addition to the equipment above, is given a meterstick but has no access to a stopwatch or any other way to measure time. Explain how she can make measurements and how those measurements can be used to calculate the spring constant.

Measurements to be made: _____

*How measurements will be made**How measurements can be used to calculate k*

PART B: In addition to the equipment above, Blake is given a stopwatch but has no access to a meterstick or any other way to measure distance. Explain how he can make measurements and how those measurements can be used to calculate the spring constant.

Measurements to be made: _____

*How measurements will be made**How measurements can be used to calculate k*

Argumentation

PART C: Now suppose that both students and the classroom (including all equipment) are transported to another planet where the acceleration due to gravity is greater than Earth's. For each student, list any measurements taken above (not calculated) that would have different values on the new planet.

<i>Angela</i>	<i>Blake</i>

PART D: Which student (or both or neither) will obtain a different value for the spring constant? In a clear, coherent, paragraph-length response, explain your reasoning.

[illegible]

Checklist:

- _____ I answered the question directly.
- _____ I stated a law of physics that is always true.
- _____ I connected the law or laws of physics to the specific circumstances of the situation.
- _____ I compared the situation (stated what was the same in all cases).
- _____ I contrasted the situations (stated what was different in all cases).
- _____ I used physics vocabulary (period, mass, spring, constant, force, velocity, displacement, equilibrium).