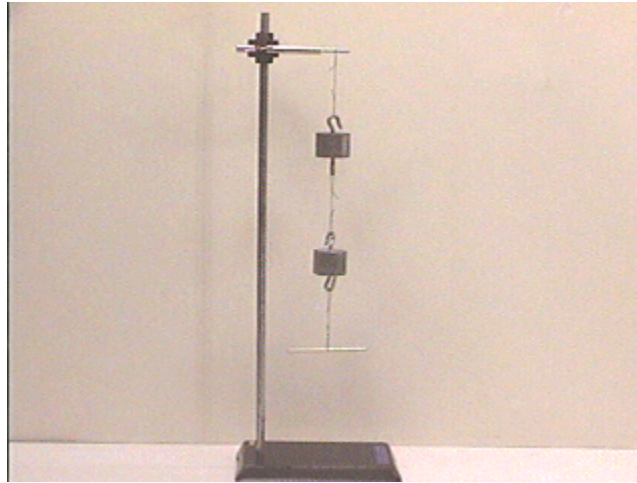


Answer #42

The answer is IT DEPENDS - on HOW you pull the lower string.



If you pull rapidly, the answer is (c): the lower string will break. In this case the important physics concept is inertia: the lower mass wants to stay where it is because of its inertia, so when the rod is yanked rapidly the lower string develops a large amount of tension, causing it to break. To see a video of this case, click on "[inertia.](#)"

On the other hand, if you pull on the rod very slowly, the top string will break, due to addition of forces. As you pull downward on the rod, you create a certain amount of tension in the lower string. The lower weight adds some tension to the center string, and the upper weight adds even more tension to the upper string. This is sort of like the case of a locomotive pulling a line of railroad cars, where the tension in the coupling decreases as you go back from the engine to the caboose. To see a video of this case, click on "[sum of forces.](#)"

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