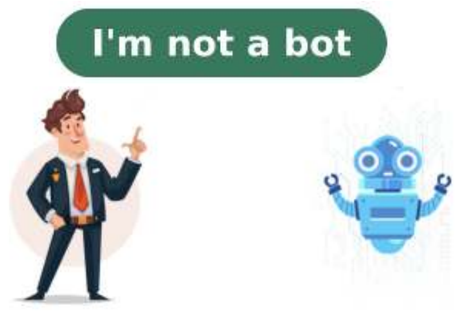

I'm not a bot

Law of conservation of energy problems worksheet

Law of conservation of energy worksheet. Law of conservation of energy practice problems. Conservation of energy exercises. Law of conservation of energy questions.

The bus is traveling on a straight road with a rising and falling pattern, where friction and air resistance are assumed negligible. The speed of the bus at point A is 26.82 m/s, and it is coasting. To determine if the bomb will explode, we need to calculate the potential energy at each altitude from 50m to 60m. Let's assume the potential energy is zero at an altitude of 50m. We can complete the table below: | Altitude (m) | Speed (m/s) | Kinetic Energy (MJ) | Potential Energy (MJ) | Total Energy (MJ) | | --- | --- | --- | --- | --- | | 55 | 26.82 | 0.000 | -5.2 | -4.92 | | 50 | 26.82 | 0.000 | -10 | -9.96 | | 60 | 27.14 | 1.16 | -11.04 | -8.88 | | 65 | 28.02 | 3.24 | -12.04 | -6.68 | As we can see, the total energy of the bus decreases as it increases in altitude. Since the bomb will explode if the speed falls below 22.35 m/s, we need to check if the speed will reach this value. At an altitude of 55m, the speed is 26.82 m/s, which is above the critical speed. However, at an altitude of 50m, the speed is also above 22.35 m/s. Therefore, we can conclude that the bomb will explode. When a roller coaster's speed suddenly drops as it enters a loop from the side, the normal force acting on its wheels changes compared to when it's moving downwards. In this context, what's the relationship between this force and the coaster's weight?