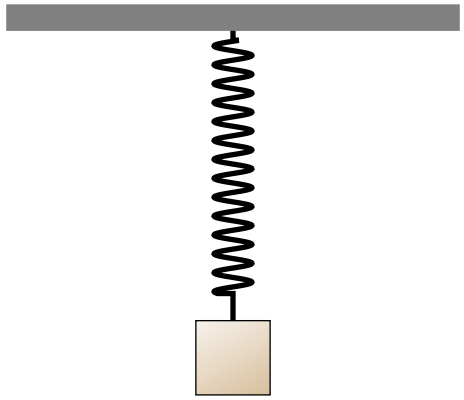
Question 1

A block is suspended by a spring from the ceiling. The block is pulled down to the level of the floor and released from rest.



Use as total energy

$$E = KE + PE$$

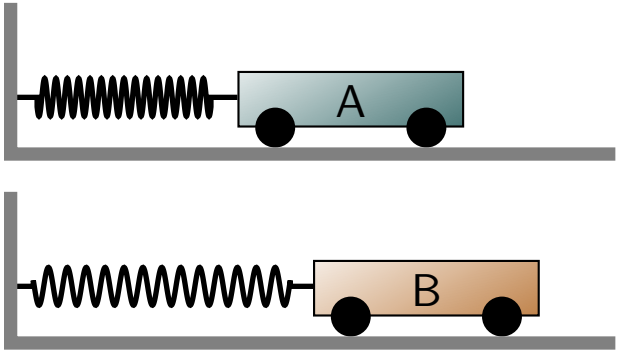
(PE is gravitational potential energy.)

Which of the following is true?

1. $E = 0$ at release; $E = 0$ moments after release.
2. $E = 0$ at release; $E \neq 0$ moments after release.
3. $E \neq 0$ at release; $E = 0$ moments after release.
4. $E \neq 0$ at release; $E \neq 0$ moments after release.

Question 2

Two identical carts can slide along a horizontal surface. Each cart is attached to an identical spring which is also attached to a wall.



The cars are pushed against the springs and then released. The carts eventually leave the springs.

Suppose that cart A compresses its spring more than cart B. Which of the following is true?

1. KE same (for both) after they leave springs. E_{elas} same before release.
2. KE same after they leave springs. E_{elas} larger for A before release.
3. KE same after they leave springs. E_{elas} larger for B before release.
4. KE larger for A they leave springs. E_{elas} larger for A before release.
5. KE larger for A they leave springs. E_{elas} smaller for A before release.

Question 3

A slinky spring is held vertically in a stretched configuration. The spring is then released.

Immediately after release which of the following happens?

1. The entire slinky falls toward the ground.
2. The bottom of the slinky stays fixed, the top moves.
3. The top of the slinky stays fixed, the bottom moves.