

Name _____ PHY2048C, Quiz 4

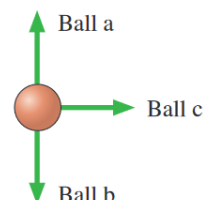
A- Read all the quiz once, or twice, before beginning to write. Make sure to comprehend all questions and start with those you feel most confident.

B – Be clear and concise. There are no extra points for being verbose or writing extra.

C –Only use the white pages that I will provide. You have 60 minutes to answer the quiz.

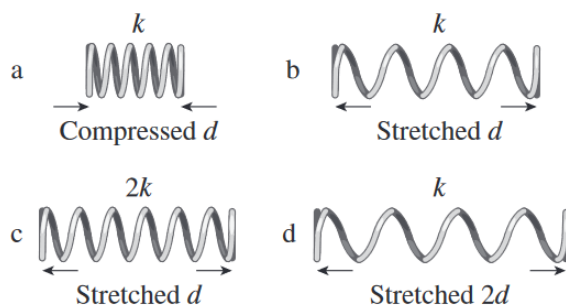
Problem 1a

The three balls in the Figure have equal masses and are fired at equal speeds from the same height above ground. Rank in order, from largest to smallest (using $<$, $>$, or $=$), their speeds as they hit the ground.



Problem 1b

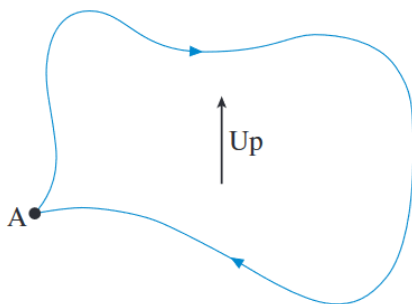
Rank the springs in terms of the amount of potential energy stored. Greatest first.



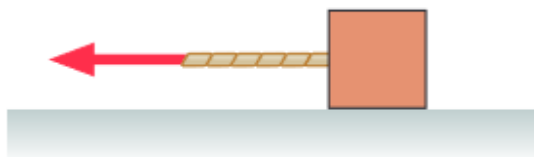
Problem 2

Consider the next three scenarios:

- 1) A 1kg particle moves in a vertical plane along the closed path shown in the Figure. Gravity exerts a force along the path.



- 2) The rope pulls the 3kg box to the left across a rough surface with a constant acceleration of 1 m/s^2 . The tension exerts a force on the box along the path.



- 3) The rope pulls the 3kg box to the left across a smooth surface with a constant acceleration of 1 m/s^2 . Friction exerts a force on the box along the path.
- 4) A 2.5kg ball on a string travel once among a circle of circumference 2m. The tension of the string exerts a force on the ball along the path.

Rank these scenarios, from greatest to smallest, in terms of the work done by the mentioned force.

Problem 3

The proportion of 25-to-34-year-olds still living with their parents has increased by more than a third in nearly two decades. In 2006, some 13% of people in the UK aged between 25 and 34 were living with their parents. By last year, that had increased to 18%. Assuming the number of 25-to-34-year-olds stayed the same in the period, how many of them are living with their parents today?