

Question 1

A telephone is suspended from a rope. A person controls the rope so that the telephone is raised at a constant speed.

Which of the following is true?

1. The rope does positive work, gravity does positive work.
2. The rope does positive work, gravity does negative work.
3. The rope does negative work, gravity does positive work.
4. The rope does negative work, gravity does negative work.

Question 2

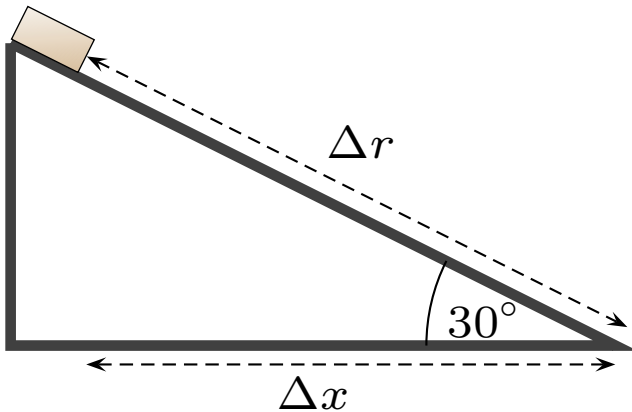
A dog sits on the floor of an elevator, which moves vertically down with gradually increasing speed. The dog is always in contact with the floor.

During this time, which of the following is true about the works done on the dog?

1. $W_{\text{normal}} > 0$ and $W_{\text{grav}} > 0$
2. $W_{\text{normal}} > 0$ and $W_{\text{grav}} < 0$
3. $W_{\text{normal}} < 0$ and $W_{\text{grav}} > 0$
4. $W_{\text{normal}} < 0$ and $W_{\text{grav}} < 0$

Question 3

A block with mass m slides down the illustrated ramp. The block slides distance Δr along the ramp.



Which of the following is the work done by the gravitational force as the block slides from the top to the bottom of the ramp?

1. $W_{\text{grav}} = +mg\Delta r \cos 60^\circ$
2. $W_{\text{grav}} = +mg\Delta r \cos 30^\circ$
3. $W_{\text{grav}} = +mg\Delta r$
4. $W_{\text{grav}} = +mg\Delta x \cos 60^\circ$
5. $W_{\text{grav}} = +mg\Delta x \cos 30^\circ$
6. $W_{\text{grav}} = +mg\Delta x$