

## Answer on Question #63306, Physics / Mechanics | Relativity

### Question:

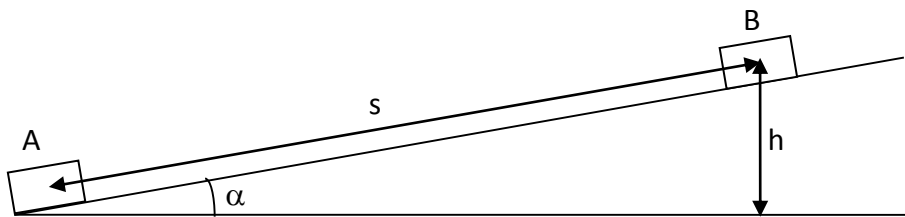
A box of mass 22.3 kg is pushed 7.32 meters uphill on an inclined plane sloped at  $17.6^\circ$  to the horizontal. What is the change in its potential energy?

Select one:

- a. -803 J   b. 1525 J   c. 484 J   d. 803 J   e. 2.21 J

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### Solution:



The mass of the box  $m = 22.3 \text{ kg}$ ,  $s = 7.32 \text{ m}$ ,  $\alpha = 17.6^\circ$ .

At point A the potential energy is zero because the box is on the ground.

At point B its potential energy  $E_p = mgh$ , where  $g = 9.81 \text{ m/s}^2$ . So the change in potential energy is equal to  $E_p$ .

The height  $h$  we may calculate this way:  $h = s \cdot \sin \alpha$ , and then  $E_p = mgs \cdot \sin \alpha$ .

$$E_p = 22.3 \cdot 9.81 \cdot 7.32 \cdot \sin 17.6^\circ = 484.2 \text{ J}$$

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### Answer:

- c. 484 J