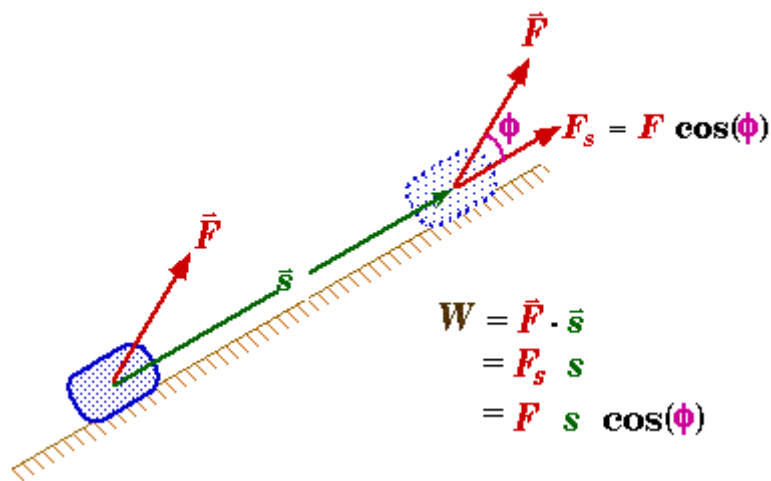# Answer on Question #41466, Physics, Mechanics

A force $\vec{F}$ at an angle of θ above the horizontal displaces an object through a distance S in its along the horizontal. Which of the following is the CORRECT expression for the work done on the object by the force?

a. $\vec{F} \cdot \vec{s} \cos\theta$

b. $\vec{F} \times \vec{s}$

c. Fssinθ

d. Fscosθ

Solution:

In order to accomplish work on an object there must be a force exerted on the object and it must move in the direction of the force.

Work is

$$W = \vec{F} \cdot \vec{s} = Fs \cos\theta$$

$\vec{F}$= Force vector applied to the object/system.

F_s = Component of Force along the direction of movement.

$\vec{s}$ = Displacement vector.

s = Distance the system is displaced.

θ = Angle between the displacement and the force.

$\vec{F} \cdot \vec{s}$ = Scalar or Dot product of the force vector and the distance vector.

Answer. d. Fscosθ.