PRACTICE A

Work

1. A tugboat pulls a ship with a constant net horizontal force of 5.00×10^3 N and causes the ship to move through a harbor. How much work is done on the ship if it moves a distance of 3.00 km?
2. A weight lifter lifts a set of weights a vertical distance of 2.00 m. If a constant net force of 350 N is exerted on the weights, what is the net work done on the weights?
3. A shopper in a supermarket pushes a cart with a force of 35 N directed at an angle of 25° downward from the horizontal. Find the work done by the shopper on the cart as the shopper moves along a 50.0 m length of aisle.
4. If 2.0 J of work is done in raising a 180 g apple, how far is it lifted?

The sign of work is important

Work is a scalar quantity and can be positive or negative, as shown in **Figure 3.** Work is positive when the component of force is in the same direction as the displacement. For example, when you lift a box, the work done by the force you exert on the box is positive because that force is upward, in the same direction as the displacement. Work is negative when the force is in the direction

extension

Integrating Biology

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Keyword HF6WRKX

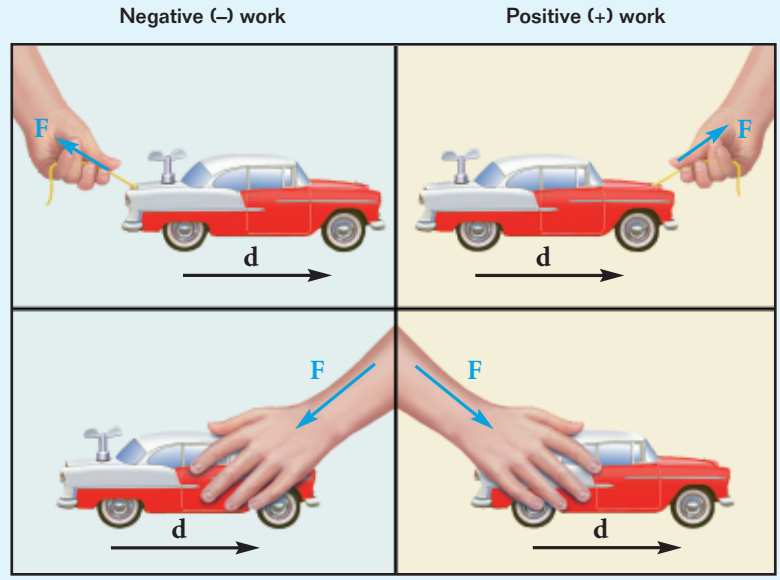

Figure 3
Depending on the angle, an applied force can either cause a moving car to slow down (left), which results in negative work done on the car, or speed up (right), which results in positive work done on the car.