

Monday, January 21

# Clicker Questions

## Clicker Question 1

### Do some work

A pail weighs  $10 \text{ kg} \approx 22 \text{ lb}$ . **How much work** is required to lift the pail from the ground to an altitude of  $18 \text{ m} \approx 59 \text{ ft}$ ? Express the answer in both systems of units.

### Here on Earth:

The force of gravity is approximately  $9.8 \text{ m/s}^2 \approx 32 \text{ ft/s}^2$ .

- A.  $10 \cdot 9.8 \cdot 18 \text{ J} \approx 22 \cdot 59 \text{ ft-lb}$ , which is about  $1800 \text{ J} \approx 1300 \text{ ft-lb}$
- B.  $10 \cdot 18 \text{ J} \approx 22 \cdot 59 \text{ ft-lb}$
- C.  $10 \cdot 9.8 \cdot 18 \text{ J} \approx 22 \cdot 32 \cdot 59 \text{ ft-lb}$
- D.  $10 \cdot 18 \text{ J} \approx 22 \cdot 32 \cdot 59 \text{ ft-lb}$
- E. none of the above

## Clicker Question 2

### For my information

How many of the **Suggested Problems** have you worked through on the first two assignments?

- A. all of them
- B. most of them
- C. about half of them
- D. a few of them
- E. none of them

### My constant refrain

Students who work hard on the WeBWork and Suggested Problems will be better prepared to score well on the midterms and final exam.

## Clicker Question 3

### Deducing a spring constant

For a particular spring, a force of 5 pounds is required to keep it compressed 2 inches shorter than equilibrium. **What is the constant  $k$  for this spring?**

- A.  $k = 30$  ft-lb
- B.  $k = 2.5$  ft-lb
- C.  $k = 10$  ft-lb
- D.  $k = \frac{5}{6}$  ft-lb
- E. **none of the above**

From Hooke's Law  $F = kx$ :

When  $x = 2$  in  $= \frac{1}{6}$  ft, the force is  $F = 5$  lb. So

$$5 \text{ lb} = k \cdot \frac{1}{6} \text{ ft}$$

$$\frac{5 \text{ lb}}{1/6 \text{ ft}} = k$$

$$30 \frac{\text{lb}}{\text{ft}} = k$$