Quiz 5

60% Multiple choice
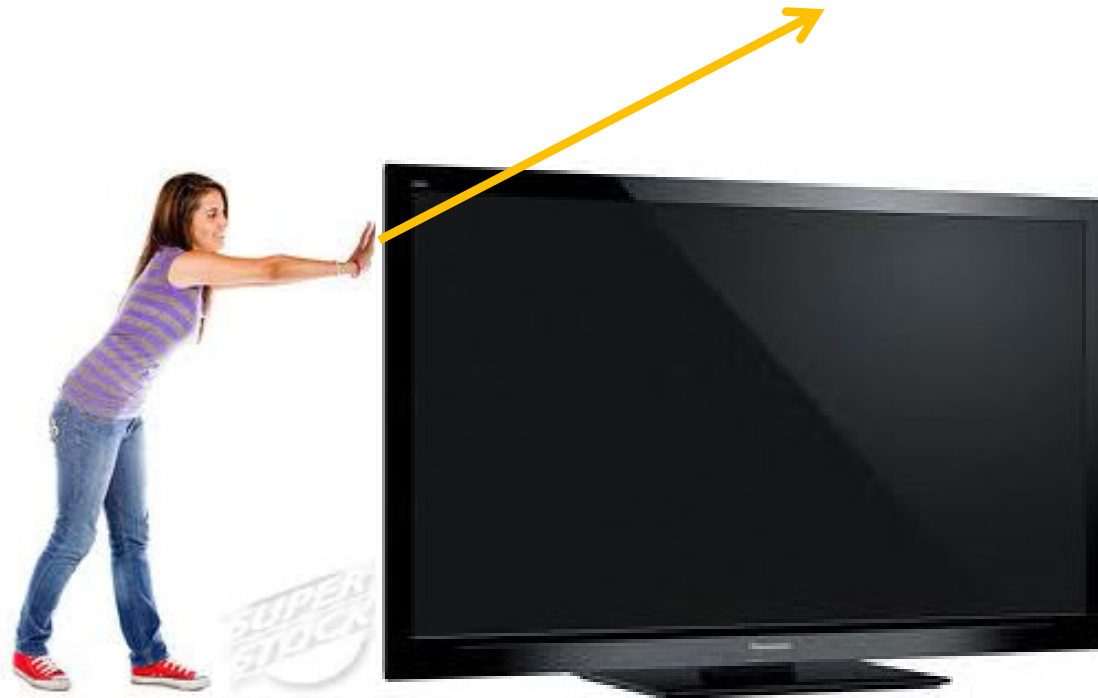
1 incline problem and problems on
friction, work and energy

Cindy pushes her new 18 kg TV 20.0m at a constant speed and at an angle of 20 degrees from the rough carpet (μ_k=0.50).
A) What force does she apply?

B) How much work does she do on the TV?
C) What is the energy lost due to friction?

A 20 kg sled slides down a 30° hill after receiving a tiny shove (only enough to overcome static friction, not enough to give significant initial velocity, assume $v_o=0$).

A) If there is friction of $\mu_k=0.1$, what is the acceleration of the sled? B) If the length of the hill is 20 m, how long does it take the sled to reach the bottom of the hill if it starts from rest?

Inclines & Friction

20 m

30º
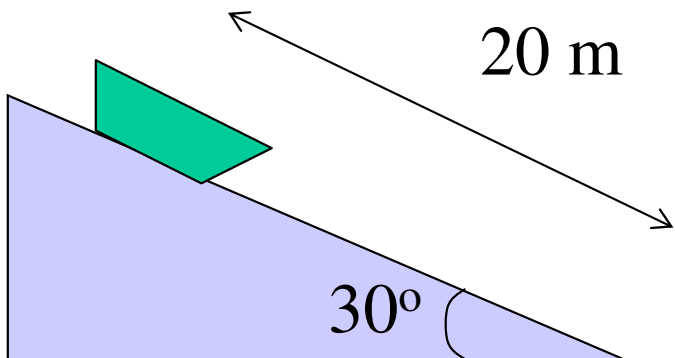
This person weighs 170 lb. Each crutch makes an angle of $\theta = 22.0°$ with the vertical (as seen from the front). Half of the person's weight is supported by the crutches, the other half by the vertical forces exerted by the ground on his feet.

Assuming he is at rest and the force exerted by the ground on the crutches acts along the crutches, determine the smallest possible coefficient of friction between crutches and ground.