

**Lecture Example Problem**

Lake Point Tower in Chicago is the tallest apartment building in the United States (although not the tallest building in which there are apartments). Suppose you take the elevator from street level to the roof of the building. The elevator moves almost the entire distance at constant speed, so that it does  $1.15 \times 10^5 \text{ J}$  of work on you as it lifts the entire distance. If your mass is 60.0 kg, how tall is the building? Ignore the effects of friction.



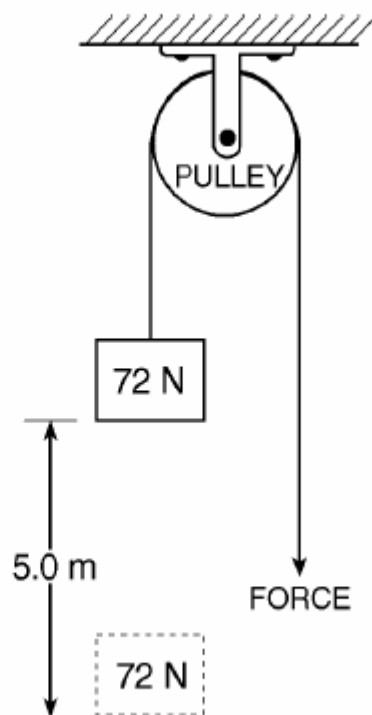
1. The *Warszawa Radio* mast in Warsaw, Poland, is 646 m tall, making it the tallest human-built structure. Suppose a worker raises some tools to the top of the tower by means of a small elevator. If  $2.15 \times 10^5 \text{ J}$  of work is done in lifting the tools, what is the force exerted on them?



The Warsaw radio mast in Konstantynów

Class Practice Problems

1. In the diagram below, 400. joules of work is done raising a 72-newton weight a vertical distance of 5.0 meters.



How much work is done to overcome friction as the weight is raised?

2. How much work is done on a downhill skier by an average braking force of  $9.8 \times 10^2$  newtons to stop her in a distance of 10. meters?



