

POWER-WORK-ENERGY

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The i360, World's Most 'Slender' Tower, Opens in England



The British Airways i360 observation tower in Brighton, England.

INTRODUCTION: Application purpose is to find gravitational potential energy increase of Pod + 200 passengers (consider each 200 lb. with gear) "and" power needed to pick up pod + passengers in 10 min.

QUESTIONS: (a) Find weight of 200 passengers? , (b) Convert 90 tons to lb.?, (c) Find combined weight of passengers + Pod ?, (d) Lifting passengers + pod , 531 ft. produces how much gravitational potential energy?, (e) How much work was done to lift pod + passengers 531 ft.? (f) How much power (in ft. lb./s.) was needed to lift pod + passengers up 531 ft in 10 minutes? (g) Convert the computed power in (f) to horsepower?

HINTS: $U = m g h$, $g = 32 \text{ ft./s.}^2$
 $1 \text{ ton} = 2000 \text{ lb.}$, $P = W / t =$
Work/time, 1 HP = 550 ft. lb./s.

ANSWERS:

- (a) 40,000 lb.,
- (b) 180,000 lb.,
- (c) 220,000 lb.
- (d) 116,820,000.00 ft. lb.
- (e) 116,820,000.00 ft. lb.
- (f) 194,700 ft. lb./s.
- (g) 354 HP



LONDON — It has been billed as “the world’s tallest moving observation tower,” a futuristic **531-foot-high structure** that will give visitors an experience that one of its creators likened to floating in a hot-air balloon. Combining high-tech modernism with a somewhat incongruous Victorian seaside vibe, the tower, British Airways i360, opened on Thursday in the city of Brighton in southern England. Visitors who pay the general admission fee of 15 pounds, or about \$20, **can ride about 10 minutes up a slender steel spire in a glass pod** to take in sweeping views of the Sussex coastline. Whatever the critics might say, **the tower — whose 90-ton pod can hold up to 200 people at a time** — has already earned its place in the Guinness World Records as the most slender tower in the world, with a diameter of just 12.7 feet.