

Problem 1: If it takes a total work W to give an object a speed v and kinetic energy K when starting from rest, find the object's speed (in terms of v) if we do twice as much work on it, again starting from rest.

Problem 2: What will be the object's kinetic energy (in terms of K) if we do thrice as much work on it, again starting from rest?

Problem 3: Starting from rest, find the final speed of a 3-kg block that slides 2.5 meters along an inclined plane that slopes downward at an angle of 30° below the horizontal. Neglect friction.

Problem 4: You designed an elevator that carries hollow blocks to ascend 40 m in 35.0 s. It has a mass of 75 kg (does not include the hollow blocks) and its motor can provide up to 3000 watts of power to the elevator. If an average hollow block has a mass of 3 kg, find the maximum number of hollow blocks that can be placed in the elevator.

Problem 5: Find the gravitational potential energy of a 60-kg adventurer who climbs from the 500-m level on a vertical cliff to the top at 1350 m.