

Challenge Problems

1. An electric motor is driven by a battery of voltage 6 V and draws a current of 1 A . If the motor is used to lift vertically a block of mass 100 g , what is the vertical velocity of the mass?
2. A toy car of mass 10 g rests on a slope of inclination 30° . Neglecting friction, what is its acceleration down the slope?
3. A boat crosses a river of width 100 m and flowing in the east-west direction. The water in the river flows from east to west at a speed of 5 m/s . The boat can travel at a speed of 10 m/s . The boat leaves one bank and the skipper wants to reach the point directly on the opposite bank. What course must they steer?