

Gravity and Uniform Acceleration Worksheet (Extra Practice)

1. An airplane starts from rest and accelerates at a constant $+3.00 \text{ m/s}^2$ for 30.0 s before leaving the ground. What is its displacement during this time?
2. Starting from rest, a race car moves 110 m [fwd] in the first 5.0 s of uniform acceleration. What is the car's acceleration?
3. A driver brings a car travelling at $+22 \text{ m/s}$ to a full stop in 2.0 s . Assume the acceleration is constant.
 - a. What is the car's acceleration?
 - b. How far does it travel before stopping?
4. A biker passes a lamppost at the crest of a hill at $+4.5 \text{ m/s}$. She accelerates down the hill at a constant rate of $+0.40 \text{ m/s}^2$ for 12 seconds . How far does she move down the hill during this time?
5. A spacecraft travelling at a velocity of $+1210 \text{ m/s}$ is uniformly accelerated at -150 m/s^2 . If the acceleration lasts for 8.68 s , what is the final velocity of the craft? Explain in words as well.
6. On wet pavement, a car can be accelerated with a maximum acceleration $\vec{a} = 0.2\vec{g}$ before its tires slip.
 - a. Starting from rest, how fast is it moving after 2.0 s ?
 - b. How far has it moved after 4.0 s ?