Kinematic Equations Practice

Problem	Variables	Kinematic Equation(s)	Modified Equation(s) (if applicable)	Plug In & Solve
#1 An airplane accelerates down a runway at 3.20 m/s^2 for 32.8 s until it finally lifts off the ground. Determine the *distance* traveled before takeoff.	$\vec{v}_i =$ _____ $\vec{v}_f =$ _____ $\Delta t =$ _____ $\Delta x =$ _____ $\vec{a} =$ _____			(*Answer:* 1720 m)
#2 A car starts from rest and accelerates uniformly over a time of 5.21 seconds for a distance of 110 m. Determine the *acceleration* of the car.	$\vec{v}_i =$ _____ $\vec{v}_f =$ _____ $\Delta t =$ _____ $\Delta x =$ _____ $\vec{a} =$ _____			(*Answer:* 8.10 m/s^2)

#3 A race car accelerates uniformly from 18.5 m/s to 46.1 m/s in 2.47 seconds. Determine the *acceleration* of the car AND the *distance* traveled.	$\vec{v}_i =$ _____ $\vec{v}_f =$ _____ $\Delta t =$ _____ $\Delta x =$ _____ $\vec{a} =$ _____			(*Answer:* 11.2 m/s^2 & 79.8 m)
#4 A feather is dropped from a height of 1.40 meters. The acceleration of the feather is 1.67 m/s^2. Determine the *time* for the feather to fall to the surface.	$\vec{v}_i =$ _____ $\vec{v}_f =$ _____ $\Delta t =$ _____ $\Delta x =$ _____ $\vec{a} =$ _____			(*Answer:* 1.29 s)

Source: *The Physics Classroom* (http://www.physicsclassroom.com/class/1DKin/Lesson-6/Sample-Problems-and-Solutions)