Name: Period:

Equations of Motion 7: *vf2 = vi2+2ad*

*Show all work and include units*

1. A car initially traveling at a speed of 16 meters per second accelerates uniformly to a speed of 20 meters per second over a distance of 36 meters. What is the magnitude of the car’s acceleration?

2. A race car traveling at 10 meters per second accelerates at a rate of 1.5 meters per second2 while traveling a distance of 600 meters. The final speed of the race car is approximately

3. A 1000-kilogram car traveling with a velocity of +20 meters per second decelerates uniformly at −5.0 meters per second2 until it comes to rest. What is the total distance the car travels as it decelerates to rest?

4. A skater increases her speed uniformly from 2.0 meters per second to 7.0 meters per second over a distance of 12 meters. The magnitude of her acceleration as she travels these 12 meters is

5. A 747 jet, traveling at a velocity of 70 meters per second north, touches down on a runway. The jet slows to rest at the rate of 2.0 meters per second2.

Calculate the total distance the jet travels on the runway as it is brought to rest.

6. A car traveling on a straight road at 15.0 meters per second accelerates uniformly to a speed of 21.0 meters per second in 12.0 seconds. The total distance traveled by the car in this 12.0-second time interval is

BONUS:

7. A car moving at a speed of 8.0 meters per second enters a highway and accelerates at 3.0 meters per second squared. How fast will the car be moving after it has accelerated for 56 meters?