

KINEMATICS ASSIGNMENT

- Using the “GRASS” method, answer the following.
1. How far and where will a robot travel in 3.0 s, accelerating at 1.0 cm/s^2 [forward], if its initial velocity is 5.0 cm/s [forward]?

2. How far will a car travel if it starts from rest and experiences an acceleration of magnitude 3.75 m/s^2 [forwards] for 5.65 s ?

3. An aircraft starts from rest and accelerates at 42.5 m/s^2 until it takes off at the end of the runway. How long will it take the aircraft to travel down the 2.6 km runway?

4. If a cyclist traveling at 14.0 m/s skids to a stop in 5.60 s , determine the skidding distance. Assume uniform acceleration.

5. Approaching a flashing pedestrian activated traffic light, a driver must slow down to a speed of 30.0 km/h. If the crosswalk is 150 m away and the vehicle's initial speed is 50km/h, what must be the magnitude of car's acceleration to reach this speed limit?

6. A rocket starts from rest and accelerates uniformly for 2.00 s over a displacement of 150m[W]. Determine the rocket's acceleration.

7. A jet starting from rest reaches a speed of 241 km/h on 96.0 m of runway. Determine the magnitude of the jet's acceleration.

8. Determine the magnitude of car's acceleration if its stopping distance is 39.0 m for initial speed of 97.0 km/h.

9. Determine a submarine's acceleration if its initial velocity is 9.00 m/s [N] and it travels 1.54 km[N] in 2.00 min .