

NAME _____

PHYSICS ACC PROBLEMS 1

Solve with: formulas, D-T and V-T graphs, or Interactive Physics!

$$D = V_{\text{avg}} T \quad V_{\text{avg}} = (V_i + V_f) / 2 \quad (\text{if } A \text{ is constant}) \quad A = (V_f - V_i) / T$$

D-T graph, slope is velocity

V-T graph area is displacement, slope is accel

1) While driving his sports car at 20 m/s Eddie comes up behind a slow moving dump truck and decides to pass it. If he can accelerate at a rate of 5 m/s/s, how long will it take him to reach a speed of 30 m/s ?

2) A jet taxiing down a runway receives word that it must return to the hangar for an important message. The jet is traveling at 45 m/s . What is the acceleration of the plane if it takes 5 sec to bring it to a halt?

3) Hans stands at the rim of the Grand Canyon and yodels. He hears his yodel 5 sec later. (2.5 sec to go down, 2.5 sec to come back) Assume that the speed of sound is 340 m/s . How deep is the canyon?

4) Monica is walking to the hairdresser at 1.3 m/s, then realizes she is going to be late. She quickens her pace at the rate of .09 m/s/s . What is her speed after 10 s? How far has she traveled in this time?

5) Bobby wants to catch up with his friend in the hallway. His friend is 10 m ahead of him, walking at 3 m/s. If Bobby constantly accelerates at a rate of 2 m/s/s from rest, how long till he catches up to his friend? How far? What is his speed at that time?

**** HONORS**

6) Frank is going 4 m/s for 5 seconds. If I start 2 m ahead of him going 9 m/s, at what rate will I have to deaccelerate so I will be in the same spot as him after 5 sec?

7) A bird is flying along at 60 m/s and reaches a constantly increasing force of wind which causes the bird to deaccelerate at the rate of 12 m/s/s. How far will the bird have gone after 15 seconds? What will its velocity be at that time?

8) What speed do I have to start at if I want to go 200 meters accelerating at the rate of 4 m/s/s for 10 seconds?