



1. (Openstax Chapter 2) Find the following for path D: (a) The distance traveled. (b) The magnitude of the displacement from start to finish. (c) The displacement from start to finish.
2. (HRK Chapter 2) A car travels up a hill at the constant speed of 40 km/h and returns down the hill at the speed of 60 km/h. Calculate the average speed for the round trip.
3. (HRK Chapter 2) A particle had a velocity of 18 m/s in the x direction and 2.4 s later its velocity was 30 m/s in the opposite direction. What was the average acceleration of the particle during this 2.4-s interval?
4. (HRK Chapter 2) A rocket ship in free space moves with constant acceleration equal to  $9.8 \text{ m/s}^2$ . (a) If it starts from rest, how long will it take to acquire a speed one-tenth that of light? (b) How far will it travel in so doing? (The speed of light is  $3.0 \cdot 10^8 \text{ m/s}$ .)
5. (HRK Chapter 2) An automobile traveling 35 mi/h (= 56 km/h) is 110 ft (= 34 m) from a barrier when the driver slams on the brakes. Four seconds later the car hits the barrier. (a) What was the automobile's constant "deceleration" before impact? (b) How fast was the car traveling at impact?
6. (HRK Chapter 2) At a construction site a pipe wrench strikes the ground with a speed of 24.0 m/s. (a) From what height was it inadvertently dropped? (b) For how long was it falling?
7. (HRK Chapter 2) Two objects begin a free fall from rest from the same height 1.00 s apart. How long after the first object begins to fall will the two objects be 10.0 m apart?

8. (Blue Morin Chapter 2) A ball is dropped from rest at height  $h$ . Another ball is simultaneously thrown downward with speed  $v$  from height  $2h$ . What should  $v$  be in terms of  $h$  and  $g$  so that the two balls hit the ground at the same time?