1) A brick is dropped from the top of a building (don't try this at home!). 5.5 s later it hits the ground. How high is the building? $(1.5 \times 10^2$ m)

2) A volleyball is tossed straight up in the air with a velocity of 15 m/s.
   a) How high will it go? (11 m)
   b) How much time will it spend in the air? (3.1 s)

3) A large rock is dropped from the top of the Empire State building. A second smaller rock is dropped from the same spot 1.0 s after the first one. How far apart are the rocks when the 2nd on has reached a speed of 23 m/s. (28 m)

4) Mr. Mister greatly desires to make a midnight run directly north across the Fraser river which runs due east at 4.0 m/s. His speedboat travels at 10.0 m/s through still water.
   a) If he foolishly heads straight across, what is his velocity with respect to (w.r.t.) the bank? (11 m/s, 22° E of N)
   b) What direction should he head to make a direct midnight crossing? (24° W of N)
   c) If the river is 2.0 km wide, how long does a direct crossing take? (216 s)

5) Wayne Gretzky starts skating from his LA mansion and goes 40.0 km on a 30° N of E heading and then changes and proceeds 50.0 km due north. Where is he now w.r.t. his lovely home? (78 km, 64° N of E)

6) Han Solo is traveling in the Millennium Falcon going 500.0 km/h over the desert due east. If a 90.0 kmh wind is blowing to the south in what direction must Han be traveling relative to the moving air? (10.0° N of E)

7) Oprah wants to fly to a destination 320 km due east of her position (Chicago) in 40.0 minutes. There is a strong wind blowing at 48 km/h (the Windy City!), 30° E of S. Determine:
   a) what her ground velocity must be to make the trip $(4.8 \times 10^2$ km/h due east)
   b) what her air velocity must be to make the trip $(4.6 \times 10^2$ km/h, 5.2° W of N)

8) Michael Corleone is headed due south in the Nevada desert in his Jaguar at 60.0 kmh. In a matter of 10. s he changes his velocity to 70.0 km/h due west. Determine the magnitude and direction of his acceleration during the change. $(2.6$ m/s^2, 49° W of N)