2D Kinematics Worksheet (ANSWERS ONLY)

1. (a) $v_{ix} = 50$ m/s
   (b) $v_{iy} = 0$ m/s
   (c) $v_{fx} = 50$ m/s
   (d) $v_{fy} = 40$ m/s
   (e) $v_f = 64$ m/s
   (f) 38.7^o relative to the ground
   (g) x = 200 m
2. (a) $v_{ix} = 87$ m/s
   (b) $v_{iy} = 50$ m/s
   (c) $v_{fx} = 87$ m/s
   (d) $v_{fy} = -50$ m/s
   (e) $v_f = 100$ m/s
   (f) 30^o relative to the ground
   (g) $t_{total} = 10$ s
   (h) $t_{up} = 5$ s
   (i) y = 125 m
   (j) x = 870 m
3. t = 0.346 s; x = 0.83 m
4. $v_{ix} = 16.7$ m/s
5. t = 3.6 s; x = 64.8 m; y = 16.2 m
6. $t_{total} = 1.9$ s
7. $v_{ix} = 8$ m/s
8. $v_{ix} = 84.8$ m/s
9. $v_{ix} = 71$ m/s
10. x = 3.6 m
11. y = -0.45 m
12. $v_{ix} = 7.9$ m/s
13. x = 225 m
14. $v_y = 0.71$ m/s; $v_x = 714$ m/s
15. $v_x = 40$ m/s; $v_y = 44.8$ m/s
16. t = 6.9 s; v = 145 m/s