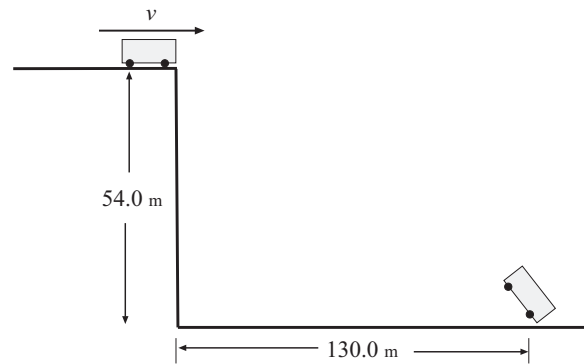


Name _____

Phys 2010 (NSCC), Fall 2006
Problem Set #4

1. A car drives straight off the edge of a cliff that is 54 m high. (Its initial velocity is completely *horizontal*.) The police at the scene of the accident observe that the point of impact is 130 m from the base of the cliff.

How long did the car spend in falling? (Use the y equation of motion.)

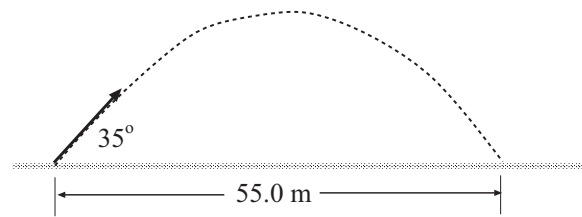


2. How fast was the car traveling when it went over the cliff? (Use the x equation of motion.)

3. What was the speed of the car when it struck the ground? (Find v_x and v_y at impact.)

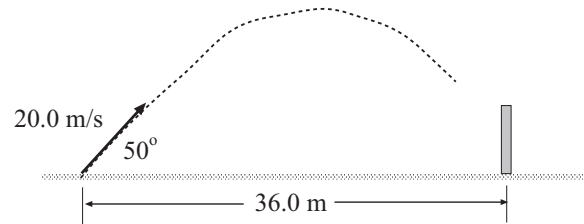
4. A projectile is fired from ground level at an angle of 35° . It lands at the same level, with a range of 55 m.

What was the initial speed of the projectile?



5. A place kicker kicks the football from a point 36.0 m from the goal; the ball needs to clear the crossbar, which is 3.05 m high! When kicked, the ball leaves the ground with a speed of $20.0 \frac{\text{m}}{\text{s}}$ at an angle of 50° from the horizontal.

At what time t was the ball directly over or under the crossbar?



6. In problem 5, what was the height of the ball at the time t that you found? Does the ball make it over the crossbar?

7. A 2.0 kg mass moves in one dimension; it is acted on by two forces, a 10.0 N force in the $+x$ direction and a 13.0 N force in the $-x$ direction.

What is the direction and magnitude of the acceleration of the mass?

8. A 3.0 kg mass starts from rest and accelerated uniformly in the $+x$ direction so that it has moved 19.3 m in 3.00 s

What is the net force which is acting on the mass?