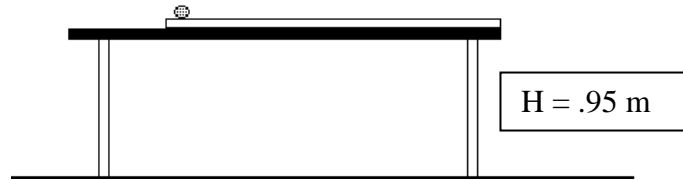


1ST SEMESTER FRQ REVIEW



1. Ryan rolls a steel ball horizontally at 0.8 m/s from a top of a lab table that is 0.95 m high as shown.

a. How long will it take the stone to strike the ground?

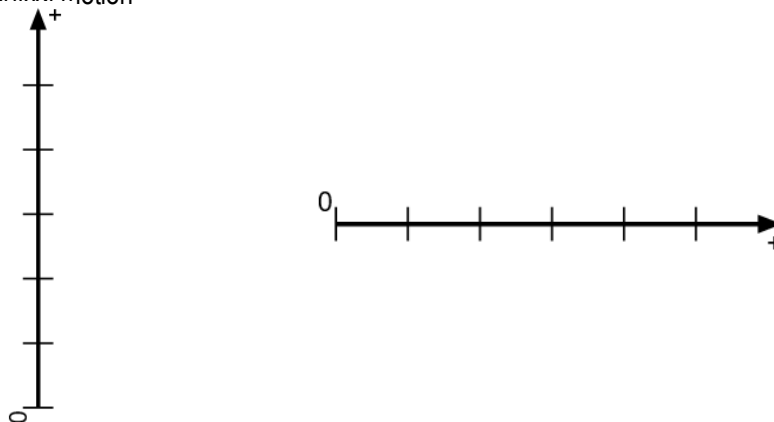
Givens	Unknown	Equation	Substitute into equation	Answer with Units

b. How far did the rock travel horizontally before it hit the ground?

Givens	Unknown	Equation	Substitute into equation	Answer with Units

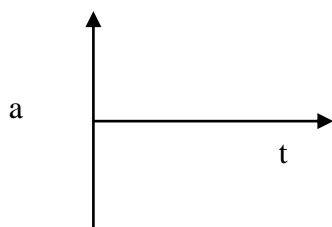
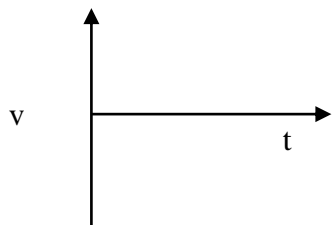
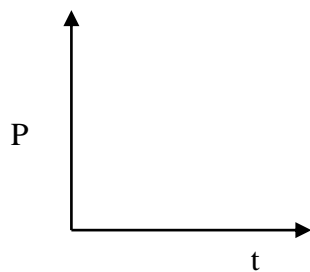
2. What are the velocity vector components (vertical and horizontal) just before it hits the ground?

3. Draw a motion map to describe the motion of the object. Include **velocity** vectors for both the horizontal and vertical motion



4. Describe the motion of the object. Be sure to include each of the following in your description: starting position, direction moved, type of motion, relative speed in both the horizontal and the vertical direction.

5. Sketch **position vs. time**, **velocity (y) vs time**, and **acceleration vs time** graphs for the ball.

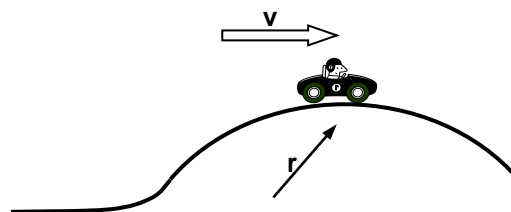
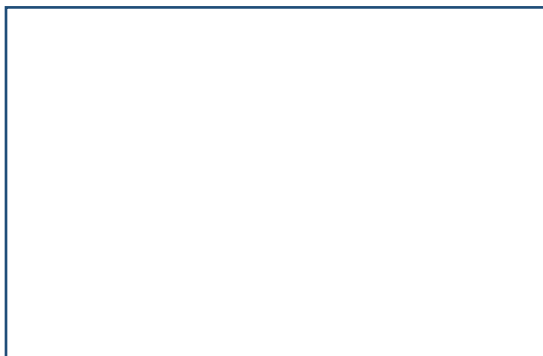


1. A car travels over a hill at constant speed of 10 m/s.

a. If the radius of the hill is 40 meters determine the magnitude of the centripetal force acting on the car.

Givens	Unknown	Equation	Substitute into equation	Answer with Units

b. Construct a force diagram for the car at the top of the hill. Force vectors, clearly drawn & labeled with correct vector lengths. Equality marks on vectors as needed.



c. Calculate the normal force on the car. Show work.