

# FREE-FALL KINEMATICS WORKSHEET 2

1. A ball is thrown downward with an initial speed of 20 m/s on Earth.  
 a. Make a motion map of the situation.



- b. Calculate the displacement during the first 4 s.

Givens	Unknown	Equation	Substitute into equation	Answer with Units

- c. Calculate the speed after falling 100 m.

Givens	Unknown	Equation	Substitute into equation	Answer with Units

2. A rock is thrown upward with an initial speed of 15 m/s on Earth.  
 a. Make a motion map of the situation.



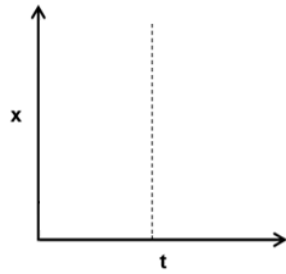
- b. Calculate the rock's height after 1 sec.

Givens	Unknown	Equation	Substitute into equation	Answer with Units

- c. Calculate the time required to reach a downward speed of 5 m/s.

Givens	Unknown	Equation	Substitute into equation	Answer with Units

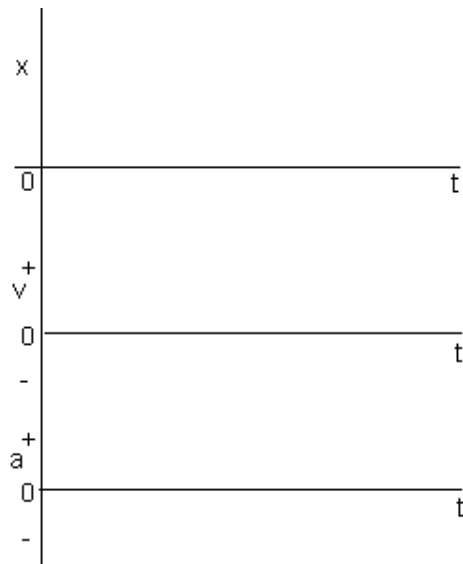
3. A ball punted vertically has a hang time of 3.8 seconds. Draw a position vs. time graph.



a) What was its initial velocity?

Givens	Unknown	Equation	Substitute into equation	Answer with Units

4. A rock is thrown straight up with an initial speed of 22 m/s. Graph the vertical position, velocity, and acceleration of the rock on the axes provided. Make a well-labeled motion map of the trip.



b. How long will it be in the air before it returns to the thrower?

Givens	Unknown	Equation	Substitute into equation	Answer with Units

