

Name \_\_\_\_\_

Date \_\_\_\_\_

Mrs. Roumbos

8A CC Algebra 1

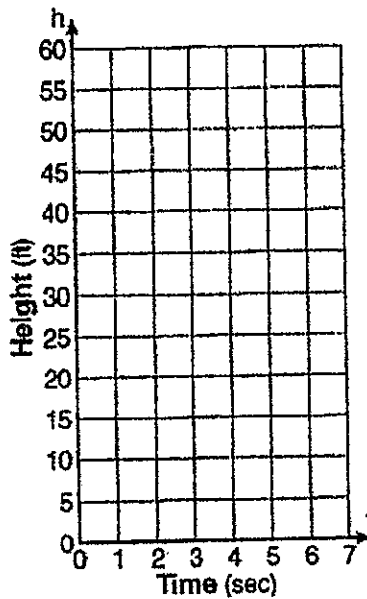
★ The constant at the end of the equation is the y-intercept. The y-intercept is where the object is being tossed from. If there is no constant (meaning  $c=0$ ) it will start from the ground

Parabola Word Problems Classwork

1) Tom throws a ball into the air. The ball travels on a parabolic path represented by the equation

$$h = -8t^2 + 40t, \text{ where } h \text{ is the height, in feet, and } t \text{ is the time, in seconds.}$$

a) On the accompanying set of axes, graph the equation from  $t = 0$  to  $t = 5$  seconds, including all integral values of  $t$  from 0 to 5.



b) What is the value of  $t$  at which  $h$  has its greatest value?

2) Jason jumped off a cliff into the ocean in Acapulco while vacationing with some friends. His height as a function of time could be modeled by the function  $h(t) = -16t^2 + 16t + 480$ , where  $t$  is the time in seconds and  $h$  is the height in feet.

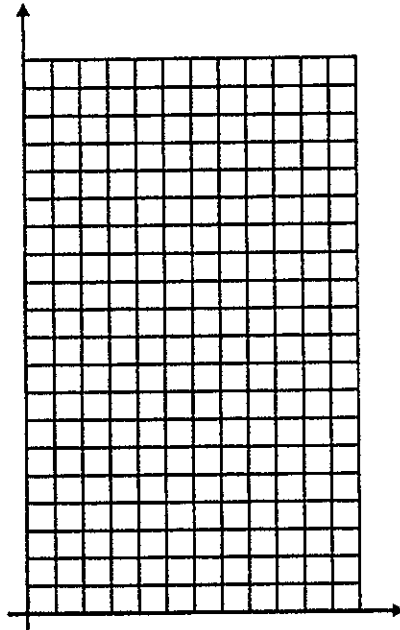
a) How long did it take for Jason to reach his maximum height?

b) What was the highest point that Jason reached?

c) Jason hit the water after how many seconds?

3) The height in feet of a golf ball hit into the air is given by  $h = -16t^2 + 64t$ , where  $t$  is the number of seconds elapsed since the ball was hit.

a) Graph  $h$  on the accompanying graph from  $0 \leq t \leq 4$



b) What is the maximum height of the ball?

c) How long does it take for the ball to reach its maximum height?

d) How long does it take for the ball to hit the ground?

e) For how many seconds is the ball more than 48 feet up in the air?

f) Determine all values of  $t$  for which  $h > 48$

4) A model rocket is launched. The height, in feet, of the rocket  $h(t)$  at  $t$  ( $t \geq 0$ ) seconds after the launch is determined by the equation  $h = -\frac{1}{2}t^2 + 15t$

a) Find the maximum height of the rocket.

b) Find the number of seconds after the launch it takes for the rocket to reach its *maximum* height.

c) For how many seconds will the rocket be at the height or more than 100ft?