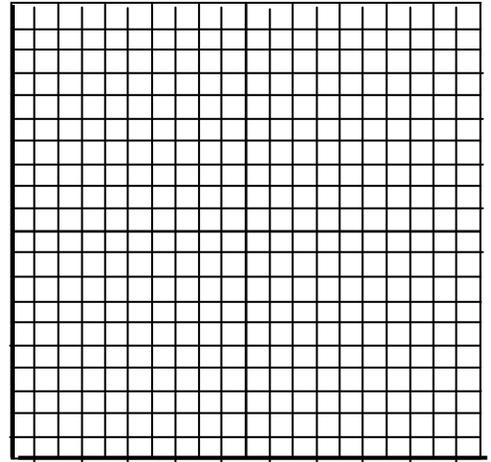




6. A ball is thrown in the air. The path of the ball is represented by the equation  $h = -t^2 + 8t$ . Graph the equation over the interval  $0 \leq t \leq 8$  on the accompanying grid.

height (meters)



What is the maximum height of the ball? \_\_\_\_\_

How long is the ball above 7 meters? \_\_\_\_\_

time (seconds)

7. Using the graph at the right, It shows the **height  $h$**  in feet of a small rocket  **$t$  seconds** after it is launched. The path of the rocket is given by the equation:  
 $h = -16t^2 + 128t$ .

- How long is the rocket in the air? \_\_\_\_\_
- What is the greatest height the rocket reaches? \_\_\_\_\_
- About how high is the rocket after 1 second? \_\_\_\_\_

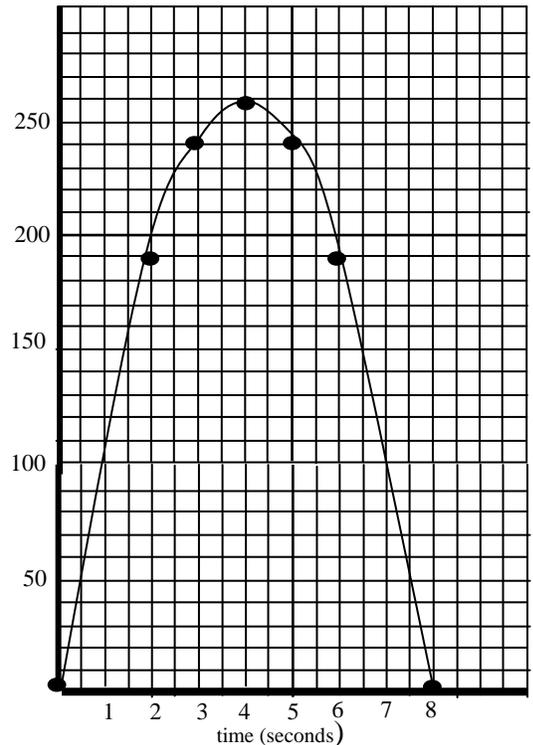
After 2 seconds,

- about how high is the rocket? \_\_\_\_\_
- is the rocket going up or going down? \_\_\_\_\_

After 6 seconds,

- about how high is the rocket? \_\_\_\_\_
- is the rocket going up or going down? \_\_\_\_\_

$h$  (height (feet))



Do you think the rocket is traveling faster from 0 to 1 second or from 3 to 4 seconds? Explain your answer.

8. After  $t$  seconds, a ball tossed in the air from the ground level reaches a height of  $h$  feet given by the equation  $h = 144t - 16t^2$ .
- What is the height of the ball after 3 seconds?
  - What is the maximum height the ball will reach?
  - Find the number of seconds the ball is in the air when it reaches a height of 224 feet.
  - After how many seconds will the ball hit the ground before rebound?
9. An object is launched into the air from a ledge 16 feet off the ground at an initial vertical velocity of 96 feet per second. Its height,  $h$ , in feet at  $t$  seconds is given by the equation  $h = -16t^2 + 96t + 16$ . Find all times  $t$  that the object is at a height of 160 feet off the ground.
10. A ball is launched upward at 48 ft/s from a platform that is 100 ft. high. Find the maximum height the ball reaches and how long it will take to get there.
11. Bob made a quilt that is 4 ft x 5 ft. He has 10 sq. ft. of fabric to create a border around the quilt. How wide should he make the border to use all of the fabric? (The border must be the same width on all four sides). Hint: Sketch the problem.