Secondary II-Unit 3.1 Quad Applications Day 3 Homework Name_____
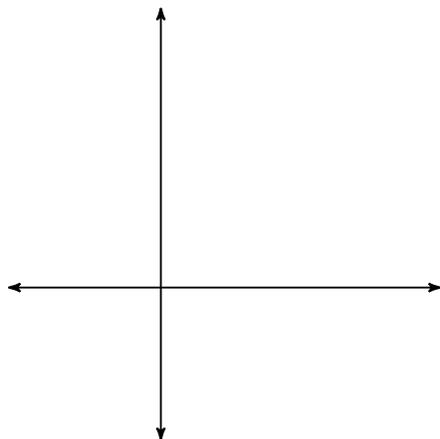
Solving Real World Problems   Date_____ Period_____

Jason jumped off of a cliff into the ocean in Acapulco while on vacation. The function
$h = -16t^2 + 16t + 480$ **represents his position, where** *t* **is time in seconds and** *h* **is height in feet**
above the water.

1) Make a graph of the situation.

2) What is Jason's initial height before he jumps off the cliff?

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

4) What was the highest point that Jason reached?

5) Jason hit the water after how many seconds?

If a toy rocket is launched vertically upward from ground level. Its height in feet h, after t seconds, is given by the equation $h = -16t^2 + 128t$.

6) Make a graph of the situation.
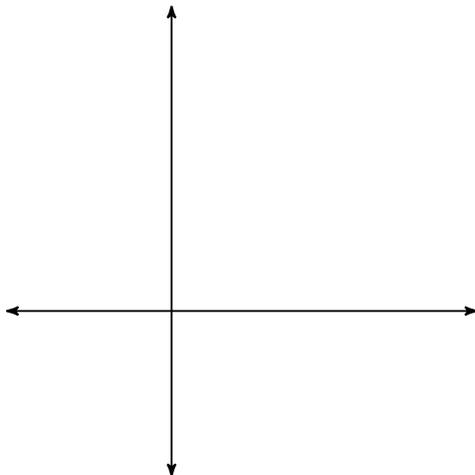
7) How long will it take for the rocket to return to the ground?

8) How long will it take the rocket to hit its maximum height?
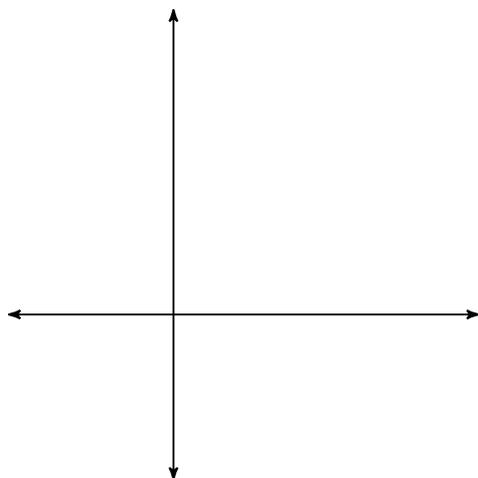
9) What is the maximum height?

10) What is the height of the rocket after 5.5 seconds?

11) After how many seconds will the rocket be 112 feet above the ground?
       *be careful, there are two answers on this one

You and a friend are hiking in the mountains. You want to climb to a ledge that is 20 ft above you. The height in feet h of the grappling hook you throw, t seconds after you throw it, is given by the function $h = -16t^2 - 32t + 5$.
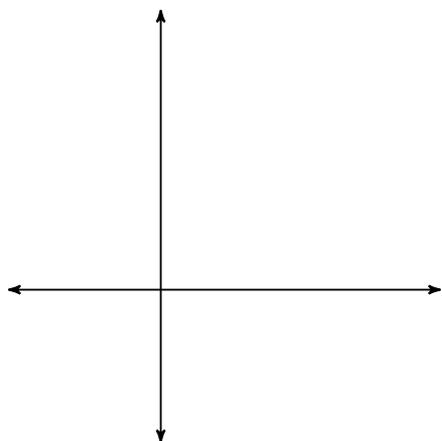
12) Make a grah of the situation.

13) What is the maximum height of the grappling hook?

14) Can you throw it high enough to reach the ledge?

You are trying to dunk a basketball. You need to jump 2.5 feet in the air to dunk the ball. The height that your feet are above the ground is given by the function $h = -16t^2 + 12t$.
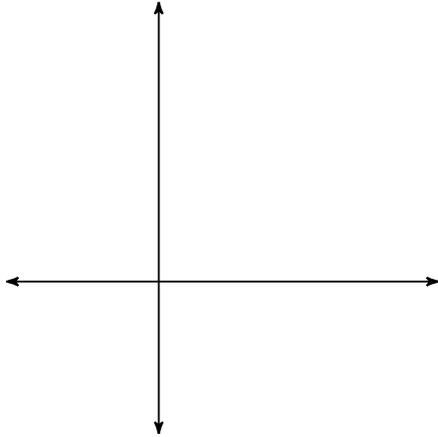
15) Make a graph of the situation.

16) What is the maximum height your feet will be above the ground?

17) Will you be able to dunk the basketball?

A diver is standing on a platform 24 feet above the pool. Use the formula $h = -16t^2 + 8t + 24$, where h is his height above the water, and t is the time after he has jumped.
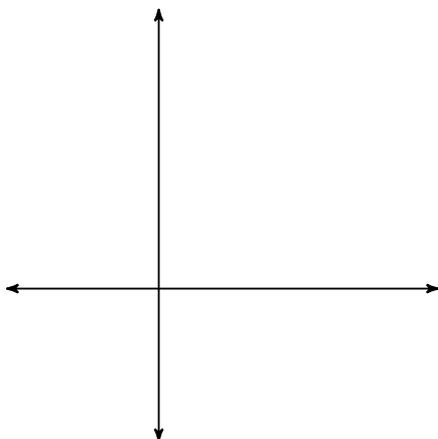
18) Make a graph of the situation.

19) How long will it take for him to hit the water?

20) What is the diver's maximum height?

A ball is thrown upward from a height of 15 feet above the ground. It can be modeled by the formula $h = -16t^2 + 5t + 15$, where h is height, and t is time after the ball is thrown.
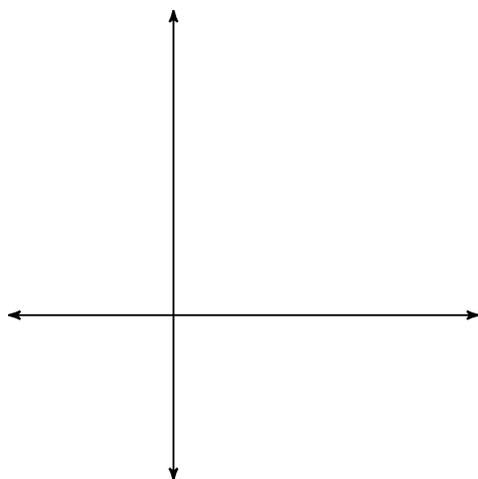
21) Make a graph of the situation.

22) How long will it take the ball to hit the ground?

23) What is the maximum height of the ball?

One of the games at a carnival involves trying to ring a bell, 25 feet above the ground, by hitting a platform with a hammer that propels a ball into the air. The height of the ball is modeled by equation $h = -16t^2 + 39t$.

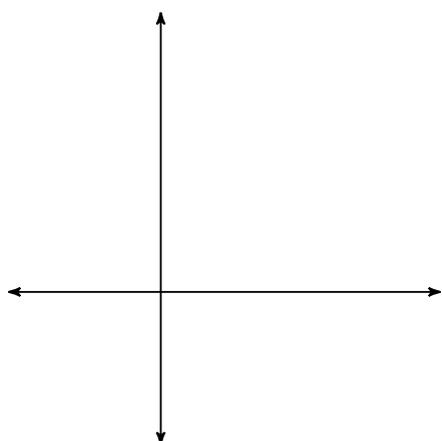24) Make a graph of the situation.

25) What is the maximum height the ball reaches?

26) Does it hit the bell?

A rocket is launched from atop a 101 foot cliff is represented by the equation $h = -16t^2 + 116t + 101$.
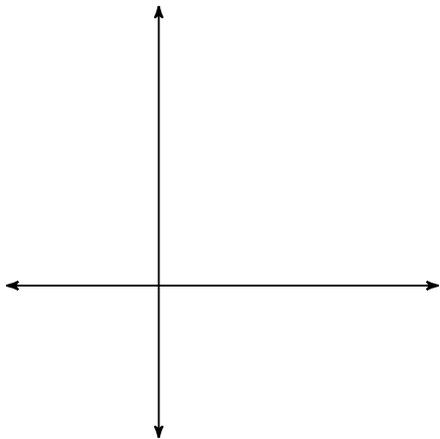
27) Make a graph of the situation.

28) How long will it take the rocket to hit the ground after it is launched?

A certain company's main source of income is selling earrings. The company's annual profit is modeled by $P = -2x^2 + 12x - 10$, where P is the profit in thousands of dollars, and x is the price for a pair of earrings.

29) Make a graph to model the situation.

30) What price should the company sell a pair of earrings for to earn the maximum profit?

31) What is the maximum profit the company can earn with their earrings?

32) What is the profit made when selling the earrings for $2.50 each pair?

33) What price(s) for a pair of earrings, would cause the company to have a profit of zero dollars?

Factor each completely.

34) $2n^2 - 22n + 60$

35) $4n^2 - 40n$

36) $n^2 - 5n + 15$

37) $n^2 + 8n + 12$

38) $-6p^2 - 42p$

39) $5x^2 - 180$

40) $m^2 - 9$

41) $m^2 - 25$

42) $9a^2 - 16$

43) $16a^2 - 1$

Made with Infinite Algebra 2.