Quadratic Applications

Sandy tosses a softball into the air at a speed of 62 ft/sec. Answer the following questions about the height of the ball.

1) What type of function models this situation?
2) What are the units of measure?
3) What is the specific function that models this situation?

4) How high is the ball after 3 seconds?
5) What is f(0)?
6) What is the height of the ball at t = 1?
7) What is the height of the ball at t = -3?
8) What is f(20)?

9) When does the ball reach it's maximum height?
10) What is the maximum height?

Little Billy is playing with fireworks. Naughty boy! He lights a supercracker and covers it with an empty can. When the firecracker explodes it propels the can into the air at a rate of 40 ft/sec. Using this information answer the following questions.

11) What type of function models this situation?
12) What are the units of measure?
13) What is the specific function that models this situation?

14) How high is the can after 1 second?
15) What is f(2)?
16) What is the height of the can at t = 0?
17) What is the height of the can at t = 10?
18) What is f(-4)?

19) What are the coordinates of the y-intercept of this function? What does the x-coordinate indicate? What does the y-coordinate indicate?

20) When does the can reach it's peak?
21) What is that height?

Joe kicks a football off the ground with an initial velocity of 55 ft/ per second:

22) What type of function models this situation?
23) What are the units of measure?
24) What is the specific function that models this situation?

25) How high is the ball after 0 seconds?
26) What is f(4)?
27) What is the height of the ball at t = 2?
28) What is the height of the ball at t = 16?
29) What is f(-8)?

30) What are the coordinates of the vertex of this function? What does the x-coordinate indicate? What does the y-coordinate indicate?

31) When does the ball reach it's greatest height?
32) What is that greatest height?

A hunter shoots a rifle straight up into the air. The bullet leaves the barrel at 300 m/s. Using this information answer the following questions.

33) What type of function models this situation?
34) What are the units of measure?
35) What is the specific function that models this situation?

36) What is f(0)?
37) What is the height of the bullet after 8 seconds?
38) What is the height of the bullet at t = 20?
39) What is the height of the bullet at t = -8?
40) What is f(42)?

41) When does the ball reach it's maximum altitude?
42) What is that altitude?

43) What are the coordinates of the x-intercepts of this function? What do the x-coordinates indicate? What do the y-coordinates indicate?

Paul tilts a pitching machine so it propels a ball straight into the air. He wants to see how high it will go. The machine is propelling the ball at 38 m/sec. Using this information answer the following questions.

44) Give the function that models this situation?
45) What are the coordinates of the y-intercept of this function? What does the x-coordinate indicate? What does the y-coordinate indicate?

46) How high is the ball after 2 seconds?
47) What is f(4)?

48) What are the coordinates of the vertex of this function? What does the x-coordinate indicate? What does the y-coordinate indicate?

49) How high does the ball get?
50) What is the maximum height?

51) What information do the x-intercepts of this function give me?

John stands on the top of the MVHS auditorium. The building is 70 ft tall. John throws the ball upward at a velocity of 30 m/s. Using this information answer the following questions.

52) Give the function that models this situation?
53) What are the coordinates of the x-intercepts of this function? What do the x-coordinates indicate? What do the y-coordinates indicate?

54) How high is the ball after 2 seconds?
55) What is f(4)?

56) When does the ball reach it's peak?
57) What is that height?

At the BYU-Utah basketball game, Cheerleader Sue shoots T-shirts in the air using a "T-shirt Cannon." The cannon projects the t-shirt at an initial rate of 70 feet per second.

58) Give the function that models the height of the t-shirt relative to time.

59) How high will the t-shirt be at h(2)?

60) How high will the t-shirt be after 3 seconds?

61) What are the coordinates of the vertex of this function? What does the x-coordinate indicate? What does the y-coordinate indicate?

62) When does a t-shirt reach it's maximum height?
63) What is the maximum height?

Sue shoots the t-shirt using the same cannon from the mezzanine level which is 50' above ground level:

64) Give the function that models this situation.

65) How high, from the ground, would the t-shirt be in 1 second?

66) How long would it take for the t-shirt to hit the ground at center court, when shot from the mezzanine?

67) What are the coordinates of the x-intercepts of this function? What do the x-coordinates indicate? What do the y-coordinates indicate?

A rescue swimmer jumps from a helicopter into the ocean. The helicopter hovers at 150 ft. Using this information answer the following questions.

68) What type of function models this situation?

69) What are the units of measure?

70) Give the specific function that models this situation?

71) What are the coordinates of the y-intercept of this function? What does the x-coordinate indicate? What does the y-coordinate indicate?

72) What are the coordinates of the vertex of this function? What does the x-coordinate indicate? What does the y-coordinate indicate?

73) What are the coordinates of the x-intercepts of this function? What do the x-coordinates indicate? What do the y-coordinates indicate?

74) What is f(1)?