1) When an arrow is shot into the air, its height, h, in feet above the ground is given by the equation $h = -16t^2 + 96t + 5$, where t represents time elapsed in seconds. What is the maximum height of the arrow? What is the height after 3 seconds?

2) A slow pitch softball is pitched to a batter. The ball follows a path in which the height, h, is given by $h = -2t^2 + 8t + 3$, where t is the time in seconds elapsed since the ball was pitched. What is the maximum height reached by the ball? What is the height after 4 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. What is the balls maximum height? What is the height after 2 seconds?

4) When an arrow is shot into the air, its height, h, in feet above the ground is given by the equation $h = -16t^2 + 96t + 5$, where t represents time elapsed in seconds. Suppose the arrow hits a tree after 1.5 seconds. How far up the tree would the arrow hit?

5) 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. What is the maximum height? How high will the ball be after 1.5 seconds has gone by?

For each of the following quadratic equations, find the following:

1) open up or down
2) axis of symmetry (x = ?)
3) max or min (x, y)

a) $-x^2 - 2x - 15 = 0$

b) $x^2 + 2x - 24 = 0$

c) $-3x^2 + 7x + 4 = 0$

d) $5x^2 - 22x - 8 = 0$

Review:

1. Simplify: $(x + 3)(x + 7)$

2. Simplify: $(3x - 1)(x + 6)$

3. Simplify:

$$7x^3y^2 \cdot 5xy^9$$

4. Simplify:

$$\left(3x^2\right)^4$$

5. Simplify:

$$\frac{30a^7b^4}{2a^4b^2}$$

6. Factor:

$$x^2 + 8x - 20$$

7. Factor:

$$2x^2 + 9x - 5$$

8. Factor:

$$x^2 - 11x - 42$$