**Standard Form for Quadratic Functions**

For each of the situations below, convert the quadratic function from factored form or vertex form to standard form and answer the questions.

Remember that a quadratic in standard form, $f(x)=ax^{2}+bx+c$, has a minimum value (when *a* > 0) or a maximum value (when *a* < 0) at $x=-\frac{b}{2a}$.

1. a. Rewrite $y=(x-2)^{2}+9$ in standard form. Hint: $(x-2)^{2}=\left(x-2\right)\left(x-2\right).$

1. Find the point that represents the minimum value for the function. Make sure you find both the *x* and the *y* value of this point.
2. Is this point the same as the vertex? Why or why not?

2. The equation *h =* (16*t* + 8)(–*t* + 5) models the height, *h*, of an object in feet after *t* seconds.

1. Rewrite the equation in standard form.
2. How long is the object in the air before it reaches its maximum height?
3. What is the maximum height of the object?
4. Explain how you arrived at your answer for the maximum height.

3. In Activity 8.4.2 the function $f\left(x\right)=(20-x)(30+5x)$ gave the amount of money earned

 (in dollars) as a function of *x*, the amount the price of a sweatshirt is reduced. Rewrite this

 function in standard form.

4. In Activity 8.3.1 the function $y=-0.001\left(x-200\right)^{2}+44$ gave the height of a baseball as

 a function of its distance from home plate. Rewrite this function in standard form.