Directions: Answer the following question(s).

1. Which of these represents $y = 2x^2 - 16x + 40$ in vertex form as well as the vertex of the function?

A. $y = 2(x - 4)^2 + 8$ with a vertex of $(4, 8)$

B. $y = 2(x + 4)^2 + 8$ with a vertex of $(-4, 8)$

C. $y = 2(x + 4)^2 - 8$ with a vertex of $(-4, -8)$

D. $y = 2(x - 4)^2 - 8$ with a vertex of $(4, -8)$

2. A rock on Mars moves according to the equation $y = -6x^2 + 48x$, where x = time in seconds and y = height in feet.

Write the equation in vertex form $y = a(x - h)^2 + k$. Explain what information about the situation is given by the equation when it is in vertex form.

Type your answer in the box below.

Web Only Interaction

3. A. The height in feet, $h(t)$, of a small toy rocket t seconds after being fired from the top of a building is given by $h(t) = -16t^2 + 84t + 130$. Explain how to write $h(t)$ in vertex form by completing the square in order to find the maximum height attained by the rocket and the time at which this height is reached. Show your work.

B. Explain how to write $h(t)$ in factored form in order to easily determine the time at which the toy rocket hits the ground after being fired. Show your work, and show how to calculate the time.

4. The height in meters, $h(t)$, of a baseball t seconds after being thrown from the top of a hill is given by $h(t) = -4.9t^2 + 19.6t + 40.425$. Explain how to write $h(t)$ in vertex form. Then use this form of the equation to identify the maximum height attained by the ball and the time at which this height is reached. Show your work.