Classwork – Quadratic Formula – Day 2 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Objective: SWBAT solve real life applications of quadratics using the quadratic formula.

**Warm-Up**

What is the Quadratic Formula that can be used as another method to find the roots of a quadratic function?

**Practice Application Problems**

1. The prom committee at Willits High School starts with no funding and has several fixed expenses for the dance. Based on previous experience, their advisor predicts that their Profit, $p$ (after deducting expenses), would be

$p=-t^{2}+100t-1600$ dollars if they charge $t$ dollars for each prom ticket.

**Part A:** How much are fixed expenses? Show your work or explain your reasoning

**Part B:** According the advisor’s model, if they charge $90 per prom ticket, how much of a profit or loss will result? Show your work or explain your reasoning.

**Part C:** According to the advisor’s model, what is the maximum profit than can be expected from the prom? How much should you sell the tickets for to maximize profit? Show your work or explain your reasoning.

**Part D:** How much should the committee charge for the prom tickets in order for them to break even? (profit = 0)

1. A ball is thrown upwards in the air. The height, in feet, of the ball above the ground *t* seconds after being thrown can be determined by the equation $h\left(t\right)=-10t^{2}+40t+3$.

**Part A:** Find the maximum height the ball reaches and when it occurs.

**Part B:** At what height does the ball begin when $t=0$? Show work to support your answer.

**Part C:** When does the ball hit the ground after it is thrown?

1. Johnny attempts to throw a quarter to the very top of the Empire State Building from the roof of his hotel across the street (the hotel building is shorter).  The path of the quarter is represented by the function:

$h\left(t\right)=-16t^{2}+20t+120$ where ℎ(𝑡) is the height of the quarter and $t$ is time in seconds.  When will the quarter hit the ground?