

SPARK Hybrid Education Center

Mathematics | Upper Level

Quadratics: Word Problems & Applications

Name: _____

Date: _____ Score: _____

UNIT TOPICS

- * Projectile motion: $h(t) = -16t^2 + v_0t + h_0$
- * Area and optimization problems
- * Real-world quadratic models

PRACTICE PROBLEMS - Show all work

1. A ball: $h(t) = -16t^2 + 64t + 4$. What is the initial height? ____
2. Using $h(t) = -16t^2 + 64t + 4$, find h when $t = 2$: ____
3. At what time does the ball reach max height? (Use $t = -b/2a$): ____
4. What is the max height? (Substitute t from above): ____
5. A garden has perimeter 40 ft and area $= x(20-x)$. Find x for max area: ____
6. A rocket has $h = 0$ at $t = 0$ and $t = 5$. Write $h(t)$ in factored form: ____
7. True or False: Air time equals 2x the time to reach max height. ____
8. If a quadratic gives a negative time solution, what does it mean in context? ____
9. Profit $P = -2x^2 + 80x - 400$ where $x =$ price. What price maximizes profit? ____
10. Explain why quadratic functions model real-world curves well.

Answers (accept equivalent responses and correct reasoning):

1. [Grade based on correct application of concept taught this week]
2. [Grade based on correct application of concept taught this week]
3. [Grade based on correct application of concept taught this week]
4. [Grade based on correct application of concept taught this week]
5. [Grade based on correct application of concept taught this week]
6. [Grade based on correct application of concept taught this week]
7. [Grade based on correct application of concept taught this week]
8. [Grade based on correct application of concept taught this week]
9. [Grade based on correct application of concept taught this week]
10. [Grade based on correct application of concept taught this week]