Last night's homework... Name _____ Period _____

5.1B *Answering Real-World Questions by Graphing Quadratic Functions*

P-5

#1 – 10: Use your graphing utility to solve the following problems.

1. Phillip, Peter and Pablo each throw a ball over a fence. The height of Phillip's ball with respect to time can be modeled by the equation $y = -16t^2 + 60t$. The height of Peter's ball with respect to time can be modeled by the equation $y = -16t^2 + 50t$. The height of Pablo's ball with respect to time can be modeled by the equation $y = -16t^2 + 40t$, where y is the height in feet and t is the time in seconds for each of the three models.

a) Phillip, Peter and Pablo want to know whose ball hit the ground first. Peter thinks that they should find the x-intercept of the graphs to determine this. Phillip thinks that they should find the vertex of each graph to find which ball hit the ground first. Which one is correct? Explain your answer.

Phillip 3.75

Peter 3.125

Pablo 2.5

Peter is correct because X-int is like the ground.

b) Whose ball hit the ground first? How long did it take?

Pablo ... it took 2.5 seconds

c) Whose ball hit the ground second? How long did it take?

Peter ... it took 3.125 seconds

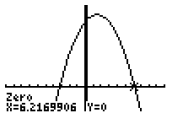
3. Suppose a batter hits a baseball, and the height of the baseball above the ground can be modeled by the function $h(t) = -16t^2 + 50t + 2$. Where is the vertex of the graph? Explain the meaning of the vertex in the context of this situation.

5. The driver of a car traveling downhill on a road applied the brakes. The speed of the car, $s(t)$, in kilometers per hour t seconds after the brakes were applied is modeled by the function rule $s(t) = -4t^2 + 12t + 80$.

a) After how many seconds did the car reach its maximum speed?

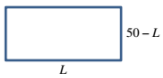
b) What was the maximum speed reached?

c) How long will it take the car to stop? speed = 0



6.2 seconds

6. Andrew has 100 feet of fence to enclose a rectangular tomato patch. He wants to find the dimensions of the rectangle that encloses the most area. The width of the rectangle can be found by the expression $50 - L$ where L is the length of the rectangle.



a) In the expression representing the width of the rectangle $(50 - L)$, what does the 50 represent? Explain your thinking clearly.

The width is 50 ft minus the length

b) Write a function rule to model the area of the rectangle. $A(L)$ represents the Area of the rectangular tomato patch base on the length (L) of one side.

equation

$A(L) =$ L × (50 − L)

Area = length × width

L | 50 − L

50L | −L²

$A = -L^2 + 50L$

c) Find the coordinate representing the maximum of the graph. Explain its meaning in the context of the situation.

(25, 625)

L A

A length of 25 ft gives an area of 625 ft²

d) What size should Andrew make the tomato patch in order to enclose the most area within the fencing?

L = 25

50 − L = 50 − 25 = 25

Length = 25 ft
Width = 25 ft

Section 5.2A

A friend of yours is getting ready to start a unit where they will need to be able to factor a variety of quadratic equations.

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As you work through the problems below, identify the key characteristics of the expression that give you clue to how to factor it. Record the key characteristics, the factoring method and factor completely.

1) $-12x^2+14x$

GCF needs to negative if there's a minus sign in front

GCF=-2x

$-2x(6x-7)$

2) x^2-81

GCF=1

$(x-9)(x+9)$

0x

3) $x^2+14x+49$

4) $x^2+11x+24$

5) $2x^2-13x+15$

GCF=1

$(1x-5)(2x-3)$

1·15
3·5

6) $\frac{6x^2}{3}-\frac{15x}{3}-\frac{36}{3}$

GCF=3

$3(2x^2-5x-12)$

$3(1x-4)(2x+3)$

-6·2
-3·4

7) Your friend also needs a reminder about how to find the x-intercepts once an equation is in factored form. Use $x^2+11x+24$, from problem **4)** above to help you explain your method.

HOMEWORK:

	5.1	I can solve a quadratic equation by graphing	5.1A #1, 3–7, 9 (P-1) *#8 for E.C.		☺ ☹
			5.1A #11, 13, 15, 18 (P-1)		
			5.1B #1, 3, 5, 6 (P-5)		☺ ☹
1/fri 1/23		I can factor quadratic expressions	5.2A #1 – 33 odd (P-9) #13,18,20, 22,24,27,31		☺ ☹