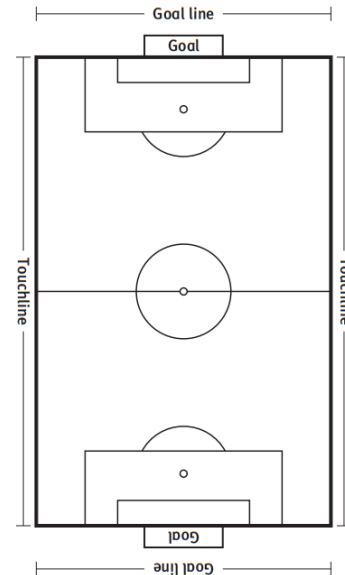# 11.1.D2 – QUADRATIC FUNCTIONS

Name: _____

Past due on: _____ Period: _____

1. Barry and Samantha's teacher writes the function $f(x) = 2x^3 - 2x(3 - x + x^2) + 3$ on the board. Barry tells Samantha that the function cannot be quadratic because it contains the term $2x^3$. Samantha is uncertain. Is Barry correct? Explain your reasoning.

Soccer season is starting and Coach Wentworth needs to mark the field by chalking the touchlines and goal lines for the soccer field. She can mark 320 yards for the total length of all the touchlines and goal lines combined. She would like to mark the field with the largest possible area.

2. Complete the table for rectangles with the given side lengths. (The first row has been completed for you.) In the last row, write an expression to represent the width of the soccer field and its area. Remember: $P = 2l + 2w$ & $A = lw$

Length	Width	Area
10	150	1500
20		
40		
60		
80		
100		
120		
140		
150		
l		

3. Graph the data.
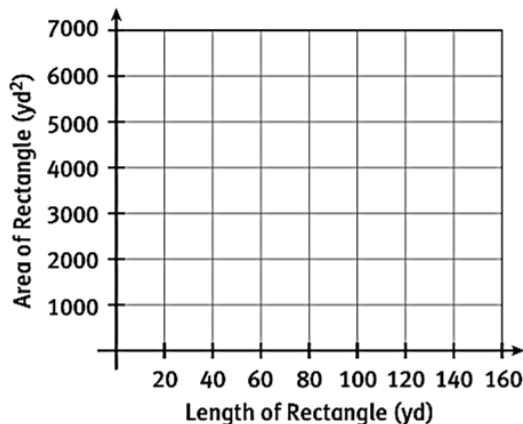
4. Write a quadratic function in standard form that represents the area, A, of the soccer field.

5. Does the function have an absolute minimum or maximum? Identify the coordinates of this point.

6. Describe what the x- and y-coordinates of the absolute minimum/maximum represent in terms of the problem situation.

Write an expression that represents the length in terms of the width, x. Then write a quadratic function in standard form that represents the area, A, as a function of the width. *Refer to the 11.1 example "Writing Quadratic Functions in Standard Form" in the Chapter 11 Summary.*

7. A builder is designing a rectangular parking lot. She has 300 feet of fencing to enclose the parking lot around **three** sides.

   If x = the width, then the length = _____ & the area, A = _____

8. Lea is designing a rectangular quilt. She has 16 feet of piping to finish the quilt around **three** sides.

   If x = the width, then the length = _____ & the area, A = _____

9. Kiana is making a rectangular vegetable garden alongside her home. She has 24 feet of fencing to enclose the garden around the **three** open sides.

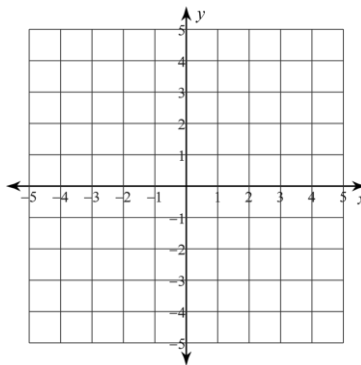   If x = the width, then the length = _____ & the area, A = _____

1ˢᵀ SEMESTER SPIRAL REVIEW

Solve the system of linear equations graphically. Write your solution as an ordered pair (x, y). *Refer to the "Systems of Equations" section on your 1st semester summary card.*
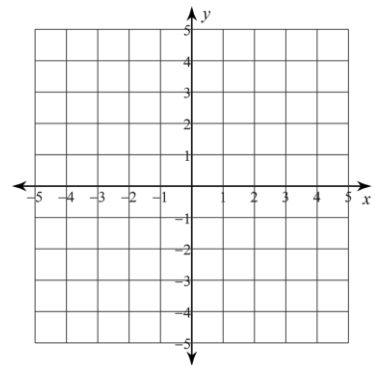
10. $y = 2x + 1$
    $y = -x + 4$
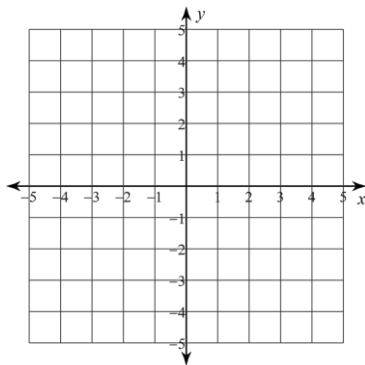
11. $y = 8x + 4$
    $y = x - 3$

12. $2x + y = -2$
    $x + 3y = 9$

Solve each compound inequality and graph its solution set. *Refer to the "Solving Inequalities" section on your 1st semester summary card.*

13. $-57 < 10x - 7 \le 13$

14. $-10x + 7 \le -3$ or $6x + 7 < -29$