Agenda:

1) Take out HW to be checked
   - Questions?

2) Do Now: Sketch, Label, Explain

3) Quadratic Application #8-Area

Homework:
QuadraticApplication#5-Profit

DO NOW

1) If the perimeter of the rectangle below is 120 ft, label the missing sides.

2) Read the scenario about Ms. Paris and her dog (next page).
- **Sketch** the scenario in the given space.
- **Label** the sides appropriately in terms of *x*.
(Careful- it is not identical to #1 above)

3) Check your answer with the person next to you. Explain what you did to get your answer. See if together you can come up with the correct solution.

Name_____ Date_____

518 Quadratic Applications #8

Ms. Paris wants to build a rectangular pen for her dog. She can use the back of her house for one side of the pen and she has 120 feet of fencing to use for the remaining 3 sides. You want to figure out the maximum dimensions of the pen.

Sketch this scenario:

a. Identify the length and width of the pen in terms of x.

b. What is the area of the pen in terms of x?

$A(x) =$ _____

c. What is the maximum rectangular area that 120 feet of fencing can produce for her pen and what width should she use?

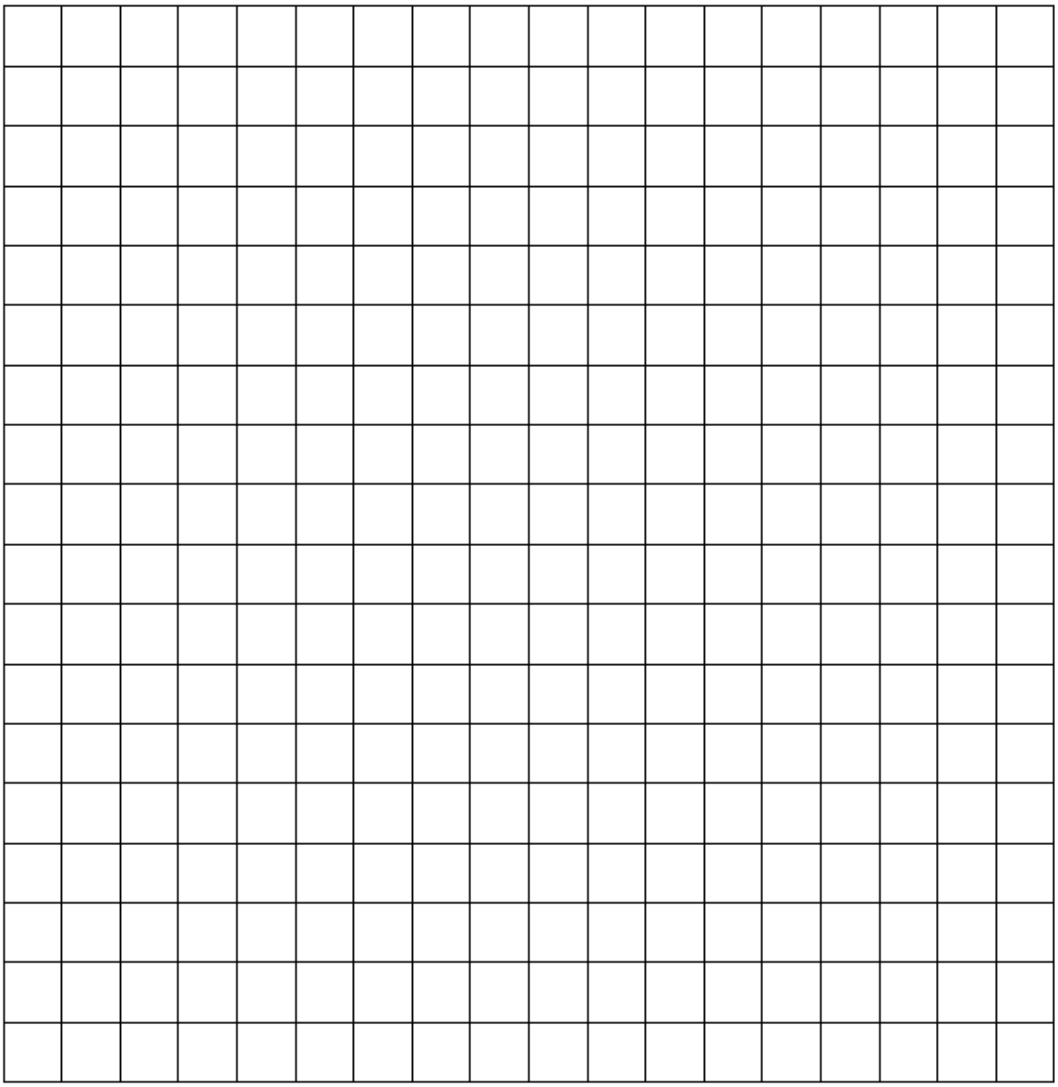
Maximum area = _____ width= _____

d. What is the length of her pen? _____

e. If the width of her pen is 50 feet, what is the area? _____

f. If she wants the area to be 1400 sq. feet, what widths can she use?

Why are there two answers?



i. What is the domain of your quadratic **model**? _____

j. What is the range of your quadratic **model**? _____

Homework:

Name_____ Date_____

518 Quadratic Applications #5

You own a small business that makes handcrafted music stands. A consultant analyzes your production costs and the consumer demand for your stands and states that the equation $P(x) = -0.3x^2 + 75x - 2000$ (P = your profit and x = the price you charge for the stand) can be used to study your profit for various selling prices for your stands.

[This problem was adapted from Holt, Rinehart and Winston, Algebra 2, page 312]

a. Graph this problem using an appropriate window on your calculator.

b. At what price should the stands be sold to make a maximum profit?

c. According to this model, what is the maximum profit that the company can make?

d. Why do you think that the company cannot make more and more profit as it increases the price of the stand?

e. What are the break-even points (the selling prices for which the profit is zero). The selling price is money, so give your answer to the nearest cent.

Homeworkcontinued...

f. For what values of x does the company make a profit? Write this as a betweeness inequality.

g. For what values of x does the company suffer a loss? (There are two inequalities).

i. Graph this equation on the grid. Label the x-axis and the y-axis and clearly identify the scale used if not counting by ones. Identify the vertex and x-intercepts on the grid.