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for 4 sided you can  
Just continue to use it

Name \_\_\_\_\_

Date \_\_\_\_\_

Unit 4: Quadratics

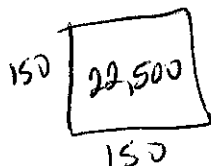
I can apply quadratics in real life. Assignment #19

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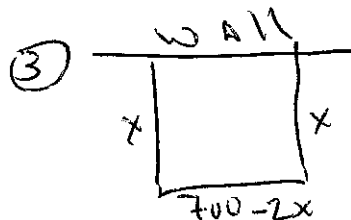
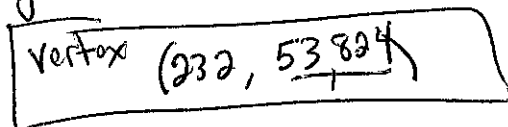
Fence problems:

- 1) You have 600 feet of material to build a four sided fence. Show how to find the maximum area. What are the dimensions?
- 2) You have 928 feet of material to build a four sided fence. Show how to find the maximum area. What are the dimensions?
- 3) You have 700 feet of material to build a three sided fence. Show how to find the maximum area.
- 4) You have 325 feet of material to build a three sided fence. Show how to find the maximum area.
- 5) High Challenge problem: You have a 1200 foot roll of fencing and a large field. You want to make two paddocks to keep your T-Rex separate from your velociraptors by splitting a rectangular enclosure in half. Velociraptors are very sensitive to unfairness, so the two pens must contain the same amount of free-range area. What are the dimensions of the largest configuration.

①  $y = -1(x-0)(x-300)$   
Roots 0 and 300  
Vertex (150, 22,500)



②  $y = -1(x)(x-464)$

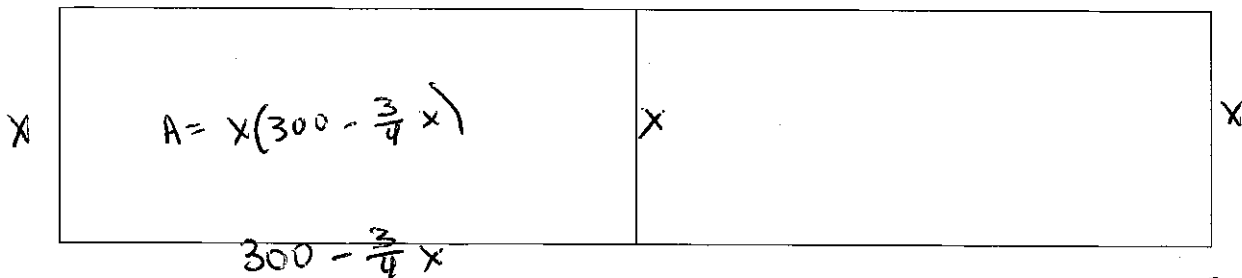


$A = x(700-2x)$   
Roots 0 and 350  
Vertex (175, 61,250)

30,000 MAX Area each

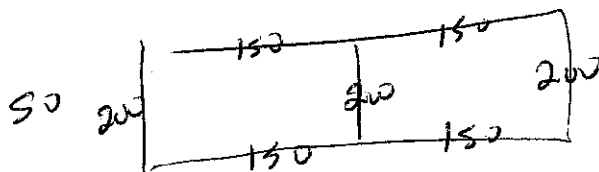
length

Width



$\frac{1200-3x}{4}$

0 and 400  
(200, 30,000)



Write the equation of the following parabolas. Final answers must be in VERTEX FORM

- 1) The parabola cuts the x axis at -10 and at 2. The point that the parabola goes through is (4, -48)

$$y = a(x+10)(x-2) \quad (4, -48)$$

$$-48 = a(4+10)(4-2)$$

$$-48 = 28a \quad a = 1.7$$

$$y = 1.7(x+10)(x-2)$$

Final Answer

$$y = 1.7(x+4)^2 - 61.2$$

- 2) The parabola touches the x axis at -5. The point that it goes through is (3, -192)

$$\frac{-10+2}{2}$$

$$(-4, -61.2)$$

$$y = a(x+5)^2 + 0 \quad (3, -192)$$

$$-192 = a(3+5)^2 + 0$$

$$-192 = 64a$$

$$a = -3$$

Final Answer:

$$y = -3(x+5)^2 + 0$$

- 3) The parabola cuts the x axis at 6. The axis of symmetry is given by  $x=8$ . It passes through a point of (3, 63)

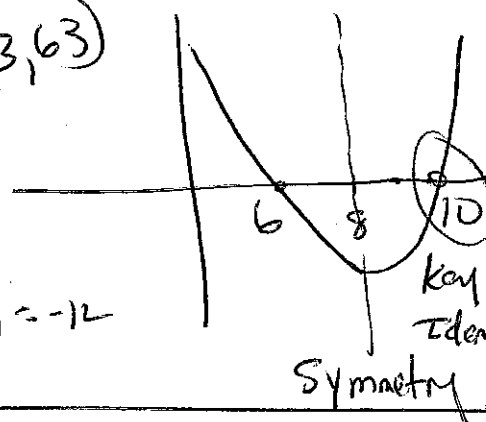
$$y = a(x-6)(x-10) \quad (3, 63)$$

$$63 = a(3-6)(3-10)$$

$$63 = 21a$$

$$a = 3$$

$$\text{vars}(8) = -12$$



Final Answer:

$$y = 3(x-8)^2 - 12$$

- 4) The parabola has a y intercept of 48. It has a root at 3 and it passes through a point of (4, -8). This parabola is in the form  $y = ax^2 + bx + c$ . You need to set up your system of equations to write this equation.

$$(3, 0) \text{ And } (4, -8)$$

substitute points into  $y = ax^2 + bx + c$

$$0 = 9a + 3b + 48$$

↳ substitute 3

$$-8 = 16a + 4b + 48$$

substitute 4

Final Answer:

$$y = 2x^2 - 22x + 48$$

$$a = 2$$

$$b = -22$$

$$c = 48$$

$$9a + 3b = -48$$

$$16a + 4b = -56$$

now do Elimination

$$(4) 9a + 3b = -48$$

$$36a + 12b = -192$$

$$(3) 16a + 4b = -56$$

$$-48a + 12b = +168$$

$$\frac{-12a = -24}{-12a = -24}$$