

FFPC Investigations 1 - 2.4

- 1.) fixed perimeter problems 2-3
- 2.) drawing and labeling rectangle to show expanded and factored from given a description
- 3.) going from factored to expanded form and reverse
- 4.) recognizing quadratic relationships from equation

- 22.** A square has sides of length x centimeters. One dimension increases by 4 centimeters and the other increases by 5 centimeters, forming a new rectangle.
- a.** Make a sketch to show the new rectangle.
 - b.** Write two equations, one in factored form and one in expanded form for the area of the new rectangle

- 43.** Darnell makes a rectangle from a square by doubling one dimension and adding 3 centimeters. He leaves the other dimension unchanged.
- a.** Write an equation for the area A of the new rectangle in terms of the side length x of the original square.

- 6. a.** A rectangle has a perimeter of 30 meters and a side length of ℓ . Express the lengths of the other sides of the rectangle in terms of ℓ .



- b.** Write an equation for the area A in terms of ℓ .

- 8.** The equation for the areas of rectangles with a certain fixed perimeter is $A = \ell(20 - \ell)$, where ℓ is the length in meters.
- ~~a. Describe the graph of this equation.~~
 - b.** What is the maximum area for a rectangle with this perimeter? What dimensions correspond to this area? Explain.
 - c.** A rectangle with this perimeter has a length of 15 meters. What is its area?
 - d.** Describe two ways you can find the perimeter. What is the perimeter?

2. What is the maximum area for a rectangle with a perimeter of 130 meters? As in Exercise 1, support your answer with sketches, a table, and a graph.

16. $-a^3 - 4a$

20. $x^2 - 64$

21. $y^2 - 144$

17. $x^2 + 15x + 50$

18. $y^2 + 30y + 216$

$$23. \quad 9x^2 - 30xy + 25y^2$$

24. $3x^2 + 11x + 10$

25. $48 - 16y + y^2$