

1.4 Rabbit Run

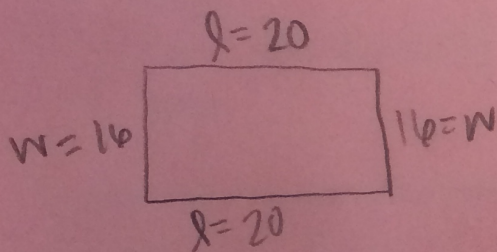
A Solidify Understanding Task

Misha has a new rabbit that she named "Wascal". She wants to build Wascal a pen so that the rabbit has space to move around safely. Misha has purchased a 72 foot roll of fencing to build a rectangular pen.

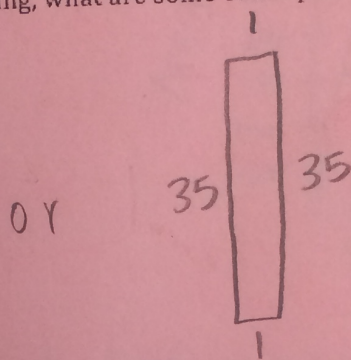


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1. If Misha uses the whole roll of fencing, what are some of the possible dimensions of the pen?



$$P = 16 + 16 + 20 + 20 = 72$$

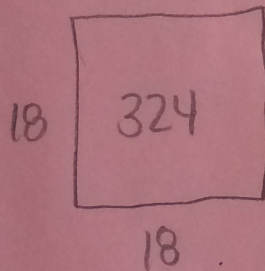


$$P = 35 + 35 + 1 + 1 = 72$$

2. If Misha wants a pen with the largest possible area, what dimensions should she use for the sides? Justify your answer.

$$72 \div 2 = 36$$

l	w	Area
1	35	35 > 33 > 2
2	34	68 > 31 > 2
3	33	99 > 29 > 2
4	32	128 > 27 > 2
5	31	155 > 25 > 2
6	30	180
...
17	19	323
18	18	324
19	17	323
...
30	6	180



A square area will always give the largest area

3. Write a model for the area of the rectangular pen in terms of the length of one side. Include both an equation and a graph.

l	w
1	35
2	34
3	33
x	36-x

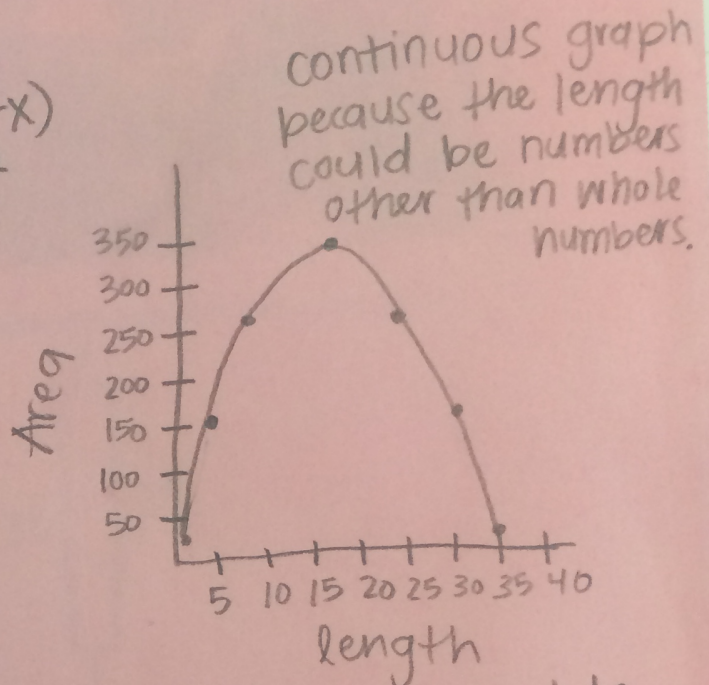
$$A = l \cdot w$$

$$A = (x)(36-x)$$

$$= 36x - x^2$$

D: $\{0 < x < 36\}$
length

R: $\{0 < y \leq 324\}$
Area



4. What kind of function is this? Why?

Quadratic, the second difference on the table is constant, the graph is an upside down parabola, and the equation has an x^2 in it.

5. How does this function compare to the second type of block I logos in I Rule?

Similarities

- Both quadratic functions
- Both have limited domain and range
- Both domains exclude $x < 0$

Differences

- The graph is upside down, in I-rule we have half the parabola
- I-Rule we have discrete data this one is continuous.
- This function has a maximum, I-rule doesn't.