U1D8_T Optimizing Perimeter and Area

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U1D8_T
Optimizin...
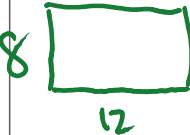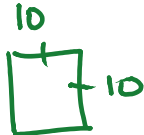
U1D8   1.4 **Optimize Perimeter and Area**

Investigate: What is the maximum rectangular area for a given perimeter?

Complete Pg 36-37 # 1 − 5, Pg. 38 # 1 − 4

Pg 37
#1

Part A: Enclose Four Sides # 1

Sketch	Length (m) $l+w=20$	Width (m)	Perimeter (m)	Area (m²) lw
19	19	1	40	19
15	15	5	40	75
12	12	8	40	96
10, 10	10	10	40	100

300ft of rope with buoys

Part B: Enclose Three Sides

Sketch	Length (ft)	Width (ft) $\dfrac{300-l}{2}$	Perimeter (ft) $2w+l$	Area (ft²) lw
10 ⌐ 10, 10	100	100	300	10000
50 ⌐ 200	200	50	300	10 000
⌐	50	125	300	6 250
⌐	150	75	300	11 250

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OPTIMIZING MEASURES:

Maximizing Area & Minimizing Perimeter Summary

	Given Perimeter, Maximizing Area	Given Area, Minimizing Perimeter
Enclosing all 4 sides (optimal is a square)	*Width = Perimeter ÷ 4* Area = Width^2	Width = $\sqrt{Area}$ Perimeter = 4×Width
Enclosing only 3 sides (rectangle with length twice the width)	*Width = Perimeter ÷ 4* Length = 2×Width Area = Length × Width	Width = $\sqrt{(Area \div 2)}$ Perimeter = 4×Width