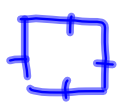


GHCI/MFM1P

Name: _____
Date: _____

Maximum/Minimum Measures of a Rectangle

1. What is the maximum area of a rectangle with perimeter 30 m?



$$P = 30\text{m}$$

$$S = \frac{30}{4}$$

$$= 7.5\text{m}$$


$$A = ?$$

$$= 7.5 \times 7.5$$

$$= 56.25\text{m}^2$$

\therefore The max. area is 56.25m^2 .

2. Determine the dimensions of a rectangle with perimeter 42 m whose area is as great as possible. What is the maximum area? Justify your answer.



$$P = 42\text{m}$$

$$= \frac{42}{4}$$

$$= 10.5$$

Max. area = square

$$A = ? \therefore \text{the max area is}$$

$$= 10.5^2$$

$$= 110.25\text{m}^2$$

3. In a banquet room, there are small square tables that seat 1 person on each side. These tables are pushed together to create a rectangular table that seats 20 people.



(a) Sketch all possible arrangements of square tables to seat 20 people.

(b) Which arrangement requires the most tables? The fewest tables?

(c) Explain why the arrangement with the fewest tables might not be preferred in this situation.

GHCI/MFMLP

Name: _____
Date: _____

Rectangle
Max/Min

4. What is the minimum perimeter for a rectangle with area 40 m²?



$A = 40$

$S = \sqrt{40}$

$= 6.325 \text{ m}$

\therefore The minimum perimeter is 25.3 m.

$P = ?$

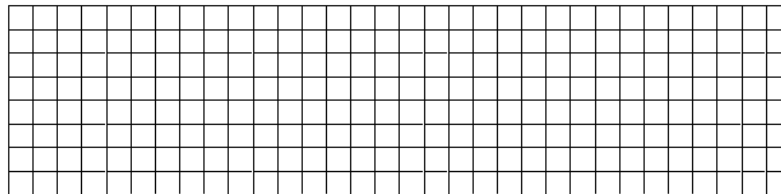
$P = 6.325 \times 4$

$= 25.3 \text{ m}$

5. Determine the dimensions of a rectangle with area 1000 m² whose perimeter is the least possible. What is the minimum perimeter? Justify your answer.

6. In a banquet room, there are small square tables that seat 1 person on each side. The tables are pushed together to create larger rectangular tables.

(a) Sketch all possible arrangements of 12 square tables.



(b) Which arrangement seats the most people? The fewest people? Explain.

(c) Explain why the minimum perimeter might not be preferred in this situation.

Answers: 1. 56.25 m²; 2. 10.5 m by 10.5 m, 110.25m²; 3. (a) 1 by 9, 2 by 8, 3 by 7, 4 by 6, 5 by 5, (b) most = 25, fewest = 9, (c) the person at one end of the table won't be able to speak to the person at the other end. The square is closest to a circle, which is the best shape for communicating around a table; 4. 25.3 m; 5. 31.62 m by 31.62 m, 126.49 m; 6. (a) 1 by 12, 2 by 6, 3 by 4, (b) most = 26, fewest = 14, (c) Same as 3 (c)