Squares And Rectangles:

A. Definitions

1. A square is defined as having 4 sides all of which are equal and whose inside angles are all 90 degrees.

2. A rectangle is defined as having 4 sides whose inside angles are all 90 degrees.

B. Basic Memorizations

Square:

Area = s^2, where 's' is a side

Area = $d^2/2$, where 'd' is the diagonal

Perimeter = 4s

Diagonal = $\sqrt{2} \cdot s$

Rectangle:

Area = $l \cdot w$, where 'l' is the length and 'w' is the width

Area = $d^2/2$, where 'd' is the diagonal

Perimeter = $2l + 2w$

Diagonal = $\sqrt{l^2 + w^2}$

C. Examples

Ex [1] The perimeter of a square is equally numerical to its area. Each side is _____ units?

a. The only way this is true is if $4s = s^2$. The only way this is possible is for s = 0 or s = 4. Since a square cannot have a side of 0, the answer is 4.

Ex [2] If the perimeter of a rectangle is 28 units, and one side is 6 units, then the diagonal measures _____ units.

a. We know that the perimeter of a rectangle is 2l+2w. If one side is 6, then this forces the other side to be equal to: 2(6)+2w=28. Solving for w, we get w=8.

b. With two sides of 6 and 8, the diagonal is equal to $\sqrt{6^2+8^2}$ which is 10. You can see this quickly if you know your *Pythagorean Triples*.

c. The answer is 10.