



Level 2

Math Olympics

A1. Let a and b be the two numbers. Then,

$$a - b = 9 \text{ and } ab = 16$$

$$\text{Now, } (a - b)^2 = (a - b)(a - b) = a^2 - 2ab + b^2$$

$$\text{So, } 9^2 = a^2 - 2(16) + b^2$$

$$81 + 32 = a^2 + b^2$$

$$\text{Thus, } a^2 + b^2 = 113$$

A2. Total number of squares = $1^2 + 2^2 + 3^2 + 4^2 + \dots + 7^2 = 140$.

A3.

You divide \$105 (in whole \$ increments) into 7 bags as follows:

1, 2, 4, 8, 16, ... , 32, 42.

The first 6 bags contain a total of \$63 as per the following series:

$2^0, 2^1, 2^2, 2^3, 2^4, \dots, 2^5$

A4. x is 9, y is 15 (two series)



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