Query

Given $x + y = 10$ and $x^3 + y^3 = 370$, find the value of $x^2 + y^2$.

Instance-style methods

{"reasoning_trace": To find $x^2 + y^2$ given $x + y = 10$ and $x^3 + y^3 = 370$

1. Apply Formula: I use the relation $x^3 + y^3 = (x + y)(x^2 + y^2)$

2. Substitute : Plugging in the values gives $370 = 10*(x^2 + y^2)$

3. Solve : Dividing 370 by 10 isolates the target term.

The calculated result is 37. "final_answer": "37"} ✗

Think beyond Instances (Ours)

	Abstraction Logical Expression	Computational Grounding
1.	Apply the sum of cubes identity substituting the known sum value.	$x^3 + y^3 = (x + y)*(10^2 - 3xy)$
2.	The product term can be obtained by dividing the sum of cubes by the sum.	$(x^3 + y^3)/(x + y) = 100 - 3xy$
3.	Compute the sum of squares using the square of sum and the product.	$x^2 + y^2 = (x + y)^2 - 2xy = 58$

Answer: 58 ✓