

Competitive Programming

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1 Number Theory

1.1 Elementary Tricks

1.1.1 Chicken McNugget Theorem

The highest solution that satisfies the equation

$$ax + by = c : \{a, b, c \in \mathbb{Z}\}$$

where a and b are coprime is equivalent to $ab - a - b$

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Example (Art of Problem Solving)

Joe is at McDonalds, which sells McNuggets in packs of 9 and 11. What is the highest number of McNuggets he cannot buy?

10ptText Testing 1 vs 1

By Chicken McNugget theorem, since $\gcd(9, 11) = 1$, then the answer is $9 \cdot 11 - 9 - 11 = 79$ McNuggets.