$6+i$ —square it→ $(6+i)^2 = (6+i)(6+i)$

↓ N it

$= 36 + 6i + 6i + i^2$ ($i^2 = -1$)

$= \underline{35} + \underline{12}\,i$

$N(6+i) = (6+i)(6-i)$

$= 36 + 6i - 6i - i^2$

$= \underline{37}$

$35^2 + 12^2 = 37^2$ Heron's

$m+ni$ —sq it→ $\underline{(m^2-n^2)} + \underline{2mn}\,i$

↓ N it

$N(m+ni) = \underline{m^2+n^2}$ so is $(m^2-n^2)^2 + (2mn)^2 = (m^2+n^2)^2$?

Week 1: What questions are rolling in our heads?

- Why can't 103 be written as $N(x+yi)$? (x, y integers)
- What type of numbers give primitive Pythagorean triples?
- Why does the hypotenuse have to be written as x^2+y^2?
- Which N values can be produced by multiple positive pairs of x, y?
- Is there a method that produces all Pythagorean triples?
- "Dude where's my isometric paper?" (60° triangles w/ integer sides)
- "Dudette, where's my $\sqrt{2}$?"
- "Whoa! N-values & geometry?"
- What's the plural of "hypotenuse"?