Investigating Gaussian Integers

Problem 153

As we all know the equation x^2=-1 has no solutions for real x.
If we however introduce the imaginary number i this equation has two solutions: x=i and x=-i.
If we go a step further the equation $(x-3)^2$=-4 has two complex solutions: x=3+2i and x=3-2i.
x=3+2i and x=3-2i are called each others' complex conjugate.
Numbers of the form a+bi are called complex numbers.
In general a+bi and a−bi are each other's complex conjugate.

A Gaussian Integer is a complex number a+bi such that both a and b are integers.
The regular integers are also Gaussian integers (with b=0).
To distinguish them from Gaussian integers with $b \neq 0$ we call such integers "rational integers."
A Gaussian integer is called a divisor of a rational integer n if the result is also a Gaussian integer.
If for example we divide 5 by 1+2i we can simplify $\frac{5}{1+2i}$ in the following manner:
Multiply numerator and denominator by the complex conjugate of 1+2i: 1−2i.
The result is $\frac{5}{1+2i} = \frac{5}{1+2i}\frac{1-2i}{1-2i} = \frac{5(1-2i)}{1-(2i)^2} = \frac{5(1-2i)}{1-(-4)} = \frac{5(1-2i)}{5} = 1-2i$.
So 1+2i is a divisor of 5.
Note that 1+i is not a divisor of 5 because $\frac{5}{1+i} = \frac{5}{2} - \frac{5}{2}i$.
Note also that if the Gaussian Integer (a+bi) is a divisor of a rational integer n, then its complex conjugate (a−bi) is also a divisor of n.

In fact, 5 has six divisors such that the real part is positive: {1, 1 + 2i, 1 − 2i, 2 + i, 2 − i, 5}.
The following is a table of all of the divisors for the first five positive rational integers:

n	Gaussian integer divisors with positive real part	Sum s(n) of these divisors
1	1	1
2	1, 1+i, 1-i, 2	5
3	1, 3	4
4	1, 1+i, 1-i, 2, 2+2i, 2-2i,4	13
5	1, 1+2i, 1-2i, 2+i, 2-i, 5	12

For divisors with positive real parts, then, we have: $\sum_{n=1}^{5} s(n) = 35$.

For $\sum_{n=1}^{10^5} s(n) = 17924657155$.

What is $\sum_{n=1}^{10^8} s(n)$?