$$\sqrt{\frac{N^2\left(\left(N^4 q^2 + 2 N^2 q^5\right) + q^8\right)}{N^4 q^2}}$$

$$N = \sqrt{\frac{N^2\left(\left(N^4 q^2 + 2 N^2 q^5\right) + q^8\right)}{N^4 q^2}}$$

N = N_guess

q is the smallest Prime factor

Plug in guess q to get an N_guess that equals the given N.

test N = 85, q = 5.

In[9]:=
$$N = 85$$
$$q = 5$$
$$\sqrt{\frac{N^2\left(\left(N^4 q^2 + 2 N^2 q^5\right) + q^8\right)}{N^4 q^2}}$$

Set::wrsym : Symbol N is Protected. >>

Out[9]= 85

Out[10]= 5

Out[11]= $$\frac{1}{5}\sqrt{\frac{390\,625 + 6250\,N^2 + 25\,N^4}{N^2}}$$

In[13]:= `Simplify[` $\sqrt{\frac{N^2\left(\left(N^4 q^2 + 2 N^2 q^5\right) + q^8\right)}{N^4 q^2}}$ `]`

$$\sqrt{\frac{\left(125 + N^2\right)^2}{N^2}}$$

85 = approximate $\sqrt{\frac{\left(125+N^2\right)^2}{N^2}}$