1106-11-1763 **Eva G. Goedhart*** (egoedhart@brynmawr.edu) and **Helen G. Grundman** (grundman@brynmawr.edu). *Diophantine Equations of the Form* $X^{2N} + 2^{2\alpha}5^{2\beta}p^{2\gamma} = Z^5$.

After a brief introduction to the modular approach of solving Diophantine equations and some key results derived by Bennett and Skinner using this method, I will discuss our recent proof that no equation of the form $X^{2N}+2^{2\alpha}5^{2\beta}p^{2\gamma} = Z^5$, with p an odd prime and $\alpha > 0$, has integral solutions with $N > 1$ and $\gcd(X, Z) = 1$. (Received September 15, 2014)