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I enjoyed the papers in your March 2004 issue of Mathematics Teaching including Ray Huntley's paper: "Exploring a Mental Squaring Method". However, I think one of the 'simplest' reasons why the method he described which he calls Arthur T. Benjamin works is the difference of two squares.

That is:

$$a^2 - b^2 = (a - b)(a + b)$$

So that:

$$a^2 = (a - b)(a + b) + b^2$$

Then using Huntley's presentation of the method to square a, I only need to choose b so that the product $(a - b)(a + b)$ can be done mentally without much difficulty.

Preferably for either $(a - b)$ or $(a + b)$ to become a multiple of 10. This approach gives the method more flexibility in its use as will be shown by applying this approach to one of Huntley's examples, finding the square of 57.

$$\begin{aligned} 57^2 &= (57 - 2)(57 + 2) + 2^2 \\ &= (57 - 3)(57 + 3) + 3^2 \\ &= (57 - 7)(57 + 7) + 7^2 \end{aligned}$$

The second line gives:

$$54 \times 60 + 9 = 3\,249$$

The third line, Huntley's:

$$50 \times 64 + 49 = 3\,249$$

I hope my letter contributes to a very interesting method.