Multiplying Fractions In The Form: a x $\frac{a}{b}$

A. From algebra we learn:

$$\text{a x } \frac{a}{b} = a - (b - a) + \frac{(b-a)^2}{b}$$

*Note: Since you are squaring (b – a) it does not matter if you use $(b - a)^2$ or $(a - b)^2$

B. Use the following steps:

1. The denominator is always b.
2. Subtract the values b and a and square it. This is the numerator.
3. If the resulting fraction is proper, write it down, otherwise "fix" it and carry.
4. If $^{a}/_{b}$ is proper: subtract the difference of b and a from a to get the whole number.
5. If $^{a}/_{b}$ is improper: add the difference of b and a to a to get the whole number.

Ex [1] 13 x $\frac{13}{15}$ = _____ (mixed number).

a) $(15 - 13)^2 = 4$. This is the numerator.
b) Since $^{4}/_{15}$ is a proper fraction we write it down.
c) Since the fraction $^{13}/_{15}$ is proper, we subtract the difference, 2, from 13, which equals 11. This is the whole number.
d) The answer is 11 $^{4}/_{15}$.

Ex [2] 8 x $\frac{8}{5}$ = _____ (mixed number).

a) $(8 - 5)^2 = 9$.
b) Since $^{9}/_{5}$ is an improper fraction, rewrite it as 1 $^{4}/_{5}$. Write $^{4}/_{5}$ and carry the 1.
c) Since $^{8}/_{5}$ is improper, add the difference, 3, to 8, which equals 11. Adding the carried number the whole number becomes 12.
d) The answer is 12 $^{4}/_{5}$.