

Adding Fractions In The Form: $\frac{a}{b} + \frac{b}{a}$

A. This method is very easy since from algebra we know:

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

*Note: Since we are squaring (b-a), it does not matter if we use (b-a)² or (a-b)²

B. Use the following steps:

1. Find the difference between the two numbers, b and a.
2. Square the result of step 1. This is the numerator.
3. Multiply the two numbers, b and a. This is the denominator.

C. If the fraction is proper, write down 2. This is the whole number. If the fraction is improper, "fix" it to be a mixed number and add it to 2 for the answer (see Ex [2] below).

Ex [1] $\frac{3}{5} + \frac{5}{3} =$ _____ (mixed number)

- a) $(5 - 3)^2 = 4$. This is the numerator.
- b) $5 \times 3 = 15$. This is the denominator.
- c) Since $\frac{4}{15}$ is a proper fraction, write 2 for the whole number.
- d) The answer is $2 \frac{4}{15}$.

Ex [2] $\frac{2}{7} + \frac{7}{2} =$ _____ (mixed number)

- a) $(7 - 2)^2 = 25$. This is the numerator.
- b) $7 \times 2 = 14$. This is the denominator.
- c) Since $\frac{25}{14}$ is an improper fraction, we need to "fix" it to be $1 \frac{11}{14}$.
- d) Now we add this to 2 to get $3 \frac{11}{14}$.
- e) The answer is $3 \frac{11}{14}$.