

Adding 3 Fractions In The Form: $\frac{a}{b} + \frac{b}{c} + \frac{c}{d}$:

- A. When adding 3 fractions in this form such that each letter is one number greater than the previous, use the following formula:

$$2 + \frac{a^2d - (d + 2)}{bcd}$$

- B. Note: This is usually true!! When $a = 1$, you get: $\frac{1}{2} + \frac{2}{3} + \frac{3}{4}$. When you use this formula, the answer is $2^{-1}/_{12}$ which is not a real answer. When $a = 1$, the answer is $1^{11}/_{12}$. The above formula is true for $a > 1$.
- C. Basically the formula says the whole number is always 2. The numerator is $a^2d - (d+2)$ and the denominator is the product of the denominators.
- D. Examples:

Ex [1] $\frac{4}{5} + \frac{5}{6} + \frac{6}{7} = \underline{\hspace{2cm}}$ (mixed number)

- The whole number is 2.
- The numerator is $4^2 \times 7 - 9 = 16 \times 7 - 9 = 112 - 9 = 103$.
- The denominator is $5 \times 6 \times 7 = 30 \times 7 = 210$.
- The answer is $2^{103}/_{210}$.

Ex [2] $\frac{10}{11} + \frac{11}{12} + \frac{12}{13} = \underline{\hspace{2cm}}$ (mixed number)

- The whole number is 2.
- The numerator is $10^2 \times 13 - 15 = 1300 - 15 = 1285$.
- The denominator is $11 \times 12 \times 13 = 11 \times 156 = 1716$.
- The answer is $2^{1285}/_{1716}$.