$$Sum = \frac{3\lfloor\frac{999}{3}\rfloor(\lfloor\frac{999}{3}\rfloor+1)}{2} + \frac{5\lfloor\frac{999}{5}\rfloor(\lfloor\frac{999}{5}\rfloor+1)}{2} - \frac{15\lfloor\frac{999}{15}\rfloor(\lfloor\frac{999}{15}\rfloor+1)}{2} \tag{1}$$

$$sum = \frac{\frac{999}{3}(2*3+(\frac{999}{3}-1)*3)}{2} + \frac{\frac{999}{5}(2*5+(\frac{999}{5}-1)5)}{2} + \frac{\frac{999}{15}(2*15+(\frac{999}{15}-1)*15)}{2}; \tag{2}$$

$$\sum_{i=1}^{n} i = 1+2+...+n \tag{3}$$

$$= \frac{n(n+1)}{2} \tag{4}$$

arithmetic Sequence

$$bottom = a, top = a+(n-1)q$$

$$\sum_{i=0}^{n-1} a+iq = a+(a+q)+(a+2q)+...+(a+(n-1)q) \tag{5}$$

$$= n\,a+(1+2+...+(n-1))q \tag{6}$$

$$= n\,a+\frac{(n-1)nq}{2} \tag{7}$$

$$= n\,(a+\frac{(n-1)q}{2}) \tag{8}$$

$$= n\,(\frac{a+a+(n-1)q}{2}) \tag{9}$$

$$= n\,(\frac{bottom+top}{2}) \tag{10}$$

arithmetic Sequence for a=q

$$bottom = q, top = nq, n = \frac{top}{bottom}$$

$$\sum_{i=1}^{n} iq = q+(2q)+(3q)+...+(nq) \tag{11}$$

$$= (1+2+...+n))q \tag{12}$$

$$= \frac{n(n+1)q}{2} \tag{13}$$

$$= \frac{n(q+nq)}{2} \tag{14}$$

$$= \frac{top}{bottom}\frac{bottom+top}{2} \tag{15}$$