

# 北一女中 102 學年度《數戰數決》有獎徵答活動

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題號： 5-2 頁碼/總頁數： 2/6 (如果只有一頁，可不填)

$$S = \frac{1}{1 \times 2} + \frac{1}{3 \times 4} + \frac{1}{5 \times 6} + \dots + \frac{1}{2013 \times 2014}$$

$$= \frac{1}{1} - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} + \dots + \frac{1}{2013} - \frac{1}{2014} = \left( \frac{1}{1} + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{2014} \right) - 2 \times \frac{1}{2} \left( \frac{1}{1} + \frac{1}{2} + \dots + \frac{1}{2014} \right)$$

$$T = \frac{1}{1008 \times 2014} + \frac{1}{1009 \times 2013} + \dots + \frac{1}{2014 \times 1008}$$

$$= \frac{1}{1008} + \frac{1}{1009} + \dots + \frac{1}{2014}$$

$$= \frac{1}{3022} \left( \frac{1}{1008} + \frac{1}{2014} \right) + \frac{1}{3022} \left( \frac{1}{1009} + \frac{1}{2014} \right) + \dots + \frac{1}{3022} \left( \frac{1}{2014} + \frac{1}{1008} \right)$$

$$= \frac{2}{3022} \left( \frac{1}{1008} + \frac{1}{1009} + \dots + \frac{1}{2014} \right)$$

$$\frac{S}{T} = \frac{\left( \frac{1}{1008} + \frac{1}{1009} + \dots + \frac{1}{2014} \right)}{\frac{2}{3022} \left( \frac{1}{1008} + \frac{1}{1009} + \dots + \frac{1}{2014} \right)} = \frac{3022}{2} = 1511$$