

# 北一女中 107 學年度《數戰數決》有獎徵答活動

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題號：3-2

頁碼/總頁數：\_\_\_\_\_ (如果一題只有一頁，可不填)

(請不要將兩題的解答寫在同一張答案紙，一題的解答也不要寫在同一張答案紙的正反面。)

$$yz + \frac{1}{x} = zx + \frac{2}{y} = xy + \frac{7}{z} = \frac{1}{x+y+z}$$

$$x(yz + \frac{1}{x}) = \frac{x}{x+y+z} \quad \dots\dots ①$$

$$y(zx + \frac{2}{y}) = \frac{y}{x+y+z} \quad \dots\dots ②$$

$$z(xy + \frac{7}{z}) = \frac{z}{x+y+z} \quad \dots\dots ③$$

①+②+③:

$$3xyz + 1 + 2 + 7 = \frac{x+y+z}{x+y+z}$$

$$3xyz = -9$$

$$xyz = -3 \quad \dots\dots ④ \text{ 代回原式}$$

$$\frac{-3}{x} + \frac{1}{x} = \frac{-3}{y} + \frac{2}{y} = \frac{-3}{z} + \frac{7}{z} = \frac{1}{x+y+z}$$

$$\frac{-2}{x} = \frac{-1}{y} \quad x = 2y \quad \dots\dots ⑤$$

$$\frac{-3}{y} = \frac{4}{z} \quad z = -4y \quad \dots\dots ⑥$$

將⑤·⑥代入④

$$2y \cdot y \cdot (-4y) = -3$$

$$-8y^3 = -3$$

$$y^3 = \frac{3}{8} \quad y = \frac{\sqrt[3]{3}}{2}$$

$$x = \sqrt[3]{3}$$

$$z = -2\sqrt[3]{3}$$