

答案

一、基礎題：

1. B 2. C 3. C 4. A 5. B 6. B 7. D 8. A
9. D 10. C 11. A 12. A 13. B 14. C 15. A 16. D
17. D 18. B 19. B 20. C

二、精熟題：

21. C 22. A 23. B

三、非選擇題：

1. (1) 48 公尺 (2) 16 根 2. 7 月 10 日 12:00

詳解

一、基礎題：

- (B) $0 \div 0$ 無意義
- $2^1 + 3^1 = 5$, $2^2 + 3^2 = 13$, $2^3 + 3^3 = 35$, $2^4 + 3^4 = 97$
 \Rightarrow 其中 35 為合數 $\therefore n = 3$
- $$\begin{array}{r} 3 \overline{) 5103} \\ \underline{3 \ 1701} \\ 3 \overline{) 567} \\ \underline{3 \ 189} \\ 3 \overline{) 63} \\ \underline{3 \ 21} \\ 7 \end{array}$$
 $\therefore 63, 189, 567$ 都是公因數
 故 $441 = 3^2 \times 7^2$, 不是公因數
- (A)
$$\begin{aligned} \frac{4}{45} - \frac{2}{55} - \frac{3}{35} &= \frac{4}{45} + \left(-\frac{2}{55}\right) + \left(-\frac{3}{35}\right) \\ &= \left(-\frac{3}{35}\right) + \frac{4}{45} + \left(-\frac{2}{55}\right) = \left(-\frac{3}{35} + \frac{4}{45}\right) - \frac{2}{55} \\ &= \left(\frac{3}{35} - \frac{4}{45}\right) - \frac{2}{55} \end{aligned}$$
- $91 = 7 \times 13$
 (B) $9 = 3 \times 3$ $\therefore 9$ 與 91 互質
- 原式 $= |-13 + 7| \div \left(-\frac{2}{3}\right) = 6 \times \left(-\frac{3}{2}\right) = -9$
- $100 - 10 = 90$
 $90 = 1 \times 90 = 2 \times 45 = 3 \times 30 = 5 \times 18 = 6 \times 15 = 9 \times 10$
- $7 + 4 = 9 + \square$, $\square = 2$
 $3 + \triangle + 7 + 2 = 12 + \triangle \Rightarrow \triangle = 18 - 12 = 6$
 故 $\square + \triangle = 2 + 6 = 8$
- $(a, b) = 2^2 \times 3 = 12$
 $[a, b] = 2^3 \times 3^2 \times 5^3 \times 7 = 63000$
 所求 $= 12 + 63000 = 63012$
- 原式 $= \frac{7}{26} \times (3 - 17 - 25) = \frac{7}{26} \times (-39) = -\frac{21}{2}$
 $\therefore m = 2, n = 21$, 故 $m + n = 2 + 21 = 23$
- $\therefore (18, 12) = 2 \times 3 = 6 \therefore a = 6$
 $b = 18 \div 6 = 3, c = 12 \div 6 = 2$
 故 $a + b + c = 6 + 3 + 2 = 11$

$$\begin{array}{r} 2 \overline{) 18 \ 12} \\ \underline{3 \ 9 \ 6} \\ 3 \ 2 \end{array}$$
- $-\frac{9}{10} = -\frac{54}{60}, -\frac{13}{15} = -\frac{52}{60} \therefore a = -53$
- $-\frac{18}{24} = \frac{-9}{12} = \frac{6}{-8} = \frac{3}{-4} = \frac{-12}{16}$
 \Rightarrow 甲 = 24, 乙 = -9, 丙 = -8, 丁 = 3
 \therefore 甲 + 乙 + 丙 - 丁 = $24 + (-9) + (-8) - 3 = 4$
- $(420, 308, 280) = 28$
 $\therefore a$ 為 28 的因數 $\Rightarrow a = 1, 2, 4, 7, 14, 28$
 又 a 為二位數 $\therefore a$ 的最小值為 14

- $\therefore [4, 5, 9] = 180$
 \therefore 這個五位數是 180 的倍數
 $\Rightarrow a = 2, b = 0$, 故 $a + b = 2 + 0 = 2$

$$\begin{array}{r} 219 \\ 180 \overline{) 394ab} \\ \underline{360} \\ 34a \\ \underline{180} \\ 16ab \\ \underline{1620} \\ 0 \end{array}$$
 - $2450 - 14 = 2436, 2436 = 2^2 \times 3 \times 7 \times 29$
 又除數必須大於餘數 14
 \therefore 此質數為 29, 其個位數字為 9
 - 原式 $= \frac{211}{107} - \frac{1}{108} + \frac{980}{109} + \frac{3}{107} - \frac{981}{109}$
 $= \frac{214}{107} - \frac{1}{108} - \frac{1}{109} = 2 - \frac{1}{108} - \frac{1}{109}$
 $= \left(1 - \frac{1}{108}\right) + \left(1 - \frac{1}{109}\right) = \frac{107}{108} + \frac{108}{109}$
 - $1 \times 2 \times 3 \times \cdots \times 8 \times 9 \times 10$
 $= 2 \times 3 \times 2^2 \times 5 \times (2 \times 3) \times 7 \times 2^3 \times 3^2 \times (2 \times 5)$
 $= 2^8 \times 3^4 \times 5^2 \times 7$
 又 $15^9 = (3 \times 5)^9 = 3^9 \times 5^9$
 $\therefore m = 3^{9-4} \times 5^{9-2} = 3^5 \times 5^7 \Rightarrow a = 5, b = 7$
 故 $a + b = 5 + 7 = 12$
 - $a = 2, b = 46$
 $a \times b = 2 \times 46 = 2 \times 2 \times 23 \Rightarrow c = 2$
 $\therefore a + b + c = 2 + 46 + 2 = 50$
 - $a \times 96 = 24 \times 288 \Rightarrow a = 72$
- #### 二、精熟題：
- $\therefore |a| = \frac{2}{3} \Rightarrow a = \frac{2}{3}$ 或 $-\frac{2}{3}$
 $|b| = \frac{3}{4} \Rightarrow b = \frac{3}{4}$ 或 $-\frac{3}{4}$
 又 $|a \times b| = -a \times b$, 即 $a \times b < 0$
 $\therefore a = \frac{2}{3}$ 時, $b = -\frac{3}{4}$ 或 $a = -\frac{2}{3}$ 時, $b = \frac{3}{4}$
 且 $|a + b| = a + b$, 即 $a + b > 0$
 $\therefore a = -\frac{2}{3}, b = \frac{3}{4}$
 故 $a + b = -\frac{2}{3} + \frac{3}{4} = \frac{1}{12}$
 - $h(e + f) = c + d, h \times 21 = 63$
 $\therefore h = 3, g = 2 \times 3 = 6 \Rightarrow a + b = 3 \times 63 = 189$
 $\therefore a + b - g = 189 - 6 = 183$
 - $\therefore 60$ 為偶數
 $\therefore a, b, c$ 不可能皆為奇數
 $\therefore c = 2$, 故 $a + b = 60 - 2 = 58$

$$\begin{array}{r|l|l|l} a & 53 & 47 & 41 \\ \hline b & 5 & 11 & 17 \end{array}$$
- #### 三、非選擇題：
- (1) $\therefore (240, 288, 384) = 48$
 \therefore 相鄰兩木樁的最長距離為 48 公尺
 (2) $240 \div 48 = 5, 288 \div 48 = 6, 384 \div 48 = 8$
 且水池的三個頂點各設一座路燈
 \therefore 最少需要木樁 $5 + 6 + 8 - 3 = 16$ (根)
 答：(1) 48 公尺；(2) 16 根
 - $8 + 12 = 20, 8 + 14 = 22$
 $[20, 22] = 220$
 $8 + 220 = 228$
 $228 \div 24 = 9 \cdots \cdots$ 餘 12
 \therefore 7 月 10 日 12:00
 答：7 月 10 日 12:00