IGCSE 數學 0580 Paper 1

IGCSE（Core）　數學　｜　時限：60 分鐘　｜　總分：56 分　｜　共 37 題

甲部：數字（16 分）

全部作答，不得使用計算機。

1. Work out 47 + 68 − 29.

答案：47 + 68 = 115, 115 − 29 = 86

2. Work out 6.4 × 5.

答案：6 × 5 = 30, 0.4 × 5 = 2, so 32

3. Work out 3/4 + 5/8. Give your answer as a mixed number in its simplest form.

答案：6/8 + 5/8 = 11/8 = 1 3/8 (11 eighths = 1 whole and 3 eighths)

4. Write 0.35 as a fraction in its simplest form.

答案：35/100 = 7/20

5. Find 15% of 240.

答案：10% = 24, 5% = 12, so 15% = 36

6. A jacket costs $80. In a sale the price is reduced by 25%. Find the sale price.

答案：25% of $80 = $20, so $80 − $20 = $60

7. Share $84 in the ratio 3 : 4.

答案：3 + 4 = 7 parts, $84 ÷ 7 = $12, so $36 and $48

8. Work out the cube root of 216.

答案：6 × 6 × 6 = 216, so the answer is 6

9. Write 4 786 correct to the nearest 100.

答案：The tens digit is 8, so round up: 4800

10. Work out $2^3 + 3^2$.

答案：$2^3 = 8$ and $3^2 = 9$, so 8 + 9 = 17

11. Find the lowest common multiple (LCM) of 12 and 18.

答案：Multiples of 18: 18, 36 …; 36 is also a multiple of 12, so LCM = 36

12. Write 45 as a product of its prime factors. Give your answer in index form.

答案：$45 = 3 \times 3 \times 5 = 3^2 \times 5$

13. Write 3/8 as a decimal.

答案：3 ÷ 8 = 0.375

乙部：代數（15 分）

化簡及解方程，須列出步驟。

14. Simplify $5a + 3b - 2a + b$.

答案：$5a - 2a = 3a$ and $3b + b = 4b$, so $3a + 4b$

15. Expand $3(2x - 5)$.

答案：$3 \times 2x = 6x$, $3 \times (-5) = -15$, so $6x - 15$

16. Solve $4x + 7 = 31$.

答案：$4x = 31 - 7 = 24$, so $x = 6$

17. Solve $3(x - 2) = 18$.

答案：$x - 2 = 18 \div 3 = 6$, so $x = 8$

18. The first four terms of a sequence are 3, 7, 11, 15. (a) Write down the next term. (b) Find the nth term of the sequence.

答案：(a) The difference is 4, so the next term is 19. (b) nth term $= 4n - 1$

19. Work out the value of v when $t = 5$, given $v = 3t^2 - 4$.

答案：$v = 3 \times 25 - 4 = 75 - 4 = 71$

20. Make x the subject of the formula $y = 5x - 3$.

答案：$5x = y + 3$, so $x = (y + 3) \div 5$

丙部：圖形與空間（13 分）

圖形未必按比例繪畫。

21. Two angles of a triangle are 48° and 65°. Work out the third angle.

答案：$180^\circ - 48^\circ - 65^\circ = 67^\circ$

22. Two angles lie on a straight line. One of them is 132°. Work out the other angle.

答案：$180^\circ - 132^\circ = 48^\circ$

23. A rectangle measures 12 cm by 7 cm. Work out its area.

答案：$12 \times 7 = 84$ cm²

24. A triangle has base 14 cm and height 9 cm. Work out its area.

答案：$(14 \times 9) \div 2 = 63$ cm²

25. A circle has radius 6 cm. Work out its circumference. Use $\pi = 3.14$.

答案：$2 \times 3.14 \times 6 = 37.68$ cm

26. A cuboid measures 8 cm by 5 cm by 4 cm. Work out its volume.

答案：$8 \times 5 \times 4 = 160$ cm³

27. A right-angled triangle has two shorter sides of length 6 cm and 8 cm. Work out the length of the hypotenuse.

答案：$6^2 + 8^2 = 36 + 64 = 100$, and the square root of 100 is 10, so 10 cm

28. A regular pentagon is shown. (a) Work out the sum of its interior angles. (b) Work out the size of each exterior angle.

答案：(a) $(5 - 2) \times 180^\circ = 540^\circ$ (b) $360^\circ \div 5 = 72^\circ$

29. A map has a scale of 1 : 25 000. A straight road is 4 cm long on the map. Work out the real length of the road in kilometres.

答案：$4 \times 25\,000 = 100\,000$ cm = 1 000 m = 1 km

丁部：數據與概率（12 分）

概率以最簡分數作答。

30. The number of goals scored in five matches were 12, 15, 9, 18 and 6. Work out the mean.

答案：$(12 + 15 + 9 + 18 + 6) \div 5 = 60 \div 5 = 12$

31. Here are eight test scores: 3, 7, 7, 9, 11, 14. Write down (a) the mode, (b) the median, (c) the range.

答案：(a) mode = 7 (b) $(7 + 9) \div 2 = 8$ (c) $14 - 3 = 11$

32. A fair dice is rolled once. Work out the probability of getting an even number.

答案：Even numbers are 2, 4, 6, so P = 3/6 = 1/2

33. A bag contains 4 red and 6 blue counters. One counter is taken at random. Work out the probability that it is blue.

答案：6 out of 10 counters are blue, so P = 6/10 = 3/5

34. In a pie chart, one category is 25% of the total. Work out the angle of its sector.

答案：25% of $360^\circ = 90^\circ$

35. In a class of 30 students there are 18 girls. 10 girls and 5 boys walk to school; the rest travel by bus. Copy and complete the two-way table.

答案：Girls by bus = $18 - 10 = 8$; boys = $30 - 18 = 12$; boys by bus = $12 - 5 = 7$; column totals $10 + 5 = 15$ and $8 + 7 = 15$

36. The probability that it rains on a certain day is 0.35. Work out the probability that it does not rain.

答案：$1 - 0.35 = 0.65$

37. A scatter graph of height against weight for 20 students shows points rising from left to right. Describe the correlation and what it means.

答案：Positive correlation: taller students tend to weigh more