

Pack B • Fluency

Answer all questions. Show your working. Questions are grouped by challenge level.

BRONZE

Questions 1–10

1. Fill in the missing digit: $4_3 + 378 = 841$. Which digit is missing and in which place? Justify your answer.

2. Round 7819 to the nearest thousand and name the digit that decided the rounding. Justify.

3. If $741 - ?? = 448$, what is the missing number? Show how you would check your answer.

4. Without fully calculating, decide: is 47×8 closer to 350 or 400? Justify.

5. Is 5913 divisible by 3? Use short division to check. Show your working and state whether there is a remainder.

6. Is 135 divisible by 9? Use short division to find out. Show enough working to be sure.

7. Find ONE factor of 48 (other than 1 and 48) and justify that it is a factor.

8. Which is the smallest multiple of 9 that is greater than 50? Justify.

9. Is 43 a prime number? Justify with at least one trial division.

10. Without working out the exact value of 7^2 , decide: is 7^2 greater or less than 50? Justify.

11. Round 8352 to the nearest hundred.

12. Calculate $5384 + 2769$.

13. Calculate $7104 - 3857$.

14. Calculate $2484 \div 9$.

15. Work out $12 + 4 \times 7$ using the correct order of operations.

16. Find the HCF of 30 and 42.

17. Find the LCM of 4 and 10.

18. What is 5 cubed? Write n^3 .

19. Write 30 as a product of prime factors.

20. Each notebook costs £7. How much do 12 notebooks cost?

21. Work out $(8 + 6) \times 3 - 20 \div 4$.

22. Find the HCF of 20, 28 and 36.

23. Express 120 as a product of prime factors in index form.

24. Work out $\sqrt[3]{n}$.

25. Without calculating exactly, decide which is larger: 31×34 or 32×33 . Explain your reasoning.

26. Calculate $b^2 \times 5$.

27. Find a number that is both a multiple of 4 and a factor of 48.

28. Estimate 63×29 by rounding each number to 1 significant figure.

29. Apples cost 45p each. Oranges cost 60p each. Sam buys 3 apples and 4 oranges and pays with a £5 note. How much change does he receive?

30. Work out $(8^2 - 4) \div 6 + 3$.

31. Given $p = 2^3 \times 3 \times 5$ and $q = 2^2 \times 3^2 \times 7$, find the HCF and LCM of p and q .

32. Find the largest prime factor of 156.

33. In the multiplication below, each letter stands for a different digit. Find A and B.

$$\overline{4A} \times 3 = \overline{14B}$$

34. Two whole numbers have HCF = 4 and LCM = 48. Find all possible pairs of numbers.

35. Is 97 a prime number? Show your reasoning.

36. A number satisfies all of these: it is two-digit, it is prime, and the sum of its digits is 8. Find all such numbers.

37. Two whole numbers a and b satisfy $a \times b = 60$ and $a + b = 17$, with $a > b$. Find a and b .

38. Explain why the product of any two consecutive even numbers is always divisible by 8.

39. Work out $(10^2 - (3 + 2)^2) \div ((10 - 3 - 2) \times 5)$.

40. A school raises £2200 for a trip. Transport costs £640. The remaining money is split equally among 40 students. Each student pays £12 on top of their share. How much does each student have in total to spend?
