

Age-related expectations: Year Five

MATHS

Number and place value

1. read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit
2. count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000
3. interpret negative numbers in context
4. count forwards and backwards with positive and negative whole numbers, inc through zero
5. round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000
6. solve number problems and practical problems that involve all of the above
7. read Roman numerals to 1000 (M) and recognise years written in Roman numerals

✚Have a concept of numbers well beyond 1,000,000 and their relative association to distances to planets; historical data and geographical aspects

✚Use rounding as a strategy for quickly assessing what approximate answers ought to be before calculating

✚Link working across zero for positive and negative numbers to work time between BC and AD in history

Addition and subtraction

8. add whole numbers with more than 4 digits, including using formal written methods (columns)
9. subtract whole numbers with more than 4 digits, including using formal written methods (columns)
10. add and subtract numbers mentally with increasingly large numbers
11. use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
12. solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

✚Calculate number problems algebraically eg $2x - 3 = 5$

Multiplication and division

13. identify multiples and factors, including finding all factor pairs of a number
14. identify common factors of two numbers
15. know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
16. establish whether a number up to 100 is prime
17. recall prime numbers up to 19
18. multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
19. multiply and divide numbers mentally drawing upon known facts
20. divide numbers up to 4 digits by a one-digit number using the formal written method
21. interpret remainders appropriately for the context
22. multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
23. recognise and use square numbers and cube numbers, and notation for squared (2) and cubed (3)
24. solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
25. solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes, scaling by simple fractions and problems involving simple rates

✚Divide whole numbers (up to 4 digits) by 2-digit numbers, using preferred method

✚Recognise the symbol for square root ($\sqrt{\quad}$) and work out square roots for numbers up to 100

Fractions (including decimals and percentages)

26. compare and order fractions whose denominators are all multiples of the same number
27. identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
28. recognise mixed numbers and improper fractions and convert from one to the other
29. write mathematical statements > 1 as a mixed number [eg $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]
30. add and subtract fractions with the same denominator and denominators that are multiples of the same number
31. multiply proper fractions by whole numbers, supported by materials and diagrams
32. multiply mixed numbers by whole numbers, supported by materials and diagrams
33. read and write decimal numbers as fractions [eg $0.71 = \frac{71}{100}$]
34. recognise, use and count in thousandths and relate them to tenths, hundredths and decimal equivalents
35. round decimals with two decimal places to the nearest whole number and to one decimal place
36. read, write, order and compare numbers with up to three decimal places
37. solve problems involving number up to two decimal places
38. solve problems involving number up to three decimal places
39. recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal
40. solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.