Starting checks A

No calculator. These short checks help you choose a starting point; they are not a grade.

3.1 Calculate 8 × 7.

3.2 Calculate 5 - 12.

3.3 Calculate (-3) × 4.

3.4 Calculate (-5) × (-2).

3.5 Find 3^2.

3.6 Calculate 18/3 + 2.

Check the answers on book page 55. Circle one prerequisite you want to practise.

Starting checks B

No calculator. These short checks help you choose a starting point; they are not a grade.

4.1 Find 3/4 of 20.

4.2 Calculate 2.5 × 4.

4.3 Calculate 6 - (-4).

4.4 Find the missing number: 3 × ___ = 24.

4.5 Calculate 2(5 + 3).

4.6 A rectangle has sides 6 cm and 4 cm. Find its perimeter.

Check the answers on book page 55. Circle one prerequisite you want to practise.

Letters stand for numbers

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

5.1 When n = 7, find n + n + n.

5.2 A box holds b pencils. Write an expression for the pencils in five identical boxes.

5.3 Sam says a = 3 and b = 3 is impossible because the letters differ. Explain.

Worked answers: book page 55. Correct one error and explain why the method works.

Expressions, equations and formulae

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

6.1 Identify the expression and the equation: 4y - 1; 4y - 1 = 11. Solve the equation.

6.2 In 7x + 5, name the coefficient of x and the constant term.

6.3 Does 3 + 4 = 5 + 2 make a true statement? Explain.

Worked answers: book page 55. Correct one error and explain why the method works.

Writing expressions from words

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

7.1 Write an expression for seven less than three times x.

7.2 Write an expression for four times the sum of a and 2.

7.3 A taxi charges a fixed £3 plus £2 for each kilometre k. Write the cost C in pounds.

Worked answers: book page 55. Correct one error and explain why the method works.

Products, coefficients and notation

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

8.1 Simplify y + y + y + y + y.

8.2 Write 3 × a × 2 in conventional algebraic notation.

8.3 Write one quarter of t without a multiplication sign.

Worked answers: book page 56. Correct one error and explain why the method works.

Powers and repeated multiplication

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

9.1 Write a × a × a × a using a power.

9.2 Simplify 2 × x × x × 3.

9.3 A pupil writes x × x = 2x. Use x = 3 to explain the error.

Worked answers: book page 56. Correct one error and explain why the method works.

Operation order in algebra

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

10.1 When x = 5, find 3x + 2.

10.2 When x = 5, find 3(x + 2).

10.3 When x = 3, find $2x^2 - 4$.

Worked answers: book page 56. Correct one error and explain why the method works.

Collecting like terms

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

11.1 Simplify 6x + 4x.

11.2 Simplify 9a - 2a + a.

11.3 Simplify 5y + 3 + 2y + 4.

Worked answers: book page 56. Correct one error and explain why the method works.

Signs belong to terms

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

12.1 Simplify 3a - 8a + 2a.

12.2 Simplify 7x - 6 - 2x - 5.

12.3 A pupil simplifies 2y - 5y to 3y. Correct the answer and explain.

Worked answers: book page 56. Correct one error and explain why the method works.

More than one letter

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

13.1 Simplify 5a + 3b - 2a + 4b.

13.2 Simplify $4x^2 + 3x + 2x^2 - x$.

13.3 Simplify 6ab - 2ba + a.

Worked answers: book page 57. Correct one error and explain why the method works.

Multiplying algebraic terms

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

14.1 Simplify $(2x)(5x)$.

14.2 Simplify $(-3a)(4b)$.

14.3 Simplify $(2p^2)(3p^3)$.

Worked answers: book page 57. Correct one error and explain why the method works.

Dividing algebraic terms

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

15.1 Simplify $15a^2 \div 5a$, for $a \neq 0$.

15.2 Simplify $18x^3y \div 6xy$, for $x \neq 0$ and $y \neq 0$.

15.3 A pupil writes $8p \div 2p = 4p$. Correct this for $p \neq 0$.

Worked answers: book page 57. Correct one error and explain why the method works.

Expanding a single bracket

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

16.1 Expand 4(x + 3).

16.2 Expand 5(2a - 1).

16.3 Expand 2p(p + 6).

Worked answers: book page 57. Correct one error and explain why the method works.

Negative signs and brackets

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

17.1 Expand -3(a + 4).

17.2 Expand -4(2x - 3).

17.3 Simplify 7 - (y - 2).

Worked answers: book page 57. Correct one error and explain why the method works.

Expanding and collecting

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

18.1 Expand and simplify 3(x + 2) + 2x.

18.2 Expand and simplify 4(a - 1) + 2(a + 3).

18.3 Expand and simplify 5(2y + 1) - 3(y - 2).

Worked answers: book page 58. Correct one error and explain why the method works.

Factorising with a common number

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

19.1 Factorise fully 8x + 12.

19.2 Factorise fully 15a - 10.

19.3 A pupil factorises 12y + 18 as 6(2y + 18). Correct the bracket.

Worked answers: book page 58. Correct one error and explain why the method works.

Common letter factors

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

20.1 Factorise fully $10a^2 + 15a$.

20.2 Factorise fully $12xy - 8x$.

20.3 Factorise fully $7p^2 + 7p$.

Worked answers: book page 58. Correct one error and explain why the method works.

Checking factorised forms

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

21.1 Factorise 18x + 24 fully and check by expanding.

21.2 Is 3a(2a - 5) equivalent to $6a^2 - 15a$? Show the expansion.

21.3 A pupil writes 4x + 4 = 4x(x + 1). Give the correct fully factorised form.

Worked answers: book page 58. Correct one error and explain why the method works.

Equivalent expressions

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

22.1 Show algebraically that $5(x + 2) - x$ equals $4x + 10$.

22.2 Are x^2 and $2x$ equivalent? Use $x = 3$ as a counterexample.

22.3 Two expressions agree at $x = 0$: $x^2 + 2$ and $x + 2$. Do they have to be equivalent? Test $x = 2$.

Worked answers: book page 58. Correct one error and explain why the method works.

Algebraic perimeter

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

23.1 A rectangle has length $x + 5$ cm and width x cm, with $x > 0$. Write and simplify its perimeter.

23.2 A triangle has sides $2a$ cm, $(a + 3)$ cm and $(a + 1)$ cm. Write its perimeter, assuming valid side lengths.

23.3 A square has side $3y$ cm, where $y > 0$. Write its perimeter and its area.

Worked answers: book page 59. Correct one error and explain why the method works.

Manipulation error clinic

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

24.1 A pupil writes 3a + 4b = 7ab. Explain the error and give the simplified expression.

24.2 Correct -2(x - 3) = -2x - 6. Explain the sign change.

24.3 Correct $9x^2 + 6x = 3x(3x + 6)$. Explain.

Worked answers: book page 59. Correct one error and explain why the method works.

Substituting positive values

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

25.1 Find 4x + 7 when x = 3.

25.2 Find 6a - 5 when a = 8.

25.3 Find 20 - 3n when n = 4.

Worked answers: book page 59. Correct one error and explain why the method works.

Substituting negative values

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

26.1 Find 3x + 4 when x = -2.

26.2 Find 7 - 2a when a = -5.

26.3 Find -4p - 3 when p = -3.

Worked answers: book page 59. Correct one error and explain why the method works.

Substitution with powers

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

27.1 Find $x^2 + 2x$ when $x = -3$.

27.2 Find $2a^2 - 5$ when $a = -4$.

27.3 When $x = 3$, find $(2x)^2$ and $2x^2$. Explain the difference.

Worked answers: book page 59. Correct one error and explain why the method works.

Substitution with several letters

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

28.1 Find 3a + 2b when a = 4 and b = 5.

28.2 Find ab - c when a = -2, b = 6 and c = -1.

28.3 Find (p + q)/r when p = 7, q = -3 and r = 2.

Worked answers: book page 60. Correct one error and explain why the method works.

Using geometry formulae

Calculator allowed | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

29.1 Use A = lw for a rectangle with l = 7 cm and w = 4 cm.

29.2 Use P = 2l + 2w when l = 8.5 cm and w = 3 cm.

29.3 Use A = bh/2 for a triangle with b = 12 cm and h = 7 cm.

Worked answers: book page 60. Correct one error and explain why the method works.

Formulae, inputs and outputs

Calculator allowed | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

30.1 A cost follows C = 5 + 2n pounds. Find C for n = 6.

30.2 Use F = 9C/5 + 32 to convert C = 20 degrees Celsius to degrees Fahrenheit.

30.3 A machine doubles its input and then subtracts 3. Write y in terms of x and find y for x = -4.

Worked answers: book page 60. Correct one error and explain why the method works.

Rearranging simple formulae

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

31.1 Make x the subject of y = 4x - 7.

31.2 Make w the subject of P = 2l + 2w.

31.3 Make b the subject of A = bh/2, with h ≠ 0.

Worked answers: book page 60. Correct one error and explain why the method works.

Equality and inverse operations

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

32.1 Solve x + 8 = 19 and check by substitution.

32.2 Solve y - 5 = 12. State the operation used.

32.3 Why is subtracting 4 from only the left side of x + 4 = 10 invalid? Give x.

Worked answers: book page 60. Correct one error and explain why the method works.

Adding and subtracting in equations

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

33.1 Solve a + 13 = 21.

33.2 Solve b - 9 = -4.

33.3 Solve 7 = c + 12.

Worked answers: book page 61. Correct one error and explain why the method works.

Multiplication and division equations

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

34.1 Solve 6x = 42.

34.2 Solve y/5 = 8.

34.3 Solve -3a = 18.

Worked answers: book page 61. Correct one error and explain why the method works.

Two-step equations

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

35.1 Solve 4x + 7 = 31.

35.2 Solve 5a - 6 = 29.

35.3 Solve y/3 + 2 = 7.

Worked answers: book page 61. Correct one error and explain why the method works.

Negative coefficients and answers

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

36.1 Solve 5 - 2x = 17.

36.2 Solve -4a - 3 = 13.

36.3 Solve 7x + 9 = -12.

Worked answers: book page 61. Correct one error and explain why the method works.

Fractional coefficients

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

37.1 Solve (2/3)x = 10.

37.2 Solve x/4 - 3 = 2.

37.3 Solve (5/2)a = 15.

Worked answers: book page 61. Correct one error and explain why the method works.

Equations with one bracket

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

38.1 Solve 4(x + 3) = 28.

38.2 Solve 2(3a - 1) = 22.

38.3 Solve 5(y - 2) + 3 = 18.

Worked answers: book page 62. Correct one error and explain why the method works.

Unknowns on both sides

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

39.1 Solve $7x + 1 = 3x + 21$.

39.2 Solve $6a - 5 = 2a + 15$.

39.3 Solve $3y + 8 = 5y - 4$.

Worked answers: book page 62. Correct one error and explain why the method works.

Brackets on both sides

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

40.1 Solve $3(x + 2) = 2(x + 7)$.

40.2 Solve $4(a - 1) = 2(a + 5)$.

40.3 Solve $5 - 2(y - 1) = y + 1$.

Worked answers: book page 62. Correct one error and explain why the method works.

Equations with decimals

Calculator allowed | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

41.1 Solve 0.4x + 1.5 = 4.7.

41.2 Solve 1.2a - 0.6 = 5.4.

41.3 Solve 2.5y + 3 = 1.5y + 9.

Worked answers: book page 62. Correct one error and explain why the method works.

Equations with fractional sides

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

42.1 Solve (x + 5)/4 = 3.

42.2 Solve (2a - 1)/3 = 5.

42.3 Solve x/2 + x/3 = 10.

Worked answers: book page 62. Correct one error and explain why the method works.

Checking proposed solutions

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

43.1 Is x = 5 a solution of 3x - 2 = 13? Show both sides.

43.2 A pupil gives a = 3 for 4a + 5 = 21. Check it and give the correct solution.

43.3 Check the solution of 2(y + 4) = 3y + 1 after solving it.

Worked answers: book page 63. Correct one error and explain why the method works.

When there is no single solution

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

44.1 Solve 3x + 2 = 3x + 9, or explain why it has no solution.

44.2 Solve 4(a + 1) = 4a + 4, or describe its solution set.

44.3 Does 2y + 6 = 4y + 6 have no solution, every real solution, or one solution? Find it if unique.

Worked answers: book page 63. Correct one error and explain why the method works.

Forming number equations

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

45.1 Five times a number, then subtract 7, gives 28. Form and solve an equation for n.

45.2 Three consecutive integers add to 48. Let the first be n. Find all three.

45.3 Mia is 4 years older than Ben. Their ages total 30. Let Ben be b years old. Find both ages.

Worked answers: book page 63. Correct one error and explain why the method works.

Forming equations from perimeter

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

46.1 A rectangle has width x cm and length (x + 4) cm. Its perimeter is 32 cm. Find both dimensions.

46.2 An isosceles triangle has equal sides (x + 2) cm and base x cm. Its perimeter is 25 cm. Find the three sides.

46.3 A square has perimeter 4(2a + 1) cm, equal to 44 cm. Find a and its side length.

Worked answers: book page 63. Correct one error and explain why the method works.

Costs and pricing models

Calculator allowed | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

47.1 A £5 delivery fee and n books at £3 each total £26. Form and solve an equation.

47.2 Plan A costs £8 plus £2 per hour. Plan B costs £3 plus £3 per hour. At how many hours h do they cost the same?

47.3 Four identical pens and a £2 notebook cost £7.40. Find the price p of one pen in pounds.

Worked answers: book page 63. Correct one error and explain why the method works.

Interpreting solutions in context

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

48.1 Entry costs £2 plus £3 per ride. Can a whole number n of rides give an exact total of £16? Form and solve the equation.

48.2 A rectangle has width x cm and length (x + 2) cm. Its perimeter is 12 cm. Find the dimensions and check they are positive.

48.3 A bag holds 6 counters. A pupil solves 6n = 39 and says exactly 7 bags contain 39 counters. Explain and correct the claim.

Worked answers: book page 63. Correct one error and explain why the method works.

Mixed revision: expressions

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

49.1 Simplify 7a - 3b + 2a + 5b.

49.2 Expand and simplify 3(2x - 1) - 2(x + 4).

49.3 Factorise fully $16p^2 - 12p$.

Worked answers: book page 64. Correct one error and explain why the method works.

Mixed revision: values and equations

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

50.1 Evaluate $2a^2 - b$ for $a = -3$ and $b = 4$.

50.2 Solve $4(x - 2) = 2x + 10$.

50.3 Make t the subject of $v = 5t - 2$.

Worked answers: book page 64. Correct one error and explain why the method works.

Explaining and repairing errors

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

51.1 A pupil writes $4x + 3 = 19$, then $x + 3 = 19/4$. Identify the error and solve correctly.

51.2 A pupil evaluates x^2 at $x = -5$ as -25. Explain and correct.

51.3 A pupil writes $5 - (2a - 4) = 1 - 2a$. Correct it and explain.

Worked answers: book page 64. Correct one error and explain why the method works.

Choosing a method and a next step

No calculator | Learn, explain and apply

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

Your practice

52.1 A rectangle has length (2x + 1) cm and width x cm. Its perimeter is 32 cm. Find x and check the perimeter.

52.2 Show that 2(3a + 4) - 5a is equivalent to a + 8.

52.3 Solve (y - 3)/2 = 4, check your value, then name a specific skill to revisit.

Worked answers: book page 64. Correct one error and explain why the method works.

Final assessment A

No calculator | 12 marks on this page

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

53.1 Expand and simplify 3(2x - 1) - 2(x + 4). Then evaluate your simplified expression at x = -2. [4 marks]

53.2 Solve 5a + 4 = 2a + 25. Check your solution in the original equation. [4 marks]

53.3 Factorise fully $12p^2 + 18p$. Verify your answer by expansion and explain why the factorisation is complete. [4 marks]

Worked answers: book page 64. Correct one error and explain why the method works.

Final assessment B

Calculator allowed | 12 marks on this page

Same questions and question IDs as the revision book. Show your method; use extra paper when helpful.

54.1 A £4 booking fee plus £2.50 for each ticket gives a total of £24. Form and solve an equation for the number n of tickets, then check. [4 marks]

54.2 A rectangle has width x cm, length (x + 3.5) cm and perimeter 29 cm. Form an equation, find both dimensions and check. [4 marks]

54.3 Use C = 6 + 1.5h. (a) Find C when h = 4. (b) Make h the subject. (c) Find h when C = 15. [4 marks]

Worked answers: book page 64. Correct one error and explain why the method works.