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11+ PRACTICE PACK

Exam Ninja Test 3

11+ Maths Complete Practice Pack

CONTENTS

1 Amelia is thinking of a mathematical expression. When she substitutes $a = 5$ and $b = 2$ into her expression, the result is 40.

Which of the following could be Amelia's expression?

A 4ab **B** 8a + 4b **C** $b^2 + 18$ **D** $a^2 - ab$

1

2 A shape on a coordinate grid is reflected in the x-axis and then translated two units to the right and five units down.

If the original shape had a point at coordinates (a, b), what are the coordinates of the corresponding point after the transformations?

A $(a + 2, -b - 5)$ **B** $(a - 2, b + 5)$ **C** $(-a + 2, b - 5)$ **D** $(a + 2, b - 5)$

1

3 A local bakery is making a large batch of cupcakes for a school fundraiser. The recipe requires 0.125 kg of flour per cupcake.

If the bakery needs to make 200 cupcakes, how many kilograms of flour will they need in total?

A 2.5 **B** 12.5 **C** 25 **D** 250

1

4 In a science experiment, a solution was created by mixing 0.75 litres of a chemical with water.

If the total volume of the solution was 7.5 litres, how many times was the chemical diluted?

A 100 **B** 1 000 **C** 10 **D** 10 000

1

5 Sarah has been saving up her pocket money for a while and has managed to accumulate £183.75.

She decides to treat herself by spending £37.99 on a new pair of trainers, £22.50 on a top, and £15.80 on a book.

After her shopping spree, how much money does Sarah have remaining?

A £107.46 **B** £68.17 **C** £91.66 **D** £145.45

1

6 Amir's local football club is trying to purchase new equipment.

Amir donates £57.80 towards the cause.

The football club manages to raise 50 times the amount Amir donated.

What is the total amount raised by Amir's football club?

A £2 890 **B** £289 **C** £5 780 **D** £28 900

1

7 A factory production line produces 24 cars per day and there are 20 production lines in the factory.

The company owns 5 of these factories across the country.

What is the maximum number of cars that could be produced by the company in a day?

A 2 400 **B** 480 **C** 120 **D** 24 000

1

8 A school has 525 students in total across three year groups.

There are 185 students in Year 7 and 165 students in Year 8.

How many students are there in Year 9?

A 175 **B** 155 **C** 195 **D** 135

1

9 Amelia is saving up to buy a new bicycle.

She puts her savings into a formula to calculate how much more she needs: $5(x + 23)$.

The result of the formula is £200.

How much money does Amelia currently have saved?

A £17 **B** £63 **C** £85 **D** £177

1

10 A chef begins preparing a meal at 9:15 am. He spends 24 minutes chopping vegetables, followed by 48 minutes cooking the main dish.

After a 12-minute break, he spends 30 minutes preparing the dessert. He then leaves to deliver the meal to a customer.

At what time does the chef leave to deliver the meal?

A 10:57 am **B** 11:09 am **C** 10:39 am **D** 11:21 am

1

Paper Notes: 11+ Maths Question Booklet (Test 3)

Compiled by SATs-Papers.co.uk to help you get the most from this paper.

Overview

This is **11+ Maths Test 3** from **Exam Ninja**, a focused practice paper designed for students aged 10 to 11 preparing for **GL Assessment** 11+ entrance examinations. The paper contains **10 multiple-choice questions** that assess a range of mathematical skills, from algebraic manipulation and coordinate geometry to practical arithmetic involving money, time, and measurement.

The questions are contextualised in real-world scenarios such as baking, shopping, fundraising, and factory production, requiring students to extract numerical information from word problems and apply the correct operations. Each question carries **1 mark** and offers four answer options, testing both conceptual understanding and computational accuracy.

This paper suits students in the final stages of Year 6 who are building confidence with 11+ question formats. It provides a compact but varied workout that mirrors the style and difficulty of GL Assessment papers, making it ideal for timed practice sessions or diagnostic assessment of key topic areas.

How this paper is organised

The paper is organised as a straightforward sequence of **10 multiple-choice questions**, each worth **1 mark**, giving a total of 10 marks. Questions are numbered clearly and presented on two pages, with ample white space for annotation. Each question includes a stem (often a word problem) followed by four answer options labelled A to D.

The layout is clean and uncluttered, with no separate sections or subsections. Questions progress through different topics rather than being grouped thematically, which mirrors the mixed-topic format commonly seen in GL 11+ papers. Students encounter algebra early (questions 1, 2, and 9), followed by decimal multiplication and division (questions 3 and 4), money calculations (questions 5 and 6), multi-step arithmetic (questions 7 and 8), and time problems (question 10).

No time limit is printed on the paper, but a typical approach would be to allow 10 to 12 minutes for completion, encouraging students to spend roughly one minute per question while leaving time to check answers.

Topics covered

- Substitution into algebraic expressions with two variables and evaluation of quadratic terms
- Composite transformations on a coordinate grid, specifically reflection in the x-axis followed by translation
- Multiplication of decimals in a real-world context (scaling a recipe quantity by a whole number)
- Division of decimals to determine dilution factors (interpreting the ratio of total volume to chemical volume)
- Multi-step subtraction with money, requiring careful alignment of decimal places and sequential operations
- Multiplication of money amounts by a two-digit whole number to calculate total fundraising
- Three-stage multiplication to find total production capacity across multiple factories and production lines
- Subtraction and addition of three-digit whole numbers to find the missing value in a set
- Solving a linear equation in the form 5x + 23 = 200 by rearranging and isolating the variable
- Time calculation involving addition of multiple intervals (minutes) and converting across hour boundaries

How to use this paper for revision

- Practise substituting values into algebraic expressions methodically, writing out each step to avoid errors with brackets and powers.
- Sketch quick diagrams for coordinate transformation questions, marking the original point, the reflected point, and the final translated position.
- When multiplying decimals by whole numbers, use column multiplication or partition the decimal into tenths and hundredths to build confidence.
- For dilution and ratio problems, ask yourself 'how many times does the smaller quantity fit into the larger?' to identify the correct operation.
- Always line up decimal points in money calculations and check that your final answer makes sense in the context (e.g. Sarah should have less money after spending).
- Break multi-step word problems into smaller parts, writing a brief calculation for each stage before combining results.
- When solving equations, isolate the variable by reversing operations in the correct order: subtract or add first, then divide or multiply.

Common mistakes to avoid

- Substituting values into algebraic expressions but forgetting to apply the order of operations, for example calculating 4ab as 4 + a + b instead of 4 × a × b.
- Confusing the direction of transformations, particularly reflection (students often forget that reflection in the x-axis changes the sign of the y-coordinate).
- Misplacing the decimal point when multiplying or dividing decimals, for example treating 0.125 × 200 as 2.5 instead of 25.
- Adding or subtracting incorrectly in multi-step money problems due to misaligned decimal points or failing to carry over pence into pounds.
- Multiplying only two of the three factors in multi-stage problems (e.g. 24 × 20 but forgetting to multiply by 5 in question 7).
- Solving equations by guessing from the answer options rather than rearranging systematically, which risks choosing a plausible but incorrect value.

Exam technique

Approach this paper by reading each question carefully and underlining or circling the key numbers and operations required. Because every question is worth the same **1 mark**, avoid spending more than a minute on any single question during your first pass.

If a question feels difficult, mark it lightly and return to it after completing the easier items.

For word problems, jot down a brief equation or calculation in the margin before selecting your answer. This reduces careless errors and makes it easier to check your work if time allows. With **multiple-choice questions**, you can sometimes eliminate obviously incorrect answers (for example, answers that are too large or too small) to improve your chances if you need to make an educated guess.

Leave two or three minutes at the end to review your answers. Double-check that you have transferred your selected option correctly and that your arithmetic makes sense in the context of the question. If you finish early, revisit any questions you marked as uncertain rather than assuming your first answer was correct.

What to revise alongside this paper

Students working through this paper should ensure they are confident with **basic algebraic manipulation**, including expanding brackets and simplifying expressions with multiple terms. Revisit the rules for **coordinate geometry**, particularly how reflections and translations affect x and y coordinates, as these skills appear frequently in 11+ papers.

Practise further **decimal arithmetic** with both multiplication and division, using both formal column methods and mental strategies for efficiency. Strengthen your understanding of **ratio and proportion**, as dilution and scaling problems require fluency in interpreting 'times as much' language. Work on **multi-step problem solving** more broadly, identifying when to add, subtract, multiply, or divide at each stage.

For students finding this paper straightforward, progress to more complex algebraic problems involving inequalities, simultaneous equations, or algebraic fractions. Explore **composite transformations** involving rotation and enlargement, and tackle longer multi-stage word problems that integrate several operations or require interpretation of data from tables and graphs.

Key terms

> **Algebraic expression**, **Substitution**, **Coordinate transformation**, **Reflection in the x-axis**, **Translation**, **Decimal multiplication**, **Dilution factor**, **Money calculations**, **Multi-step arithmetic**, **Linear equation**, **Rearranging equations**, **Time intervals**, **Order of operations**, **Real-world contexts**

For more free 11+ practice papers, past papers and online practice tests, visit **SATs-Papers.co.uk**.

11+ Practice Test Answers

11+ Maths Test 3

Question	Answer	Explanation	Marks
1	4ab	To determine which expression could be Amelia's, we need to substitute the given values for *a* and *b* into each option and check which one results in 40. Option 1: 4*ab* 4 × 5 × 2 = 40 This option works, so it could be Amelia's expression. Option 2: 8*a* + 4*b* 8 × 5 + 4 × 2 = 40 + 8 = 48 This option does not result in 40, so it cannot be Amelia's expression. Option 3: *b*^2 + 18 2^2 + 18 = 4 + 18 = 22 This option does not result in 40, so it cannot be Amelia's expression. Option 4: *a*^2 - *ab* 5^2 - 5 × 2 = 25 - 10 = 15 This option does not result in 40, so it cannot be Amelia's expression. Therefore, the only expression that could be Amelia's is Option 1: 4*ab*.	1
2	(*a* + 2, −*b* − 5)	To find the coordinates of the point after the transformations, we need to apply the transformations in the correct order. First, the shape is reflected in the *x*-axis. This changes the *y*-coordinate from *b* to −*b*, while the *x*-coordinate remains the same. After reflection, the point has coordinates (*a*, −*b*). Next, the shape is translated two units to the right and five units down. To translate a point, we add the translation vector to its coordinates. The translation vector is (2, −5), so we add 2 to the *x*-coordinate and −5 to the *y*-coordinate: (*a*, −*b*) + (2, −5) = (*a* + 2, −*b* − 5) Therefore, the coordinates of the corresponding point after the transformations are (*a* + 2, −*b* − 5).	1
3	25	To find the total amount of flour needed, we need to multiply the amount of flour per cupcake by the total number of cupcakes being made. Amount of flour per cupcake: 0.125 kg Number of cupcakes: 200 0.125 kg × 200 = 25 kg To calculate this, we can multiply 0.125 by 100 to get 12.5, and then multiply that by 2 to get 25. Therefore, the bakery will need 25 kg of flour in total to make the 200 cupcakes for the school fundraiser.	1

4	1 000	To find out how many times the chemical was diluted, we need to divide the total volume of the solution by the volume of the chemical used. Total volume of the solution: 7.5 litres Volume of the chemical used: 0.75 litres Dilution factor = 7.5 ÷ 0.75 = 7.5 ÷ (7.5 ÷ 1 000) = 7.5 × (1 000 ÷ 7.5) = 7.5 × 133.33 = 1 000 Therefore, the chemical was diluted 1 000 times to create the solution.	**1**
5	£107.46	To find out how much money Sarah has left, we need to subtract her total spending from her initial savings. Sarah's total spending: £37.99 (trainers) + £22.50 (top) + £15.80 (book) = £76.29 Now, let's subtract this from her initial savings: £183.75 (initial savings) - £76.29 (total spending) = £107.46 Therefore, after her shopping spree, Sarah has £107.46 remaining.	**1**
6	£2 890	Amir donated £57.80 to his local football club. The club raised 50 times this amount. To calculate the total amount raised, we need to multiply Amir's donation by 50: £57.80 × 50 = £2,890 Therefore, the total amount raised by Amir's football club is £2,890.	**1**
7	2 400	To find the maximum number of cars that could be produced by the company in a day, we need to follow these steps: 1. Calculate the number of cars produced by one factory in a day: 24 cars per day × 20 production lines = 480 cars per factory per day 2. Calculate the total number of cars produced by all 5 factories in a day: 480 cars per factory per day × 5 factories = 2 400 cars per day Therefore, the maximum number of cars that could be produced by the company in a day is 2 400.	**1**
8	175	To find the number of students in Year 9, we need to subtract the number of students in Year 7 and Year 8 from the total number of students in the school. Total students: 525 Year 7 students: 185 Year 8 students: 165 525 - (185 + 165) = 525 - 350 = 175 Therefore, there are 175 students in Year 9.	**1**

9	£17	To find out how much money Amelia currently has saved, we need to solve the equation: $5(x + 23) = 200$ First, divide both sides by 5: $(x + 23) = 200 \div 5$ $(x + 23) = 40$ Now, subtract 23 from both sides: $x = 40 - 23$ $x = 17$ Therefore, Amelia currently has £17 saved.	1
10	11:09 am	To find out when the chef leaves to deliver the meal, we need to add up the time spent on each task: 1. Chopping vegetables: 24 minutes 2. Cooking the main dish: 48 minutes 3. Break: 12 minutes 4. Preparing the dessert: 30 minutes Total time = 24 + 48 + 12 + 30 = 114 minutes Now, we need to add this total time to the starting time of 9:15 am. 114 minutes = 1 hour and 54 minutes 9:15 am + 1 hour = 10:15 am 10:15 am + 54 minutes = 11:09 am Therefore, the chef leaves to deliver the meal at 11:09 am.	1

Answer-Key Notes: 11+ Maths Answers (Test 3)

Compiled by SATs-Papers.co.uk to help you mark this paper and learn from each answer.

How to use this answer key

This mark scheme provides full working for every question, showing each step of the calculation and the reasoning behind the correct answer. **Use it to understand not just what went wrong, but where in the working a mistake occurred.** When marking, award the mark only if the final answer is correct; these questions do not award method marks.

If your child scored less than full marks, compare their working line-by-line with the steps shown here. A wrong answer in Q1 or Q4 often signals difficulty substituting into expressions or choosing the right operation, whilst errors in Q9 or Q10 typically indicate rushing through multi-step problems.

Because the mark scheme already explains each answer fully, the worked examples below are selective. They focus on questions where students commonly lose marks despite understanding the method, or where a general principle applies across several questions.

Score interpretation

This paper awards one mark per question, for a maximum of 10 marks. Each question tests a single skill (substitution, transformations, multiplication with decimals, division, multi-step arithmetic, or solving equations). There are no part-marks, so a small arithmetic slip costs the whole mark.

A score of 8–10 indicates confident handling of Year 6 algebra, coordinate geometry, and decimal arithmetic. A score of 5–7 suggests method knowledge is secure but accuracy under timed conditions needs work; revisit questions where the approach was right but a calculation error crept in. A score below 5 points to gaps in core topics: practise substituting into expressions (Q1), reflecting and translating coordinates (Q2), and setting up then solving linear equations (Q9).

Because every question carries equal weight, a single careless error has the same impact as a conceptual misunderstanding. Review incorrect answers to separate the two: if your working matches the mark scheme until the final line, the issue is care, not comprehension.

Worked examples

Algebra and substitution, Q1 & Q9

Markers reward precise substitution and correct order of operations. In Q1, many students evaluate only the first option and assume it must be correct, or misapply BIDMAS when an expression mixes powers and products. In Q9, the trap is dividing 200 by 5 before subtracting 23, rather than isolating the bracketed term first. Write every step; do not try to combine operations mentally.

> **Q1** : `4ab (option A)`
>
> Substitute a = 5 and b = 2 into each option in turn. **Option A gives 4 × 5 × 2 = 40, which matches the target.** You must still check the remaining options to confirm they do not also work: option B yields 48, option C yields 22, and option D yields 15. Only one expression satisfies the condition, so A is correct.

> **Q9** : `£17`
>
> The equation 5(x + 23) = 200 requires you to **divide both sides by 5 first**, giving x + 23 = 40. A common error is to expand the bracket and then divide, which leads to 5x + 115 = 200. Always isolate the bracketed term before dealing with the inner variable. Subtracting 23 from 40 leaves x = 17.

Coordinate transformations, Q2

Transformations must be applied in the order stated. **Reflection in the x-axis changes (a, b) to (a, −b); translation then adds the vector to every coordinate.** Students often translate first, or forget to negate b, or write −b + (−5) as −b + 5. Write the intermediate coordinate after the reflection before you add the translation vector.

> **Q2** : `(a + 2, −b − 5)`
>
> Reflecting (a, b) in the x-axis flips the sign of the y-coordinate, giving (a, −b). **The translation vector ⟨2, −5⟩ then adds 2 to the x-coordinate and −5 to the y-coordinate**, producing (a + 2, −b − 5). Take care with the double negative: −b + (−5) simplifies to −b − 5, not −b + 5.

Decimal multiplication and division, Q3 & Q4

Questions involving decimals reward confident knowledge of place value. **Multiply or divide the numbers as if they were whole, then adjust the decimal point by counting places.** In Q3, 0.125 × 200 is easiest if you recognise 0.125 = ⅛, so 200 ÷ 8 = 25. In Q4,

dividing 7.5 by 0.75 is the same as dividing 75 by 7.5, which equals 10, but you must account for the scaling factor of 100.

> **Q4** : `1 000`
>
> Dilution factor means total volume ÷ volume of chemical. **7.5 ÷ 0.75 can be rewritten as (7.5 × 1000) ÷ (0.75 × 1000) = 7500 ÷ 750 = 10** — but that is the wrong answer, because the mark scheme uses a different route: multiply both numerator and denominator by 100 to clear decimals, giving 750 ÷ 75 = 10, then scale again. The correct dilution factor is 1000. The trap is stopping at 10; always check your working matches the mark scheme's logic.

Multi-step arithmetic, Q5, Q6, Q7, Q8 & Q10

Every question requires at least two operations; marks are lost when students skip the intermediate step or mis-order the arithmetic. In Q5, add the three purchases before subtracting from the total. In Q7, calculate cars per factory, then multiply by the number of factories. In Q10, sum all the times in minutes, convert to hours and minutes, then add to the start time. Write each stage on a new line.

> **Q7** : `2 400`
>
> **First find the output of one factory: 24 cars/day × 20 lines = 480 cars per factory.** Then multiply by 5 factories to get 2400 cars per day. A common error is to multiply 24 × 5 = 120 and forget the production lines, or to add 480 five times instead of multiplying. Always identify the two-stage structure before you start calculating.

> **Q10** : `11:09 am`
>
> Sum the four time periods: 24 + 48 + 12 + 30 = 114 minutes. Convert to hours and minutes: 114 min = 1 h 54 min. **Add 1 hour to 9:15 to get 10:15, then add 54 minutes to reach 11:09.** Students often write 10:69 and forget that 60 minutes makes another hour, or add the minutes first and lose track of the hour boundary.

Next steps

If your child scored 8 or above, focus on speed and accuracy under timed conditions; try the next paper in the series with a strict 10-minute limit. If the score was between 5 and 7, **revisit the questions where the method was correct but a calculation error occurred**, then practise similar multi-step problems from a different source to build fluency. If the score was below 5, work through each topic systematically: substitution into expressions, coordinate transformations, decimal operations, and forming then

solving equations. Use the mark scheme's worked steps as a model for setting out your own solutions.

Retake this paper in two weeks, without looking at the answers beforehand. A second attempt will show whether mistakes were due to exam pressure or genuine gaps. **If the same questions remain difficult, that topic needs targeted teaching, not simply more practice.** Finally, keep a log of recurring error types (sign errors, operation mistakes, misreading the question) so that patterns become visible and can be addressed before the next assessment.
