

11+ PRACTICE PACK

Exam Ninja Test 10

11+ Maths Complete Practice Pack

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PRACTISE THE REAL THING

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- 1** A plumber charges a call-out fee of £50, plus £30 per hour for labour during weekdays.
- On weekends, the plumber increases the call-out fee by £20 and raises the hourly rate by £10.
- Which of the following expressions gives the cost in pounds of a job that takes h hours on a weekend?
- A $70 + 40h$ B $70h + 40$ C $h(70 + 40)$ D $50 + 40h$

1

- 2** Sarah is training for a 10km swimming event to raise money for charity.
- She begins her training on the 15th of April and completes the event on the 9th of June.
- How many days does Sarah spend training for the event?
- A 54 days B 56 days C 55 days D 57 days

1

- 3** The cost of hiring a bouncy castle for a children's party can be calculated using the formula $H = 25k + 10t$, where H is the total hire cost in pounds, k is the number of children attending, and t is the number of hours the bouncy castle is hired for.
- If 18 children are attending the party and the bouncy castle is hired for 3 hours, what is the total hire cost?
- A £480 B £450 C £510 D £540

1

- 4** A local bakery sold 500 cupcakes for a total of £1 250.
- If each cupcake was sold at the same price, how much did each cupcake cost?
- A £2.50 B £25 C £250 D £6 250

1

- 5** A toy company is creating a scale model of Big Ben, the famous clock tower in London.
- The actual height of Big Ben is 9 600 cm, and the scale model will be 50 times smaller.
- What will be the height of the scale model of Big Ben?
- A 192 cm B 19.2 cm C 1 920 cm D 48 000 cm

1

6

John is planning to buy some wooden planks for a DIY project.

Each plank costs £3.60.

What would be the total cost for 8 planks?

A £28.80**B** £32.40**C** £25.20**D** £30.60

1

7

A bakery uses 15 bags of flour to make 90 loaves of bread.

If they increase their production and use 45 bags of flour, how many loaves of bread can they make?

A 270 loaves**B** 180 loaves**C** 135 loaves**D** 225 loaves

1

8

A local charity organised a sponsored walk to raise money for a new community centre.

In total, 120 people took part in the walk and together they raised a total of £9,600.

What was the average amount raised per person?

A £80**B** £800**C** £8**D** £96

1

9

Amir is making a fruit salad for his family.

He uses 320g of chopped apples, 275g of sliced bananas, and 180g of halved grapes.

What is the total weight of the fruit salad Amir made?

A 775g**B** 675g**C** 875g**D** 575g

1

10

A school has 600 students. The library has 100 times more books than the school has students.

The number of books in the library is 10 times greater than the number of DVDs in a nearby warehouse.

The number of CDs in the warehouse is 100 times greater than the number of DVDs.

How many CDs are in the warehouse?

A 600 000**B** 600**C** 60 000**D** 6 000

1



Paper Notes: 11+ Maths Question Booklet (Test 10)

Compiled by [SATs-Papers.co.uk](https://www.SATs-Papers.co.uk) to help you get the most from this paper.

Overview

This is **Exam Ninja's 11+ Maths Test 10**, a practice paper designed for students aged 10-11 preparing for **GL Assessment** style **11+ entrance examinations**. It contains **10 multiple-choice questions** that test mathematical reasoning through real-world problem scenarios rather than abstract computation.

The paper focuses heavily on **word problems** that require students to translate practical situations into mathematical operations. Topics include money calculations, formula substitution, ratio and proportion, averages, and multi-step problems involving place value and scaling. Each question presents four possible answers, demanding both accurate calculation and careful reading.

This paper suits students in the middle to late stages of 11+ preparation who have mastered basic arithmetic and are now practising **application and problem-solving skills**. The scenarios are varied and engaging, covering contexts from plumbing charges and bakery production to scale models and charity fundraising, reflecting the GL Assessment approach of embedding mathematics in everyday situations.

How this paper is organised

The paper comprises **10 multiple-choice questions**, each worth **1 mark**, printed across two pages. There is no specified time limit stated on the paper itself, though 11+ maths papers of this length are typically completed in 10-15 minutes under timed conditions.

Questions are presented in a consistent format: a scenario or problem is described in prose, followed by four answer options labelled A to D. The opening questions (1-3) involve more complex scenarios requiring formula construction or date calculation, while later questions (4-9) test direct calculation skills with money, proportion, and measurement. **Question 10** stands out as the most demanding, requiring students to work through a chain of multiplicative relationships.

The layout is clear and uncluttered, with generous spacing between questions. Each question occupies its own numbered box, and the multiple-choice options are presented horizontally in a single row, making the paper easy to navigate under exam pressure.

Topics covered

- Constructing and interpreting algebraic expressions for real-world cost calculations involving fixed fees and variable hourly rates
- Date and time calculations across multiple months, requiring knowledge of calendar structure and accurate counting of elapsed days
- Substituting values into formulae and performing multi-step calculations with brackets and order of operations
- Division of money amounts to find unit costs, including conversion between pounds and pence
- Scaling problems and division to create scale models, working with large numbers and place value
- Multiplication of decimal amounts in money contexts, requiring precision with two decimal places
- Direct proportion problems involving ratios and scaling up production quantities
- Calculating averages (mean) from total amounts and number of participants in fundraising contexts
- Adding multiple measurements in grams to find total weight, testing basic addition with three-digit numbers
- Multi-step reasoning with multiplicative relationships, requiring students to work backwards and forwards through chains of proportional reasoning involving very large numbers

How to use this paper for revision

- Read each question twice before starting calculations; many errors come from missing key details like the weekend rate increase in question 1 or the scaling factor in question 5.
- Write out the calculation steps for formula questions (3 and 10) rather than doing them mentally, as this helps catch errors in order of operations and multiplicative chains.
- For proportion questions (7), set up the ratio clearly (15 bags : 90 loaves) and work out the multiplier before applying it to the new quantity.
- In money problems (4, 6, 8), check that your answer makes practical sense; £25 for a single cupcake or £8 average fundraising per person should immediately signal an error.
- For multi-step problems like question 10, annotate what each number represents (students, books, DVDs, CDs) to avoid losing track of which relationship you are working with.
- Practice date calculations by familiarising yourself with the number of days in each month; April has 30, May has 31, so you can count systematically from 15 April to 9 June.
- Time yourself on multiple-choice papers like this; aim for roughly one minute per question, leaving time at the end to check your work and ensure you have filled in all answers.

Common mistakes to avoid

- In question 1, students often forget to increase both the call-out fee and the hourly rate, selecting option D ($50 + 40h$) by only adjusting the hourly rate component.
- Question 2 catches many students who count 15 days in April plus 9 days in June (24 days) without including the full 31 days of May, or who miscalculate the remaining days in April.
- For question 3, students may multiply 18 by 3 first (54) and then try to use that result, rather than correctly substituting $k = 18$ and $t = 3$ into the formula separately.
- In question 7, a common error is to add 45 and 15 (getting 60) and then multiply by something, rather than recognising that 45 is three times 15, so the answer is three times 90.
- Question 10 trips up students who calculate the number of books (60,000) and mistake that for the final answer, forgetting to continue through DVDs (6,000) to reach CDs (600,000).
- Decimal multiplication errors in question 6 occur when students misplace the decimal point, calculating $\text{£}3.60 \times 8$ as $\text{£}288.0$ instead of $\text{£}28.80$.

Exam technique

Approach this paper by quickly scanning all **10 questions** first to identify which problems you find most straightforward. Tackle those confident questions first to bank easy marks, then return to trickier problems like questions 1 and 10 that require more thought.

For each question, underline or highlight the key numbers and what they represent before starting your calculation. In formula questions, write down the formula and your substitutions clearly; in proportion problems, jot down the original ratio. This takes only seconds but dramatically reduces careless errors. Always check that your chosen answer appears among the four options; if your calculated answer does not match any option, rework the problem rather than guessing.

Manage your time by allocating roughly one minute per question, which leaves you three to five minutes for checking. Use this buffer to revisit any questions where you were torn between two answers, and verify calculations where you are unsure. If you are genuinely stuck on a question, make an educated guess (eliminating obviously wrong options first) rather than leaving it blank, as there is no negative marking in multiple-choice papers.

What to revise alongside this paper

Students working on this paper should ensure they are confident with **multiplication and division of whole numbers and decimals**, as these underpin nearly every question. Revisit methods for dividing large numbers (long division) and multiplying decimals, particularly in money contexts where precision with pence is essential. Practice converting word problems into algebraic expressions and equations, as this skill bridges arithmetic and the more formal algebra required at secondary school.

Proportional reasoning is central to several questions here (7, 10), so work on additional problems involving ratios, scaling, and direct proportion, including unitary method techniques. These topics often appear in 11+ papers and are foundational for Key Stage 3 mathematics. Strengthen your understanding of **formulae** by practising substitution with a variety of letter symbols and multi-step calculations that require careful attention to brackets and operation order.

Once comfortable with this paper, progress to harder 11+ materials that include negative numbers, percentages, and more complex multi-step reasoning. Building fluency with mental arithmetic and estimation will also help you check answers quickly and spot calculation errors under timed conditions.

Key terms

Algebraic expression, Substitution, Formula, Direct proportion, Ratio, Scaling, Unit cost, Average (mean), Order of operations, Place value, Multiplicative relationship, Elapsed time, Variable, Fixed and variable costs

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11+ Practice Test Answers

11+ Maths Test 10

Question	Answer	Explanation	Marks
1	$70 + 40h$	<p>To find the cost of a plumbing job on a weekend, we need to consider the increased call-out fee and hourly rate.</p> <p>The weekday call-out fee is £50, and the weekend call-out fee is increased by £20. So, the weekend call-out fee is $£50 + £20 = £70$.</p> <p>The weekday hourly rate is £30, and the weekend hourly rate is increased by £10. So, the weekend hourly rate is $£30 + £10 = £40$.</p> <p>If the job takes h hours, the total cost will be the weekend call-out fee plus the product of the weekend hourly rate and the number of hours worked.</p> <p>Therefore, the correct expression for the cost of a weekend plumbing job that takes h hours is: $70 + 40h$.</p>	1
2	55 days	<p>To calculate the number of days Sarah spends training, we need to count the days from the 15th of April to the 9th of June, inclusive.</p> <p>April has 30 days, so from the 15th to the 30th of April, there are 16 days ($30 - 15 + 1$).</p> <p>May has 31 days, so we add 31 days for the entire month of May.</p> <p>In June, Sarah trains from the 1st to the 9th, which is 9 days ($9 - 1 + 1$).</p> <p>Therefore, the total number of days Sarah spends training is: $16 + 31 + 9 = 55$ days.</p>	1
3	£480	<p>To calculate the total hire cost, we need to substitute the given values into the formula:</p> $H = 25k + 10t$ <p>Where $k = 18$ (number of children attending) and $t = 3$ (number of hours the bouncy castle is hired for).</p> <p>Substituting these values, we get:</p> $H = 25 \times 18 + 10 \times 3$ $H = 450 + 30$ $H = £480$ <p>Therefore, the total hire cost for the bouncy castle is £480.</p>	1
4	£2.50	<p>To find the cost of each cupcake, we need to divide the total amount earned by the number of cupcakes sold.</p> <p>Total amount earned: £1 250 Number of cupcakes sold: 500</p> <p>Cost per cupcake = $£1\ 250 \div 500$ = £2.50</p> <p>Therefore, each cupcake was sold for £2.50.</p>	1

5	192 cm	<p>To find the height of the scale model, we need to divide the actual height of Big Ben by the scale factor.</p> <p>The actual height of Big Ben is 9 600 cm, and the scale model will be 50 times smaller.</p> <p>So, we calculate:</p> $9\,600 \text{ cm} \div 50 = 192 \text{ cm}$ <p>Therefore, the height of the scale model of Big Ben will be 192 cm.</p>	1
6	£28.80	<p>To find the total cost for 8 planks, we need to multiply the cost per plank by the number of planks.</p> <p>Cost per plank = £3.60 Number of planks = 8</p> <p>Total cost = £3.60 × 8 Total cost = £28.80</p> <p>Therefore, the total cost for 8 planks would be £28.80.</p>	1
7	270 loaves	<p>To find the number of loaves that can be made with 45 bags of flour, we need to set up a proportion.</p> <p>15 bags of flour make 90 loaves, so we can write this as a ratio: 15 : 90</p> <p>We want to find the number of loaves (x) that can be made with 45 bags of flour, so we can write this as another ratio: 45 : x</p> <p>Since these ratios are equivalent, we can set them equal to each other: 15 : 90 = 45 : x</p> <p>Cross multiply to solve for x: $15x = 90 \times 45$</p> $15x = 4,050$ $x = 4,050 \div 15$ $x = 270$ <p>Therefore, the bakery can make 270 loaves of bread with 45 bags of flour.</p>	1
8	£80	<p>To find the average (mean) amount raised per person, we need to divide the total amount raised by the number of people who took part.</p> <p>Total amount raised = £9,600 Number of people = 120</p> <p>Average amount raised per person = £9,600 ÷ 120 = £80</p> <p>Therefore, the average amount raised per person is £80.</p>	1
9	775g	<p>To find the total weight of the fruit salad, we need to add the weights of all the fruits Amir used:</p> <p>Apples: 320g Bananas: 275g Grapes: 180g</p> $320\text{g} + 275\text{g} + 180\text{g} = 775\text{g}$ <p>Therefore, the total weight of the fruit salad Amir made is 775g.</p>	1

10

600 000

1

To find the number of CDs at the warehouse, we need to work backwards from the number of students at the school.

The school has 600 students, and the library has 100 times more books than the school has students.

Number of books in the library = $600 \times 100 = 60\,000$

The number of books in the library is 10 times greater than the number of DVDs at the warehouse.

Number of DVDs at the warehouse = $60\,000 \div 10 = 6\,000$

The number of CDs at the warehouse is 100 times greater than the number of DVDs.

Number of CDs = $6\,000 \times 100 = 600\,000$

Therefore, there are 600 000 CDs available at the music store.

Answer-Key Notes: 11+ Maths Answers (Test 10)

Compiled by [SATs-Papers.co.uk](https://www.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 worked solutions for all ten questions, showing the reasoning behind each correct answer. When marking your child's work, **award one mark per question only if the final answer matches exactly**; partial working is not separately credited in this paper.

Use the explanations to identify whether an error was careless (a slip in arithmetic, misreading a number) or conceptual (misunderstanding ratio, order of operations, or how to set up a formula). **Careless mistakes cluster randomly; conceptual gaps appear in similar question types.**

If your child chose the wrong multiple-choice option, read the worked solution together and ask them to explain where their method differed. This dialogue often reveals the misconception more clearly than the mark scheme alone.

Score interpretation

This paper contains ten standalone problems, each worth one mark, for a maximum of ten marks. The questions test fluency in arithmetic, formula substitution, ratio, scaling, and multi-step reasoning. **A score of 8–10 indicates confident recall and accurate working under timed conditions**; mistakes at this level are usually speed-related rather than knowledge gaps.

Scores of 5–7 suggest solid understanding with occasional lapses in method or arithmetic. Review the worked examples for the questions missed; **if errors cluster around ratio (Q7) or multi-step logic (Q10), targeted practice in those areas will yield quick gains.**

A score below 5 points to gaps in core calculation skills or difficulty translating word problems into operations. Work through each solution step by step, then revisit similar problems with smaller numbers to rebuild confidence before attempting full-length practice papers again.

Worked examples

Formula and expression questions, Q1 and Q3

These questions reward careful reading of which quantities change and which stay fixed. In Q1, students must adjust both the call-out fee and the hourly rate, then write the

expression with the correct structure (fixed cost plus variable cost). In Q3, substitution into a given formula is straightforward, but marks are lost when students misread the variable names or forget to multiply before adding.

Q1 : A ($70 + 40h$)

The weekend call-out fee is $\pounds 50 + \pounds 20 = \pounds 70$ (a fixed cost), and the weekend hourly rate is $\pounds 30 + \pounds 10 = \pounds 40$ per hour. **For h hours, the total is $70 + 40h$, not $70h + 40$** (which would mean $\pounds 70$ per hour plus a $\pounds 40$ fee). Always check that the variable multiplies the rate, not the flat fee.

Q3 : $\pounds 480$

Substitute $k = 18$ and $t = 3$ into $H = 25k + 10t$. Calculate $25 \times 18 = 450$ and $10 \times 3 = 30$, then add: $450 + 30 = 480$. **A common error is adding $18 + 3 = 21$ first, then multiplying**, which breaks the order of operations. Always multiply before you add unless brackets say otherwise.

Ratio and proportion, Q7

Proportional reasoning questions ask you to scale a known relationship up or down.

The key is to recognise that if 15 bags make 90 loaves, then the ratio of bags to loaves stays constant. Students lose marks by adding or subtracting instead of scaling, or by setting up the proportion upside down.

Q7 : 270 loaves

If 15 bags make 90 loaves, then 45 bags (which is 15×3) will make $90 \times 3 = 270$ loaves. **The multiplier is the same for both quantities in a proportion.** Alternatively, set up $15 : 90 = 45 : x$, cross-multiply to get $15x = 4050$, then divide: $x = 270$. Both methods rely on the fact that the ratio of bags to loaves does not change.

Multi-step logic, Q2 and Q10

Questions that require you to **work forwards through several stages (Q2, counting days across months) or backwards from a final figure (Q10, unpacking nested multiples)** are where rushed working causes errors. Write down each intermediate result with a label; students who try to hold three calculations in their head often drop a step or misapply an operation.

Q2 : 55 days

April 15th to 30th is $30 - 15 + 1 = 16$ days (the +1 includes the start date). May contributes all 31 days. June 1st to 9th is 9 days. Total: $16 + 31 + 9 = 55$. **The most common mistake is forgetting to add 1 when counting inclusive days**, which would give 54. Always ask: does my count include both endpoints?

Q10 : 600 000

Work backwards: 600 students \rightarrow library has $600 \times 100 = 60\,000$ books. Books are 10 times DVDs, so DVDs = $60\,000 \div 10 = 6000$. CDs are 100 times DVDs, so CDs = $6000 \times 100 = 600\,000$. **Label each step clearly (students, books, DVDs, CDs)** to avoid mixing up which quantities you have found. Trying to do all four calculations mentally leads to powers-of-ten errors.

Single-operation arithmetic, Q4, Q5, Q6, Q8, Q9

These questions test **one core skill each: division (Q4, Q5, Q8), multiplication (Q6), or addition (Q9)**. Marks are lost through careless place-value errors (writing 19.2 instead of 192) or misreading the question (dividing when you should multiply). Always re-read the question after calculating to confirm your operation matches what was asked.

Q5 : 192 cm

The model is 50 times *smaller*, so divide the real height by 50: $9600 \div 50 = 192$ cm. **A typical error is $9600 \div 5 = 1920$** , forgetting the zero in 50. Always check your division by estimating: $10\,000 \div 50 = 200$, so 192 is the right order of magnitude.

Q8 : £80

Mean = total \div count = $9600 \div 120$. Simplify: $9600 \div 120 = 960 \div 12 = 80$. **Students sometimes write £800 by losing a zero during division**. A quick sense-check helps: 120 people raising £800 each would total £96 000, ten times too much.

Next steps

If your child scored well (8+ marks), **focus on speed and accuracy under timed conditions**. Reattempt any missed questions without looking at the solution first, then compare methods. For scores of 5–7, work through the explanations for incorrect answers together, then find two or three similar problems (from a different practice set) and solve them independently to confirm understanding.

If the score was below 5, pause full practice papers for now. Instead, isolate the weaker topics (ratio, multi-step problems, formula substitution) and use short, focused exercises to rebuild confidence. **Return to this paper in two weeks** and check whether the same questions still cause difficulty; improvement between attempts is a clearer measure of progress than the raw score on a single sitting.

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