

11+ PRACTICE PACK

Exam Ninja Test 9

11+ Maths Complete Practice Pack

CONTENTS

01 Question Booklet

Exam Ninja 11+ Maths. Work through this paper first.

Includes Paper Notes: overview, topics, revision tips, common mistakes.

02 Answers

Exam Ninja 11+ Maths. Use to mark your work against the official answer key.

Includes Paper Notes: score interpretation, selected worked examples, next steps.

PRACTISE THE REAL THING

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- 1** Amir has five pieces of wood.
- The lengths of the pieces are 12 cm, 15 cm, 12 cm, 15 cm, and 12 cm.
- He takes some of the pieces and arranges them so that they make a closed shape with straight sides.
- Which of the following shapes is it impossible for him to make?
- A Isosceles triangle B Rectangle C Regular pentagon D Rhombus

1

- 2** A bakery is making cupcakes for an event.
- They have 5 different flavours and are making the same number of each flavour.
- In total, they make 3 200 cupcakes.
- How many cupcakes of each flavour did they make?
- A 620 B 640 C 610 D 650

1

- 3** James visited five different bakeries and wrote down the price of a loaf of bread in each one.
- The prices are listed below:
- £1.25, £1.50, £1.35, £1.60, £1.30
- What is the mean price of a loaf of bread?
- A £1.40 B £1.50 C £1.20 D £1.35

1

- 4** Amelia is making bracelets for her friends.
- Each bracelet requires 12 beads.
- Amelia has a pack of 300 beads.
- How many complete bracelets can Amelia make with the beads she has?
- A 25 B 30 C 20 D 24

1

- 5** A recipe for making chocolate chip cookies states that the number of chocolate chips (c) needed is given by the following formula:

$$c = 4(2e + 3)$$

6

A train travels a distance of 4 500 metres.

What is this distance in kilometres?

A 4.5 km**B** 45 km**C** 0.45 km**D** 450 km

1

7

Sarah is making a sculpture using 8 spheres, each with a radius of 5 cm.

Calculate the total volume of the sculpture.

A 4 188.79 cm³**B** 2 094.40 cm³**C** 8 377.58 cm³**D** 1 000 cm³

1

8

A school is organising a trip to the zoo for 1 734 students.

The students will be divided into equal-sized groups, with 6 students in each group.

How many students will be left without a group?

A 3**B** 0**C** 4**D** 5

1

9

Amir has a piece of wood that is 850 cm long.

He cuts off a piece that is 243 cm long to make a shelf.

How much wood does Amir have left?

A 607 cm**B** 693 cm**C** 587 cm**D** 617 cm

1

10

A bakery sells 5,012 loaves of bread in a week.

If each loaf weighs 0.402 kg, what is the total weight of bread sold in a week, in kilograms?

A 20.14 824**B** 201.4 824**C** 2 014.824**D** 20 148.24

1



Paper Notes: 11+ Maths Question Booklet (Test 9)

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

Overview

This is an **Exam Ninja** practice paper designed for **11+ entrance preparation**, specifically targeting students aged 10 to 11 preparing for the **GL Assessment 11+ Maths exam**. The paper consists of **10 multiple-choice questions** that test a range of mathematical skills typically encountered in selective school entrance assessments, and it is styled as a general practice paper rather than being tied to any specific school.

The questions span practical problem-solving scenarios including geometry, measurement conversions, arithmetic operations, statistical calculations, and basic algebra. Each question is worth **1 mark** and presents four possible answers labelled A to D. The contexts are everyday and relatable, featuring bakeries, bracelets, sculpture, and wood cutting, which helps students apply abstract mathematical concepts to real-world situations.

This paper is well suited for students preparing for 11+ entrance exams who need to practise working under timed conditions with multiple-choice formats. The absence of a calculator requirement (implied by the straightforward arithmetic) means students must be confident with mental and written calculation methods. The paper provides a useful snapshot of the variety and pace required in the actual GL Assessment 11+ Maths test.

How this paper is organised

The paper comprises **10 questions** arranged across **two pages**, with questions numbered 1 to 10. Each question carries **1 mark**, giving a total of 10 marks available. The layout is clean and uncluttered, with each question presented in a separate box, followed immediately by four multiple-choice options labelled A, B, C, and D.

No time limit is printed on the paper itself, but typical 11+ practice suggests students should aim to complete it in around 10 to 12 minutes to simulate exam conditions. The questions increase slightly in complexity as the paper progresses, beginning with a geometry reasoning problem about constructing shapes and culminating in a decimal multiplication question requiring precise calculation. The format is consistent throughout, with no extended-response or working-out boxes, encouraging swift decision-making.

Question 5 introduces a simple algebraic formula ($c = 4(2e + 3)$), signalling that the paper expects familiarity with substitution and evaluation of expressions. Questions 7

and 10 involve decimals and multi-step calculations, testing accuracy and fluency with larger numbers and standard formulae such as the volume of a sphere.

Topics covered

- Properties of polygons and reasoning about which shapes can be constructed from given side lengths (isosceles triangles, rectangles, regular pentagons, rhombuses)
- Division of large whole numbers to solve equal-sharing problems in context (dividing 3,200 cupcakes among 5 flavours)
- Calculation of the mean (average) from a set of decimal prices, requiring addition and division
- Integer division with remainders to find the maximum number of complete items (bracelets from 300 beads, 12 per bracelet)
- Substitution into and evaluation of simple algebraic formulae involving brackets and order of operations
- Conversion between metric units of length (metres to kilometres)
- Application of the formula for the volume of a sphere and multiplication by 8 to find total volume in a sculpture context
- Division with remainders to determine how many students are left over when forming equal groups
- Subtraction of three-digit numbers involving borrowing across multiple columns
- Multiplication of a four-digit whole number by a three-decimal-place number, testing decimal place value and accuracy

How to use this paper for revision

- Revise the properties of common polygons, especially how many sides each has and whether all sides must be equal. For regular pentagons, remember all five sides must be identical.
- Practise mental division strategies for dividing large numbers by single digits. Breaking 3,200 into easier chunks (e.g. 3,000 and 200) speeds up calculation.
- To find the mean, add all values first and double-check your sum before dividing by the number of items. Keep track of decimal places when working with money.
- When dividing to find complete items, focus on how many whole groups fit. The remainder tells you leftovers, not the answer to 'how many complete'.
- Work through the order of operations (BIDMAS/BODMAS) carefully in algebra questions. Always do brackets first, then multiplication or division, then addition or subtraction.
- Memorise key metric conversions: 1 kilometre = 1,000 metres, 1 metre = 100 centimetres. Knowing these by heart saves time and prevents errors.
- Learn the formula for the volume of a sphere ($V = \frac{4}{3} \times \pi \times r^3$) and practise using the π button on your calculator if allowed, or use $\pi \approx 3.14$ for mental estimates.

Common mistakes to avoid

- Confusing a regular pentagon (all sides equal) with any pentagon (sides can differ). Question 1 catches students who forget 'regular' means identical side lengths.
- Forgetting to divide by the number of values when calculating the mean. Adding the prices correctly but stopping there is a frequent error.
- Rounding up when asked for 'complete' items. If $300 \div 12 = 25$, students sometimes round to 26, but only 25 whole bracelets can be made.
- Misapplying the order of operations in algebraic expressions. In $c = 4(2e + 3)$, some students multiply 4×2 first instead of evaluating the bracket.
- Decimal point errors in unit conversions. Moving the decimal point the wrong direction ($4,500 \text{ m} = 450 \text{ km}$ instead of 4.5 km) is common under time pressure.
- Forgetting to multiply the volume of one sphere by the total number of spheres. Calculating the volume of a single sphere and stopping there loses marks.

Exam technique

Begin by skimming all **10 questions** to identify any that look immediately straightforward. Questions involving simple arithmetic or conversions (such as question

6, metres to kilometres) can be tackled quickly and build confidence. Aim to spend no more than **one minute per question** on average, leaving a little time at the end to review any answers you were unsure about.

For multiple-choice questions, use elimination if you are uncertain. Cross out obviously incorrect answers first, then compare the remaining options. In questions involving calculations, do a quick sense-check: if a bakery makes 3,200 cupcakes and divides them into 5 flavours, each flavour must be fewer than 1,000, which immediately rules out some answers. This strategy saves time and reduces careless errors.

If you are working through this paper independently, mark your answers against the published solutions and focus on understanding any mistakes rather than simply counting your score. Identify whether errors stem from misreading the question, incorrect methods, or arithmetic slips. Practising this reflection after each paper is one of the most effective ways to improve speed and accuracy before the real exam.

What to revise alongside this paper

Students should consolidate their understanding of **properties of 2D shapes**, including quadrilaterals (parallelograms, trapeziums, kites) and triangles (scalene, equilateral, right-angled). Knowing angle sums and symmetry properties will support reasoning questions like question 1. Practice converting between all common metric units (millimetres, centimetres, metres, kilometres, grams, kilograms, millilitres, litres) to build fluency for questions like question 6.

Revise **formulae for area and volume** of common 3D shapes (cubes, cuboids, cylinders, cones, spheres) and practise multi-step problems where you must apply a formula and then perform further operations. Strengthen **mental arithmetic and written methods** for all four operations, especially long multiplication and division, as these underpin nearly every question on this paper.

To progress further, explore more complex algebraic manipulation (expanding brackets, solving simple equations) and multi-step word problems involving percentages, ratios, and proportion. These topics frequently appear in harder 11+ papers and selective school entrance exams.

Key terms

Isosceles triangle, Rectangle, Regular pentagon, Rhombus, Mean (average), Division with remainders, Algebraic formula, Substitution, Metric conversion, Kilometres and metres, Volume of a sphere, Radius, Decimal multiplication, BIDMAS/BODMAS (order of operations), Multiple-choice format

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11+ Practice Test Answers

11+ Maths Test 9

Question	Answer	Explanation	Marks
1	Regular pentagon	<p>To make a regular pentagon, all sides must be of equal length. However, Amir only has pieces of wood with lengths 12 cm and 15 cm.</p> <p>He can make an isosceles triangle using two 12 cm pieces and one 15 cm piece ($12 + 12 > 15$).</p> <p>A rectangle can be made using two 12 cm pieces and two 15 cm pieces.</p> <p>A rhombus can be made using four 12 cm pieces.</p> <p>Therefore, the only shape that is impossible for Amir to make with the given pieces of wood is a regular pentagon.</p>	1
2	640	<p>To find the number of cupcakes of each flavour, we simply need to divide the total number of cupcakes made by the number of different flavours ($3\ 200 \div 5 = 640$).</p> <p>Hence, the bakery made 640 cupcakes of each flavour.</p>	1
3	£1.40	<p>To calculate the mean price, we need to add up all the prices and divide by the number of prices.</p> $£1.25 + £1.50 + £1.35 + £1.60 + £1.30 = £7.00$ <p>There are 5 prices in total.</p> $£7.00 \div 5 = £1.40$ <p>Therefore, the mean price of a loaf of bread is £1.40.</p>	1
4	25	<p>To find out how many complete bracelets Amelia can make, we need to divide the total number of beads she has by the number of beads required for each bracelet.</p> <p>Amelia has 300 beads in total.</p> <p>Each bracelet requires 12 beads.</p> $300 \div 12 = 25$ <p>Therefore, Amelia can make 25 complete bracelets with the beads she has.</p>	1

5	52	<p>To find the number of chocolate chips needed, we need to substitute the value of e into the given formula.</p> <p>Given:</p> $c = 4(2e + 3)$ $e = 5$ <p>Step 1: Substitute $e = 5$ into the formula.</p> $c = 4(2 \times 5 + 3)$ <p>Step 2: Simplify the expression inside the parentheses.</p> $c = 4(10 + 3)$ $c = 4(13)$ <p>Step 3: Multiply the values.</p> $c = 52$ <p>Therefore, the baker will need 52 chocolate chips to make the batch of cookies.</p>	1
6	4.5 km	<p>To convert metres to kilometres, we need to divide the number of metres by 1 000.</p> $4\,500 \text{ metres} = 4\,500 \div 1\,000 \text{ kilometres}$ $4\,500 \div 1\,000 = 4.5 \text{ kilometres}$ <p>Therefore, 4 500 metres is equal to 4.5 kilometres.</p>	1
7	4 188.79 cm ³	<p>To find the total volume of the sculpture, we need to calculate the volume of one sphere and then multiply it by the number of spheres.</p> <p>The formula for the volume of a sphere is: $V = (4/3) \times \pi \times r^3$</p> <p>Given:</p> <ul style="list-style-type: none"> - The radius (r) of each sphere is 5 cm - There are 8 spheres in total <p>Step 1: Calculate the volume of one sphere</p> $V = (4/3) \times \pi \times 5^3$ $V \approx (4/3) \times 3.14\,159 \times 125$ $V \approx 523.60 \text{ cm}^3$ <p>Step 2: Calculate the total volume of the sculpture</p> <p>Total volume = Volume of one sphere \times Number of spheres</p> $\text{Total volume} = 523.60 \text{ cm}^3 \times 8$ <p>Total volume = 4 188.79 cm³ (rounded to 2 decimal places)</p> <p>Therefore, the total volume of Sarah's sculpture is approximately 4 188.79 cm³.</p>	1

8	0	<p>To find the number of students left without a group, we need to find the remainder when 1734 is divided by 6.</p> $1734 \div 6 = 289 \text{ remainder } 0$ <p>This means that there will be exactly 289 groups of 6 students, and no students will be left without a group.</p> <p>Therefore, the correct answer is 0.</p>	1
9	607 cm	<p>To find out how much wood Amir has left, we need to subtract the length of the piece he cut off from the original length of the wood.</p> <p>Original length of wood: 850 cm Length of piece cut off: 243 cm</p> $850 \text{ cm} - 243 \text{ cm} = 607 \text{ cm}$ <p>Therefore, Amir has 607 cm of wood left after cutting off a piece for the shelf.</p>	1
10	2 014.824	<p>To find the total weight of bread sold in a week, we need to multiply the number of loaves sold by the weight of each loaf.</p> <p>Number of loaves sold: 5,012 Weight of each loaf: 0.402 kg</p> $5,012 \times 0.402 = 2,014.824 \text{ kg}$ <p>To calculate this, we can use the same method as in the original question:</p> $5,012 \times 0.402 = (5,012 \times 402) \div 1,000 = 2,014,824 \div 1,000 = 2,014.824 \text{ kg}$ <p>Therefore, the total weight of bread sold in a week is 2,014.824 kg.</p>	1

Answer-Key Notes: 11+ Maths Answers (Test 9)

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

Use this mark scheme to mark the paper objectively, awarding one mark per question according to the answer given. If a numeric answer is wrong, check whether the student has used the correct method but made an arithmetic slip; that helps you distinguish careless mistakes from conceptual gaps.

The explanations below show the reasoning behind each answer. Refer to them when your child is unsure **why an answer is correct**, not simply that it is wrong.

If your child scores fewer than 5, work through the explanations together and revisit basic arithmetic and unit conversions before attempting another paper. Between 5 and 8 suggests solid foundations with room to sharpen accuracy. A score of 9 or 10 indicates strong fluency across the topics tested.

Score interpretation

This paper awards ten marks in total, one per question. It tests mental arithmetic, unit conversion, mean and formula substitution, division with remainders, and volume of a sphere. **A score of 7 or above** indicates confident handling of multi-step problems and familiarity with standard formulae.

Scores of 4 to 6 usually reflect gaps in one or two areas, often unit conversion (Q6), formula substitution (Q5), or volume calculations (Q7). Review those topics specifically rather than re-doing whole papers.

A score below 4 suggests that foundational arithmetic (multiplication, division, subtraction) needs reinforcement before tackling formulae or word problems. Focus on times tables, written methods for long division, and reading questions carefully to identify the operation required.

Worked examples

Geometry and shape reasoning, Q1

This question rewards careful reasoning about constraints. Many students rush to answer without checking whether the available pieces can satisfy the definition of the shape. **List the pieces you have**, then test each option systematically.

Q1 : C (Regular pentagon)

A regular pentagon requires five sides of equal length. Amir has three pieces of 12 cm and two of 15 cm, so he cannot make five equal sides. He **can** make an isosceles triangle (12, 12, 15), a rectangle (12, 15, 12, 15) and a rhombus (12, 12, 12, 12), so the regular pentagon is the only impossible shape.

Division and mean, Q2-Q4

These questions test whether you can identify the correct operation and execute it accurately. **Write down the calculation** in full before working it out. Q3 is a two-step problem: add first, then divide. Q4 asks for complete bracelets, so ignore any remainder.

Q3 : £1.40

Add the five prices: $£1.25 + £1.50 + £1.35 + £1.60 + £1.30 = £7.00$. Then divide by 5: $£7.00 \div 5 = £1.40$. A common mistake is to divide by 4, forgetting to count all five prices.

Q4 : 25

$300 \text{ beads} \div 12 \text{ beads per bracelet} = 25$ exactly. If there had been a remainder, you would discard it because the question asks for **complete** bracelets only.

Formula substitution and order of operations, Q5

Substitute the given value into the formula, then follow the order of operations: brackets first, then multiplication. **Write each step on a new line** to avoid errors. Many students multiply 4 by 2 before dealing with the bracket, which gives the wrong answer.

Q5 : 52

Substitute $e = 5$ into $c = 4(2e + 3)$. Inside the brackets: $2 \times 5 + 3 = 10 + 3 = 13$. Then multiply: $4 \times 13 = 52$. If you forget the brackets and calculate $4 \times 2 \times 5 + 3$, you will reach 43, which is incorrect.

Unit conversion, Q6

To convert metres to kilometres, divide by 1 000 because there are 1 000 metres in one kilometre. **Write the conversion factor** beside your working to remind yourself which way to divide. Multiplying by 1 000 would convert kilometres to metres, the opposite direction.

Q6 : 4.5 km

$4\,500\text{ m} \div 1\,000 = 4.5\text{ km}$. Students who multiply instead often choose 450 km or 45 km, both of which are far too large. A quick sense-check helps: 4 500 metres is a few kilometres, not hundreds.

Volume of a sphere, Q7

Use the formula $V = (4/3) \times \pi \times r^3$. Cube the radius first, multiply by π , then by $4/3$. **Round only at the final step** to two decimal places. Rounding intermediate results will introduce errors.

Q7 : 4 188.79 cm³

Volume of one sphere: $(4/3) \times \pi \times 5^3 \approx (4/3) \times 3.14159 \times 125 \approx 523.60\text{ cm}^3$. Multiply by 8 spheres: $523.60 \times 8 = 4\,188.80\text{ cm}^3$. The mark scheme rounds this to $4\,188.79\text{ cm}^3$. Either 4 188.79 or 4 188.80 would be acceptable depending on intermediate rounding.

Division with remainders and subtraction, Q8–Q10

Q8 tests whether you understand that a remainder of zero means exact division. Q9 and Q10 involve straightforward arithmetic but with larger numbers, so **use written column methods** if mental calculation is uncertain. Q10 multiplies a decimal; treat it as $5\,012 \times 402 \div 1\,000$.

Q8 : 0

$1\,734 \div 6 = 289$ remainder 0. This means every student fits into a group of 6, so **no students are left without a group**. The trap answer is to assume there must be a remainder.

Q10 : 2 014.824

$5\,012 \times 0.402$ can be calculated as $(5\,012 \times 402) \div 1\,000 = 2\,014\,824 \div 1\,000 = 2\,014.824$ kg. Move the decimal point three places left because you divided by 1 000.

Next steps

After marking, sit down with your child and review any incorrect answers using the worked examples above. **Ask your child to explain the correct method** in their own words; this cements understanding far better than simply reading the solution. If the same type of mistake appears in several questions, that topic needs focused practice before moving on.

If your child scored 8 or above, they are ready for papers that include multi-step problem-solving, algebra, and more complex geometry. If the score was below 7, consolidate arithmetic fluency, times tables to 12×12 , and written methods for division before attempting further timed papers. Revisit this paper in a fortnight to check that learning has stuck.

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