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11+ PRACTICE PACK

Exam Ninja Test 7

11+ Maths Complete Practice Pack

CONTENTS

1 A school has 18 classrooms.

Each classroom has space for 32 students.

What is the total number of students the school can accommodate?

A 576 **B** 550 **C** 608 **D** 512

1

2 A rectangular fish tank has a capacity of 3,600 cm^3 when completely filled with water.

If the length of the tank is 30 cm and the width is 20 cm, what is the height of the tank?

A 6 cm **B** 5 cm **C** 7 cm **D** 8 cm

1

3 Amelia is creating a photo collage for her school project. She has printed out several rectangular photos, each measuring 6 cm in height and 4 cm in width.

For her collage, Amelia has a large piece of cardboard that is 24 cm tall and 36 cm wide. She wants to arrange the photos on the cardboard in a grid pattern, ensuring that no photos overlap.

If Amelia uses the entire cardboard for her collage, what is the maximum number of photos that she can fit on the cardboard?

A 54 **B** 24 **C** 36 **D** 72

1

4 Which of the following regular polygons has the same number of lines of symmetry as the number of sides it has?

A Regular heptagon **B** Regular pentagon **C** Regular octagon **D** All the above

1

5 A pizza is divided into four unequal slices for four friends.

The smallest slice has an angle of x degrees, while the second smallest slice is twice the size of the smallest, with an angle of $2x$ degrees.

The second largest slice is three times the size of the smallest, with an angle of $3x$ degrees, and the largest slice is four times the size of the smallest.

Calculate the value of x.

6 The area, A, of a rectangle with length l and width w is given by this formula: $A = lw$

Calculate the area of a rectangular field with a length of 50 metres and a width of 30 metres.

A 1,500 square metres **B** 150 square metres **C** 80 square metres **D** 1,550 square metres

☐ 1

7 A train is scheduled to depart from London Paddington station at 14:40.

If the train is delayed by 35 minutes, what time will it depart using the 24-hour clock format?

A 15:15 **B** 14:75 **C** 15:05 **D** 15:25

☐ 1

8 Samantha has been practicing her violin for 420 minutes this week.

How many seconds in total has she spent practicing?

A 25 200 seconds **B** 42 000 seconds **C** 21 420 seconds **D** 28 800 seconds

☐ 1

9 A circular mirror has a radius of 35 cm.

What is the diameter of the mirror?

A 70 cm **B** 17.5 cm **C** 140 cm **D** 1,225 cm

☐ 1

10 If $y = 5x + 2$, what is the value of y when $x = 4$?

A 22 **B** 18 **C** 20 **D** 24

☐ 1

Paper Notes: 11+ Maths Question Booklet (Test 7)

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

Overview

This is **Exam Ninja's 11+ Maths Test 7**, a practice paper designed for students aged 10 to 11 preparing for **GL Assessment 11+ entrance examinations**. The paper targets Year 6 pupils working towards selective secondary school entry and covers a broad range of mathematical topics typical of the **GL Assessment format**.

The paper consists of **10 multiple-choice questions**, each worth one mark, testing core areas including number operations, geometry, problem solving, algebra, and time and measurement. Questions are presented in a clear layout with four answer options (A, B, C, D) for each item. The problems are set in real-world contexts, from calculating school capacity and fish tank dimensions to working with photo collages and pizza slices.

This paper is well suited for timed practice sessions or diagnostic assessment. It provides a representative snapshot of the variety and difficulty level students will encounter in the 11+ maths examination, making it valuable for both independent revision and tutor-led sessions.

How this paper is organised

The paper comprises **10 questions** arranged across two pages, with each question allocated **one mark**. Every item is multiple-choice with four possible answers labelled A through D. The questions are numbered sequentially from 1 to 10, and each is self-contained with its context clearly stated.

No time limit is printed on the paper itself, but a typical allocation for 10 questions at this level would be around 10 to 15 minutes, allowing roughly one to one and a half minutes per question. The layout is clean and uncluttered, with ample white space around each problem, making it easy for students to focus on one question at a time.

Questions progress in no strict order of difficulty. Early items include straightforward multiplication (Question 1) and volume calculation (Question 2), while later questions involve linear equations (Question 10) and angle reasoning (Question 5). This mixed structure mirrors the format of live GL Assessment papers, where challenge is distributed throughout rather than escalating linearly.

Topics covered

- Multiplication of two-digit numbers applied to real-world capacity problems (calculating total student accommodation)
- Volume calculation for cuboids using the formula length × width × height, rearranged to find a missing dimension
- Area and space optimisation problems involving division of large rectangles into smaller units (photo collage tiling)
- Properties of regular polygons, specifically the relationship between the number of sides and lines of symmetry
- Angle reasoning in a circle, solving for an unknown when angles are expressed as multiples of a variable
- Application of the area formula for rectangles (A = lw) with units in square metres
- Time calculations in 24-hour clock format, including addition of delays across the hour boundary
- Conversion between units of time (minutes to seconds) using the factor of 60
- Circle properties, specifically the relationship between radius and diameter
- Substitution into linear algebraic expressions (y = mx + c form) to evaluate y for a given x

How to use this paper for revision

- Practise multiplying two-digit numbers quickly and accurately without a calculator, as these appear frequently in capacity and area problems.
- Memorise key formulas such as the volume of a cuboid (length × width × height) and the area of a rectangle (length × width) so you can apply them instantly.
- When working with regular polygons, remember that the number of lines of symmetry always equals the number of sides in any regular polygon.
- For angle problems in circles, recall that the angles around a point sum to 360°, and use this to set up equations when angles are given as multiples of a variable.
- Get comfortable converting between units of time (minutes to seconds, hours to minutes) and distance (centimetres to metres) as these appear in many contexts.
- When substituting values into algebraic expressions, always follow the order of operations: multiply before adding or subtracting.
- For 24-hour clock problems, practise adding and subtracting time carefully, remembering that there are 60 minutes in an hour, not 100.

Common mistakes to avoid

- In Question 1, students may add 18 and 32 instead of multiplying, forgetting that 'each classroom has space for 32 students' requires multiplication to find the total.
- For volume problems like Question 2, students often multiply all three dimensions instead of dividing the volume by the known dimensions to find the missing height.
- In grid arrangement problems (Question 3), students may calculate how many photos fit in one direction only, or add the two dimensions instead of multiplying them.
- When working with angles in circles, students sometimes forget that all angles must sum to 360°, or they set up the equation incorrectly by missing one of the terms.
- In time conversion problems (Question 8), a common error is multiplying minutes by 100 instead of 60, confusing the decimal system with time units.
- For algebraic substitution (Question 10), students may forget to multiply 5 by x before adding 2, or they may add the numbers in the wrong order.

Exam technique

Approach this paper by reading each question carefully and identifying what operation or formula is required before looking at the answer options. In multiple-choice papers, wrong answers are often designed to catch common errors, so eliminating obviously incorrect options can help you focus on the plausible ones.

Allocate roughly one minute per question, but do not linger on any single item. If a question seems difficult, make an educated guess by eliminating implausible answers and move on. You can return to it if time allows. For calculation-heavy questions (Questions 1, 2, 6, 8), show brief working in the margin even though the paper is multiple-choice, as this helps you track your method and spot errors.

After completing all questions, use any remaining time to check your answers systematically. For formula-based questions, substitute your chosen answer back into the problem to verify it works. For conversion problems, double-check you have used the correct factor (60 for time, 100 for metric length, 2 for radius to diameter). This disciplined approach will maximise your accuracy under timed conditions.

What to revise alongside this paper

To deepen understanding of the content in this paper, revise the properties of 2D shapes, including the definitions and characteristics of regular polygons (equilateral triangles, squares, pentagons, hexagons, heptagons, octagons). Practise deriving the

number of lines of symmetry by sketching these shapes and folding them mentally or on paper.

For the algebra and formula work, ensure you are confident rearranging simple equations to isolate a variable, as this skill underpins Questions 2 and 10. Work through additional problems involving y = mx + c and practise substituting different values of x to build fluency. Also revisit the formulas for perimeter, area and volume of common shapes, as these recur frequently in 11+ papers.

Extend your practice with word problems that combine multiple steps, such as finding a missing dimension when given area or volume, or calculating total time when events overlap. These multi-step problems are common in GL Assessment papers and require careful reading and methodical working. Strengthening these skills will prepare you for more complex problem-solving questions in future practice papers.

Key terms

> **Multiplication**, **Volume**, **Cuboid**, **Area**, **Regular polygon**, **Lines of symmetry**, **Angle**, **Circle (360°)**, **24-hour clock**, **Conversion factor**, **Radius**, **Diameter**, **Substitution**, **Linear equation**, **Grid arrangement**

11+ Practice Test Answers

11+ Maths Test 7

Question	Answer	Explanation	Marks
1	576	To find the total number of students the school can accommodate, we need to multiply the number of classrooms by the number of students each classroom can hold. Number of classrooms: 18 Number of students per classroom: 32 18 × 32 = 576 Therefore, the school can accommodate a total of 576 students.	1
2	6 cm	To find the height of the rectangular fish tank, we need to use the formula for the volume of a cuboid: Volume = length × width × height We know that: Volume = 3,600 cm^3 Length = 30 cm Width = 20 cm Let's substitute these values into the formula: 3,600 = 30 × 20 × height To solve for the height, we divide both sides by (30 × 20): 3,600 ÷ (30 × 20) = height 3,600 ÷ 600 = height 6 = height Therefore, the height of the fish tank is 6 cm.	1
3	36	To determine the maximum number of photos that can fit on the cardboard, we need to calculate how many photos can fit in each row and column. The cardboard is 24 cm tall, and each photo is 6 cm in height. So, the number of photos that can fit vertically is: 24 cm ÷ 6 cm = 4 photos. The cardboard is 36 cm wide, and each photo is 4 cm in width. So, the number of photos that can fit horizontally is: 36 cm ÷ 4 cm = 9 photos. To find the total number of photos that can fit on the cardboard, we multiply the number of photos in each row by the number of photos in each column: 4 × 9 = 36 photos. Therefore, the maximum number of photos that Amelia can fit on the cardboard is 36.	1
4	All the above	A regular pentagon has 5 sides and 5 lines of symmetry, a regular octagon has 8 sides and 8 lines of symmetry, and a regular heptagon has 7 sides and 7 lines of symmetry.	1

5	36°	To find the value of x, we need to use the fact that the angles in a circle add up to 360°. Let's add up the angles of all the slices: Smallest slice: x Second smallest slice: $2x$ Second largest slice: $3x$ Largest slice: $4x$ Total angle: $x + 2x + 3x + 4x = 10x$ Since the total angle must equal 360°, we can set up an equation: $10x = 360°$ Dividing both sides by 10, we get: $x = 36°$ Therefore, the smallest slice has an angle of 36°, the second smallest slice has an angle of 72°, the second largest slice has an angle of 108°, and the largest slice has an angle of 144°.	**1**
6	1,500 square metres	To find the area of the rectangular field, we need to use the formula $A = lw$, where A is the area, l is the length, and w is the width. Given: Length (l) = 50 metres Width (w) = 30 metres Calculation: $A = lw$ $A = 50 \times 30$ $A = 1{,}500$ Therefore, the area of the rectangular field with a length of 50 metres and a width of 30 metres is 1,500 square metres.	**1**
7	15:15	The original departure time is 14:40 in the 24-hour clock format. The train is delayed by 35 minutes. To calculate the new departure time, we need to add 35 minutes to 14:40. 40 minutes + 35 minutes = 75 minutes 75 minutes is equal to 1 hour and 15 minutes. Therefore, the new departure time will be 14:40 + 1 hour and 15 minutes. 14:40 + 1 hour = 15:40 15:40 - 25 minutes (to account for the remaining 15 minutes) = 15:15 So, the train will depart at 15:15 in the 24-hour clock format.	**1**
8	25 200 seconds	To convert minutes to seconds, we need to multiply the number of minutes by 60 (as there are 60 seconds in a minute). Samantha practiced for 420 minutes. 420 × 60 = 25,200 Therefore, Samantha has spent 25,200 seconds practicing her violin this week.	**1**

9	70 cm	The diameter of a circle is twice the length of its radius. Given that the radius of the mirror is 35 cm, we can calculate the diameter as follows: Diameter = 2 × Radius Diameter = 2 × 35 cm Diameter = 70 cm Therefore, the diameter of the circular mirror is 70 cm.	**1**
10	22	To find the value of y when $x = 4$, we need to substitute the value of x into the equation $y = 5x + 2$. Step 1: Substitute x with 4 in the equation. $y = 5(4) + 2$ Step 2: Multiply 5 by 4. $y = 20 + 2$ Step 3: Add 20 and 2. $y = 22$ Therefore, when $x = 4$, the value of y is 22.	**1**

Answer-Key Notes: 11+ Maths Answers (Test 7)

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

How to use this answer key

This answer key provides the correct answer and full working for each of the ten questions. **Mark each response by checking both the final answer and the method shown**; a correct answer reached through flawed reasoning still indicates a gap that needs attention.

When a mistake occurs, compare the pupil's working against the explanation here to identify whether the error was a simple arithmetic slip, a misread of the question, or a deeper misunderstanding of the concept. **Careless errors cluster randomly; knowledge gaps show a pattern** across similar question types (for example, repeatedly struggling with volume or time conversions).

Use the worked examples below when the mark scheme's explanation is not enough to clarify why an answer is correct or where the pupil went wrong. They highlight common traps and reinforce key principles that apply across many 11+ maths papers.

Score interpretation

This paper contains ten multiple-choice and short-answer questions, each worth one mark, for a total of ten marks. **A score of 8–10 suggests confident handling of core arithmetic, geometry, and simple algebra** at the level expected for selective-school entry, though occasional slips under time pressure are normal.

Scores of 5–7 typically indicate solid understanding in some areas but uncertainty or rushed working in others. Review every incorrect question carefully: if mistakes span unrelated topics, the issue is likely exam technique or time management rather than subject knowledge. **Scores below 5 suggest that foundational concepts—particularly multi-step problems, unit conversion, and formulae—need systematic revision** before attempting further timed papers.

Because each question carries equal weight and the paper mixes topics, a single weak area (for example, always mishandling 24-hour-clock arithmetic) will cost marks but still leave room to score well overall. Targeted practice on identified gaps will quickly lift the total score.

Worked examples

Multi-step arithmetic and area/volume, Q1–3, Q6

Markers reward clear identification of the operation required and accurate execution of multi-step calculations. Pupils lose marks when they stop after the first step (for example, calculating 30 × 20 in Q2 but forgetting to divide the volume by that product) or misread dimensions (confusing length and width). Always write down the formula or the intermediate step before jumping to the final answer; this helps catch errors and earns credit even if the arithmetic goes astray.

> **Q2** : `6 cm`
>
> The volume formula Volume = length × width × height rearranges to height = Volume ÷ (length × width). **Substituting 3,600 ÷ (30 × 20) = 3,600 ÷ 600 gives 6 cm.** A common error is to divide 3,600 by 30 only, yielding 120, because the pupil forgets that both base dimensions multiply together before dividing into the volume.

> **Q3** : `36`
>
> First find how many photos fit vertically: 24 ÷ 6 = 4. Then horizontally: 36 ÷ 4 = 9. **Multiply these two results (4 × 9 = 36) to get the total grid capacity.** Pupils who add 4 + 9 = 13 have confused the two dimensions instead of recognising that the grid has four rows each containing nine photos.

Geometry and symmetry, Q4, Q9

Questions on regular polygons and circle properties test whether pupils know the standard facts (for example, diameter = 2 × radius, or that a regular polygon has as many lines of symmetry as it has sides). **Marks are usually lost through misremembering the definition or formula rather than through calculation errors.** Write down the rule explicitly before applying it, and double-check that the shape described in the question is indeed regular.

> **Q4** : `D (All the above)`
>
> **Every regular polygon has exactly as many lines of symmetry as it has sides.** A regular pentagon (5 sides, 5 lines), octagon (8 sides, 8 lines), and heptagon (7 sides, 7 lines) all satisfy this property, so the correct answer is 'All the above'. Choosing only one shape suggests the pupil has not recognised the general rule.

Angle arithmetic in a circle, Q5

This question requires forming an algebraic expression for the total angle and setting it equal to 360°. **Marks depend on correctly adding the terms (x + 2x + 3x + 4x = 10x) and then solving 10x = 360°.** Pupils who write 4x = 360° have counted only one slice, and those who guess an answer without forming the equation rarely arrive at 36°.

> **Q5** : `36°`
>
> The four slices have angles x, 2x, 3x, and 4x. Adding these gives 10x. **Because angles around a full circle sum to 360°, we solve 10x = 360°, so x = 36°.** This question tests both algebraic reasoning and knowledge of angle facts; missing either step leads to an incorrect answer.

Time and unit conversion, Q7, Q8

These questions assess whether pupils can add time correctly in 24-hour format and convert between units systematically. **Common mistakes include treating 60 minutes as 100 (adding 14:40 + 35 as 14:75 instead of recognising that 75 minutes = 1 hour 15 minutes) and multiplying by the wrong conversion factor.** Always write out the conversion (for example, 1 minute = 60 seconds) before calculating.

> **Q7** : `15:15`
>
> Starting at 14:40, add 35 minutes: 40 + 35 = 75 minutes, which is 1 hour and 15 minutes. **14:40 + 1 hour = 15:40, then 15:40 + 15 minutes (to complete the 75 minutes) gives 15:15.** Alternatively, recognise that 60 minutes takes you to 15:40, leaving 15 minutes more. Writing '14:75' is not valid in 24-hour time and signals a failure to carry the hour.

> **Q8** : `25,200 seconds`
>
> Convert minutes to seconds by multiplying by 60. **420 × 60 = 25,200.** Pupils who divide instead (420 ÷ 60 = 7) have reversed the conversion; always check that the answer makes sense (seconds should be a much larger number than minutes).

Substitution into formulae, Q6, Q10

Both questions give a formula and ask the pupil to substitute known values and solve. **Marks are earned for correct substitution and accurate arithmetic; the most frequent error is miscopying a number or confusing the order of operations.** Write each step on a new line and double-check that every given value appears in the working.

Q10 : 22

Substitute x = 4 into y = 5x + 2: y = 5 × 4 + 2. **First multiply: 5 × 4 = 20, then add: 20 + 2 = 22.** Pupils who write 5 × 4 + 2 = 5 × 6 = 30 have added before multiplying, forgetting that multiplication comes before addition in the order of operations.

Next steps

After marking, **sort incorrect answers into two groups: slips (correct method, arithmetic error) and gaps (wrong approach or missing knowledge).** Slips improve with timed practice and careful checking; gaps require revision of the underlying topic using a textbook or online resource. For each gap, work through two or three similar examples slowly, writing out every step, before attempting another timed paper.

If the score is 8 or above, move on to the next paper in the series or try a harder set that includes multi-part questions and non-calculator arithmetic. If the score is below 5, pause timed practice and spend a week on targeted revision—particularly formulae for area and volume, unit conversions, and forming simple equations—before returning to full papers. **Improving accuracy on the topics you already understand is faster than learning new content under time pressure.**