SATs·Papers.co.uk

PRACTICE PAPERS · QUESTION BOOKLETS · MARK SCHEMES & ANSWERS · PAPER NOTES

11+ PRACTICE PACK

Exam Ninja Test 6

11+ Maths Complete Practice Pack

CONTENTS

1 Amelia is practising her piano scales.

She can play each scale in 45 seconds.

If she starts practising at 3:30 pm, at what time will she have played 40 scales?

A 4:00 pm **B** 4:15 pm **C** 4:30 pm **D** 4:45 pm

1

2 Amir is thinking of a shape.

It has two pairs of equal sides.

One pair of parallel sides is longer than the other pair.

It has four right angles.

What shape is Amir thinking of?

A Square **B** Rhombus **C** Rectangle **D** Parallelogram

1

3 A local bakery is having a sale on all their baked goods.

The owner, Mr. Smith, has decided to reduce the price of every item by 20%.

Which of the following formulas should be used to calculate the sale prices (S) from the original prices (P)?

A S = P - (P ÷ 5) **B** S = P - 20 **C** S = P - 0.2 **D** S = P ÷ 20

1

4 Amelia is organising a school trip to the zoo.

There are 144 students going on the trip, and each coach can hold 24 students.

How many coaches will Amelia need to book for the trip?

A 6 **B** 12 **C** 24 **D** 144

1

5 Which of the following shapes has a different number of lines of symmetry to the number of sides?

A Regular hexagon **B** Rectangle **C** Regular pentagon **D** Regular heptagon

1

6 A rectangular fish tank has a length of 80 cm, a width of 40 cm, and a height of 50 cm.

What is the volume of the fish tank in litres?

A 160,000 litres **B** 16,000 litres **C** 1,600 litres **D** 160 litres

1

7 Amelia is measuring the length of a piece of ribbon for her craft project.

The ribbon measures 650 millimetres.

What is the length of the ribbon in centimetres?

A 0.65 cm **B** 6.5 cm **C** 65 cm **D** 650 cm

1

8 Samantha's train journey from London to Manchester took 2 hours and 40 minutes.

If she arrived in Manchester at 1:25 pm, what time did her train depart from London?

A 10:45 am **B** 11:45 am **C** 10:20 am **D** 11:05 am

1

9 Tom is making a fruit salad for a party. He has 2.5 kg of apples, 1,750 grams of grapes, and 1.2 kg of oranges.

What is the total weight of the fruit he has for the salad?

A 5.45 kg **B** 4.37 kg **C** 3.95 kg **D** 6.25 kg

1

10 A local cinema charges a £15 entry fee per person.

There is then an additional charge of 75p for each bag of popcorn purchased.

Which of the following expressions represents the total cost, in pounds, for a group of p people who each buy b bags of popcorn?

A 15p + 0.75pb **B** 15p + 0.75b **C** 15p + 75b **D** 1 500 + 0.75pb

1

Paper Notes: 11+ Maths Question Booklet (Test 6)

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

Overview

This is an **11+ Maths Question Booklet (Test 6)** published by **Exam Ninja**, designed to prepare students aged 10-11 for **GL Assessment** style entrance examinations. The paper contains **10 multiple-choice questions**, each worth one mark, covering a range of mathematical topics that appear regularly in selective school entrance tests.

The questions are presented as practical, real-world problems requiring students to apply their knowledge of time calculations, measurement conversions, geometry, volume, and algebraic thinking. Each question offers four possible answers labelled A to D, mirroring the format students will encounter in actual GL Assessment 11+ papers.

This paper is particularly useful for students in Year 5 or Year 6 who are preparing for grammar school or independent school entrance exams. The scenarios are accessible and relatable (piano practice, school trips, bakery sales, train journeys), making abstract mathematical concepts easier to visualise while testing essential reasoning skills under exam conditions.

How this paper is organised

The paper comprises **10 questions** spread across two pages, with each question carrying **one mark**. All questions follow a **multiple-choice format** with four options (A, B, C, D), allowing students to practise the answer-selection skills required in GL Assessment 11+ examinations.

Questions are numbered clearly and presented with generous spacing, making the paper accessible and reducing the risk of misreading. The scenarios range from single-step calculations (question 7 on unit conversion) to multi-step problems requiring careful planning (question 1 on time intervals, question 9 on mixed unit addition).

No time limit is specified on the paper itself, but a typical 10-question GL-style practice paper would be completed in 10-15 minutes under timed conditions. Students should aim for approximately one minute per question, leaving time to check answers. The layout is clean and uncluttered, with each question self-contained and clearly separated from the next.

Topics covered

- Time interval calculations involving repeated actions and clock arithmetic (calculating end times from start times and durations)
- Properties of quadrilaterals, including identification of rectangles based on parallel sides, equal sides, and right angles
- Percentage discounts and their representation as algebraic formulae (expressing a 20% reduction in terms of original price)
- Division problems in context, including calculating the number of coaches needed for a given number of students
- Lines of symmetry in regular and irregular polygons, comparing symmetry properties across different shapes
- Volume calculations for rectangular prisms (cuboids) and conversion between cubic centimetres and litres
- Metric unit conversions between millimetres and centimetres
- Backwards time calculations involving hours and minutes (finding departure time from arrival time and journey duration)
- Addition of mixed units (combining kilograms and grams) and total weight calculations
- Formation of algebraic expressions representing real-world costs with multiple variables (entry fees and additional purchases)

How to use this paper for revision

- Practise converting between different units of measurement (millimetres to centimetres, cubic centimetres to litres, grams to kilograms) until these become automatic, as unit errors are common under time pressure.
- For time problems, sketch a simple timeline or number line to visualise the start time, duration, and end time, which helps prevent mistakes when crossing hour boundaries.
- When working with percentages and discounts, remember that reducing by 20% is the same as multiplying by 0.8 (or subtracting one-fifth), and check which form the answer options use.
- Learn the properties of common quadrilaterals (squares, rectangles, rhombuses, parallelograms) so you can quickly eliminate wrong answers based on a single mismatched property.
- For volume questions, write down the formula (length × width × height) and substitute values carefully, then check whether the answer needs converting to different units.
- In algebraic expression questions, identify what varies (number of people, number of items) and ensure each variable appears in the correct part of the expression with the right coefficient.
- Always check the units requested in the answer (litres not cubic centimetres, centimetres not millimetres, pounds not pence) before selecting your final answer.

Common mistakes to avoid

- In question 1, students often multiply 40 by 45 but forget to convert the result (1,800 seconds) into minutes (30 minutes) before adding to the start time, leading to wrong clock arithmetic.
- In question 3, many students select option C (S = P × 0.2) thinking it represents the discount amount, when the question asks for the sale price itself, which should be P - (P × 0.2) or equivalently P - P/5.
- In question 5, students frequently assume all regular polygons have the same number of lines of symmetry as sides, overlooking that a rectangle (4 sides) has only 2 lines of symmetry, not 4.
- In question 6, calculating the volume correctly in cubic centimetres (160,000 cm^3) but failing to convert to litres by dividing by 1,000, resulting in an answer three orders of magnitude too large.
- In question 8, subtracting the journey time incorrectly across the hour boundary (forgetting that 1:25 pm minus 2 hours 40 minutes requires borrowing an hour when subtracting the 40 minutes from 25 minutes).
- In question 10, writing 15p + 75b instead of recognising that 75p must be converted to £0.75, and that each of p people buys b bags, requiring the term 0.75pb to represent total popcorn cost.

Exam technique

Approach each question methodically by reading it twice: once to understand the scenario, and again to identify exactly what is being asked. Circle or underline key numbers and units (grams vs kilograms, millimetres vs centimetres, departure vs arrival times) to prevent careless errors. Eliminate obviously wrong answers first, which often leaves only two plausible options and improves your chances if you need to guess.

Work through the paper in order, but if a question seems time-consuming or confusing, mark it lightly and return after completing easier questions. Most students find questions 4, 7, and 9 relatively straightforward, while questions 1, 3, 6, and 10 require more careful calculation and are worth revisiting if time allows. Use rough working space to show your method, particularly for multi-step problems, as this helps you spot errors when checking.

Leave two or three minutes at the end to review your answers. Check that selected answers make sense in the real-world context (a fish tank cannot hold 160,000 litres, a ribbon cannot be 650 centimetres if it measures 650 millimetres). For algebraic

expressions, substitute simple numbers (like p = 1 person, b = 1 bag) to verify your chosen formula produces a sensible cost.

What to revise alongside this paper

Students should consolidate their understanding of **ratio and proportion**, as these underpin percentage problems and are frequently tested alongside the topics in this paper. Practise simplifying ratios, finding equivalent ratios, and solving problems involving best value, which extend the thinking required in question 3. Work on **angle properties** in polygons (interior and exterior angles, angle sum rules), as these often appear in GL Assessment papers alongside symmetry and shape identification.

Review **negative numbers and directed number operations**, particularly in the context of temperature change and coordinate geometry, which are common 11+ topics not covered in this particular paper but likely to appear in full-length tests. Strengthen skills in **problem-solving with fractions and decimals**, including ordering, comparing, and performing the four operations, as these are foundational to almost every 11+ maths question.

For students finding this paper straightforward, progress to **more complex word problems** involving speed, distance and time, or problems requiring simultaneous consideration of multiple constraints (for example, timetabling problems or optimisation questions). Practise **data interpretation** from tables, charts and graphs, which is another staple of GL Assessment 11+ papers and requires similar logical reasoning skills.

Key terms

> **Multiple-choice**, **Time interval**, **Quadrilateral**, **Rectangle**, **Percentage discount**, **Algebraic expression**, **Volume**, **Cuboid**, **Unit conversion**, **Metric units**, **Lines of symmetry**, **Regular polygon**, **Variables**, **Formula**, **Mixed units**

11+ Practice Test Answers

11+ Maths Test 6

Question	Answer	Explanation	Marks
1	4:00 pm	To find the time when Amelia will have played 40 scales, we need to calculate the total time it takes her to play all the scales and add that to her start time. Each scale takes Amelia 45 seconds to play. For 40 scales, the total time would be: 45 seconds × 40 = 1 800 seconds To convert seconds to minutes, we divide by 60: 1 800 seconds ÷ 60 = 30 minutes So, it will take Amelia 30 minutes to play 40 scales. Amelia starts practising at 3:30 pm. To find the end time, we add 30 minutes to 3:30 pm: 3:30 pm + 30 minutes = 4:00 pm	1
2	Rectangle	The shape Amir is thinking of is a rectangle. A rectangle has two pairs of equal sides, with one pair longer than the other. The opposite sides are parallel to each other. Additionally, a rectangle has four right angles, which are equal to 90 degrees each. A square has all sides equal and four right angles, while a rhombus has all sides equal but not necessarily right angles. A parallelogram has two pairs of equal sides and opposite sides parallel, but its angles are not necessarily right angles. Therefore, the shape that fits all the given characteristics is a rectangle.	1
3	S = P - (P ÷ 5)	To reduce a price by 20%, we need to subtract 20% of the original price from the original price. To calculate 20% of the original price, we divide the original price by 5 (because 20% is equivalent to 1/5 or 0.2). So, if the original price is *P*, then 20% of *P* is *P* ÷ 5. Therefore, the sale price (*S*) is the original price (*P*) minus 20% of the original price (*P* ÷ 5). In other words, *S* = *P* - (*P* ÷ 5).	1
4	6	To find out how many coaches Amelia needs to book, we need to divide the total number of students by the number of students each coach can hold. Total number of students: 144 Number of students per coach: 24 144 ÷ 24 = 6 Therefore, Amelia will need to book 6 coaches for the school trip to the zoo.	1

5	Rectangle	A regular hexagon has 6 sides and 6 lines of symmetry, a regular pentagon has 5 sides and 5 lines of symmetry, and a regular heptagon has 7 sides and 7 lines of symmetry. However, a rectangle is the only shape where the number of sides (4) differs from the number of lines of symmetry (2).	**1**
6	160 litres	To find the volume of a rectangular prism (like a fish tank), we use the formula: Volume = length × width × height Given: - Length = 80 cm - Width = 40 cm - Height = 50 cm Plugging in the values: Volume = 80 cm × 40 cm × 50 cm Volume = 160,000 cm^3 Since 1 litre = 1,000 cm^3, we divide the volume in cm^3 by 1,000 to get the volume in litres: Volume in litres = 160,000 cm^3 ÷ 1,000 Volume in litres = 160 litres Therefore, the volume of the fish tank is 160 litres.	**1**
7	65 cm	To convert millimetres (mm) to centimetres (cm), we need to divide the number of millimetres by 10. This is because there are 10 millimetres in 1 centimetre. 650 mm ÷ 10 = 65 cm Therefore, the length of the ribbon is 65 centimetres.	**1**
8	10:45 am	To find the departure time, we need to subtract the journey duration from the arrival time. The journey duration is 2 hours and 40 minutes, which can be written as 2:40. The arrival time is 1:25 pm. To subtract time, we first convert 1:25 pm to 24-hour format, which is 13:25. Now, we can perform the subtraction: 13:25 - 2:40 = 10:45 Converting 10:45 back to 12-hour format, we get 10:45 am. Therefore, Samantha's train departed from London at 10:45 am.	**1**

9	5.45 kg	To find the total weight of the fruit, we need to convert all the weights to the same unit and then add them together. First, let's convert 1,750 grams of grapes to kilograms: 1,750 ÷ 1,000 = 1.75 kg Now we have: - 2.5 kg of apples - 1.75 kg of grapes - 1.2 kg of oranges Adding these together: 2.5 + 1.75 + 1.2 = 5.45 kg Therefore, the total weight of the fruit Tom has for the salad is 5.45 kg.	**1**
10	15p + 0.75pb	To calculate the total cost, we need to consider two parts: the entry fee and the cost of the popcorn. The entry fee is £15 per person, and there are p people in the group. So, the total entry fee is $15 \times p = 15p$ pounds. Each person buys b bags of popcorn, and each bag costs 75p (which is £0.75). The total cost of the popcorn is $0.75 \times b \times p = 0.75bp$ pounds, as there are p people each buying b bags. To get the total cost, we add the entry fee and the popcorn cost: $15p + 0.75bp$.	**1**

Answer-Key Notes: 11+ Maths Answers (Test 6)

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 the correct answer and full working for each question. **Mark each response against the answer given**, awarding one mark per question; there is no partial credit. Pay attention to the units and format required: for example, Q1 expects a time, Q7 expects centimetres, and Q10 expects an algebraic expression.

If your child loses marks, **read the explanation to identify whether the mistake was arithmetical, conceptual, or a misreading of the question**. A wrong answer on Q8, for instance, might mean difficulty with time arithmetic or with converting between 12-hour and 24-hour formats.

Use the worked examples below to reinforce the reasoning behind trickier answers. Where a question tests unit conversion or multi-step calculation, work through the steps together to build confidence and fluency.

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 strong arithmetic, reasoning, and familiarity with units and formulae**; these students are working comfortably at 11+ standard. A score of 5–7 indicates solid foundational skills but reveals gaps in topics such as time calculation, unit conversion, or algebraic notation that will benefit from targeted practice.

Scores of 3–4 often reflect uncertainty with multi-step problems (Q1, Q6, Q9) or unfamiliarity with formulae for percentage reduction (Q3) and total cost (Q10). **Review the mark scheme explanations for any question answered incorrectly** to pinpoint whether the issue is conceptual understanding, arithmetic accuracy, or reading the question carefully.

A score below 3 suggests that core topics—converting units, working with time, calculating volume, forming algebraic expressions—need systematic revision. Focus on one topic at a time, using similar problems from textbooks or practice papers, before attempting another full test.

Worked examples

Time and units, Q1 & Q7–Q9

Time and unit-conversion questions reward systematic working and careful attention to units. Q1 requires multiplying seconds by a quantity, converting to minutes, then adding to a clock time. Q7 tests the ten-to-one relationship between millimetres and centimetres. Q8 demands subtraction of hours and minutes in 24-hour format, and Q9 mixes kilograms and grams. Students who rush or skip intermediate steps often choose a distractor one decimal place or factor of ten away from the correct answer.

> **Q1** : `A (4:00 pm)`
>
> Forty scales at 45 seconds each gives 40 × 45 = 1 800 seconds. **Dividing by 60 converts this to 30 minutes.** Adding 30 minutes to a 3:30 pm start yields 4:00 pm. The distractors 4:15, 4:30 and 4:45 appear if you multiply 45 by 40 incorrectly or forget to divide by 60.

> **Q8** : `A (10:45 am)`
>
> **Convert 1:25 pm to 13:25 in 24-hour format, then subtract 2 hours 40 minutes to get 10:45.** Many students subtract the hours and minutes separately without borrowing correctly, landing on 10:20 or 11:05. Always check that subtracting the journey time from the arrival time equals the departure time.

> **Q9** : `A (5.45 kg)`
>
> Convert 1 750 grams to 1.75 kg (dividing by 1 000), then add 2.5 + 1.75 + 1.2. **Writing all weights in the same unit before adding is essential**; forgetting the conversion or adding 1 750 directly to the kilogram figures produces a wildly incorrect total.

Geometry and properties of shapes, Q2 & Q5

Both questions test definitions and properties rather than calculation. **Examiners reward precise reasoning about sides, angles and symmetry.** Q2 requires matching four clues to the correct quadrilateral; all four must be satisfied. Q5 asks which shape has a different *number* of lines of symmetry from its number of sides. Reading each statement carefully and eliminating impossible options one by one is the surest route to the correct answer.

Q2 : `C (Rectangle)`

A rectangle has two pairs of equal sides (one pair longer than the other), opposite sides parallel, and four right angles. **A square meets the angle and parallelism criteria but has all sides equal**, so it fails 'one pair longer than the other'. A rhombus has equal sides but lacks right angles, and a parallelogram lacks right angles.

Q5 : `B (Rectangle)`

A regular hexagon has six sides and six lines of symmetry; a regular pentagon has five of each; a regular heptagon has seven of each. **A rectangle has four sides but only two lines of symmetry** (vertical and horizontal through the centre), so it is the only shape in the list where the numbers differ.

Formulae and algebraic expressions, Q3 & Q10

These questions ask you to **translate a worded rule into algebraic notation**. Q3 tests understanding of percentage reduction as a subtraction; Q10 combines a fixed entry fee with a variable cost per item. Students who confuse operations (adding instead of subtracting, or multiplying the wrong terms together) will choose a distractor. Always check that your expression matches the words 'per person' or 'for each bag' in the question.

Q3 : `A (S = P − P ÷ 5)`

Twenty per cent is the same as one-fifth, so 20 % of P equals P ÷ 5. **The sale price is the original price minus that fifth**: S = P − (P ÷ 5). Option B subtracts 20 (not 20 %), option C multiplies by 0.2 instead of subtracting, and option D adds instead of subtracts.

Q10 : `A (15p + 0.75pb)`

The entry fee is £15 per person, so for p people the fee is 15p. Each person buys b bags at 75 p = £0.75 per bag, giving a popcorn cost of 0.75 × b × p = 0.75pb. **Total cost is the sum of these two terms: 15p + 0.75pb.** Option B omits p from the popcorn term, option C writes 75 b (pence rather than pounds), and option D uses 1 500 instead of 15.

Volume and division, Q4 & Q6

Q4 is a straightforward division to find the number of coaches; Q6 requires calculating the volume of a cuboid and converting cubic centimetres to litres. **Examiners expect you to know that 1 litre = 1 000 cm³** and to divide the calculated volume accordingly. Forgetting the conversion or misplacing a decimal point will lead to a distractor answer that is a power of ten away from the correct value.

> **Q6** : D (160 litres)
>
> Volume = length × width × height = 80 × 40 × 50 = 160 000 cm^3. **Because 1 litre = 1 000 cm^3, divide by 1 000 to obtain 160 litres.** Option A forgets the conversion entirely; options B and C result from moving the decimal point incorrectly.

Next steps

For every incorrect answer, revisit the explanation in the mark scheme and work through the steps on paper until the method is clear. If your child struggled with time problems (Q1, Q8), practise converting between units and adding or subtracting clock times using similar exercises. If algebraic expressions (Q3, Q10) or unit conversions (Q6, Q7, Q9) caused difficulty, consolidate those skills with targeted worksheets before attempting another full test.

Students who scored eight marks or above should move on to further 11+ papers, paying particular attention to any topics that cost them marks here. Those scoring below five should spend a week revising the weaker areas identified—geometry definitions, formula manipulation, or multi-step arithmetic—then retake this paper to confirm progress. Regular, spaced practice of mixed topics builds the fluency and confidence needed for success on test day.
