

## 11+ PRACTICE PACK

# OWL Tuition Test 9

## 11+ Maths Complete Practice Pack

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PRACTISE THE REAL THING

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**11 Plus**

**Paper [ 9 ]**

**Maths Non-Calculator**

**Total marks: [ 40 ]**

**Time allowed: 60 minutes**

**Instructions**

**You have 1 hour.**

**There are 40 marks available. Try to answer all the questions. Remember to show your working out.**

**No calculators are allowed.**

**Full name** \_\_\_\_\_

## Questions

1. Barry and his family are going to the theatre. The tickets are £24.50 for adults and £12 for children. The total price of the tickets is £60.50. How many adults and how many children (including Barry) are in his family? You must show your working out. (3 marks)

2. 250 people attended a concert. 40% of them were adults. How many were children? Give your answer as a number, not a percentage. (2 marks)

3. Angel is 16 years older than her nephew Tom. Tom is four years younger than Angel's sister Martha. If Angel was born in 1999, when was Martha born? (2 marks)

4. What is

a.  $10 \times 3.5$ ?

b.  $100 \times 4.92$ ?

c.  $990 \div 11$ ?

d.  $9.92 - 0$ ?

e.  $12 + 3.23$ ?

Total for Question 4 = 5 marks

5. a. Chris wants to buy three rubbers and four compasses. Rubbers cost  $r$  pence and compasses cost  $c$  pence. Write an equation in terms of the cost (£) to show how much he will spend. (2 marks)

b. If compasses cost £1 and the total cost of Chris's purchase is £5.50, how much do rubbers cost? (2 marks)

6. Fill in the missing numbers in these sequences:

a. 2, 4 \_\_\_\_\_ 8, 10

b. 1, 3, 9, 27, \_\_\_\_\_

c. 1, 4, 9, \_\_\_\_\_, 25

d. 110, 100, 80, 50, \_\_\_\_\_

e. 1, 2, 3 \_\_\_\_\_, 8, 13

7. Rupal has to be at his tennis match at 10.30am. He wakes up at 8.20am. How many minutes does he have before he has to be at tennis? (2 marks)

8. If one angle in a isosceles triangle is  $64^\circ$ , what are the possible sizes of the other two angles? (2 marks)

9. Year 6 has 48 children in it. Joshua does a survey to find out their favourite colour. His results are below but some numbers are missing. Can you fill them in?

Colour	Pink	Red	Yellow	Blue	Green
Girls		10	8	5	1
Boys	2		7		
Total	7	14		10	

Total for Question 9 = 6 marks

10. Barnaby records his team's football matches over six weeks. He accidentally forgets to record the sixth week but knows that the mean number of goals scored was 8.

a. Here are the scores. Fill in the sixth week.

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
7	5	9	10	9	

b. What is the mode?

c. What is the range?

Total for Question 10 = 5 marks

11. A cube has volume  $343\text{cm}^3$ . Another cube has a total surface area of  $216\text{cm}^2$ . What is the difference in the length of their sides? (4 marks)



# 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

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This is **Owl Tutors Paper 9**, a non-calculator maths question paper designed for **11+ entrance examinations** in the style of **GL Assessment** tests. It contains **11 questions worth 40 marks** to be completed in **60 minutes**, testing a broad range of mathematical skills expected of Year 6 pupils preparing for selective secondary school entry.

The paper combines arithmetic operations, word problems, algebra, geometry, sequences, and data handling in a format that mirrors the real 11+ experience. Questions progress from straightforward calculations to multi-step reasoning tasks, with marks allocated according to difficulty. Students must show their working throughout, a requirement that reflects how marks are awarded in actual entrance exams.

This paper suits pupils in the final stages of 11+ preparation who have covered the core curriculum and need timed practice under exam conditions. The range of topics and the requirement to work without a calculator make it particularly valuable for identifying gaps in mental arithmetic and problem-solving strategies.

## How this paper is organised

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The paper opens with clear instructions emphasising the **60-minute time limit** and the requirement to show all working. Questions are numbered 1 to 11, though several contain multiple parts, bringing the total number of individual tasks to well over 20. Marks range from **1 mark per part** for simple calculations to **4 marks** for the final cube problem.

Early questions (1 to 3) focus on word problems involving money, percentages, and age relationships, each worth 2 to 3 marks. Question 4 tests basic operations (multiplication, division, subtraction, addition) across five parts totalling 5 marks. Questions 5 to 8 cover algebra, sequences, time intervals, and geometry, with marks varying from 1 to 2 per part.

Questions 9 and 10 are data-handling tasks worth **6 marks and 5 marks** respectively, requiring students to complete tables and calculate mean, mode, and range. The paper concludes with Question 11, a challenging geometry problem involving volume and surface area that tests spatial reasoning and understanding of cube properties. The layout is clean and uncluttered, with ample space for working.

## Topics covered

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- Multi-step word problems involving ticket prices, simultaneous equations, and logical reasoning
- Percentage calculations applied to real-world contexts (concert attendance, converting percentages to actual numbers)
- Age-relationship problems requiring algebraic thinking and careful interpretation of comparative statements
- Decimal arithmetic including multiplication by powers of 10, division, subtraction, and addition without a calculator
- Forming and solving simple algebraic equations with two variables (cost of rubbers and compasses)
- Number sequences: linear (arithmetic progressions), geometric (powers of 3), square numbers, and custom patterns (differences of differences)
- Time interval calculations across hours and minutes, converting between units
- Properties of isosceles triangles and angle relationships, including the ambiguity of which angle is given
- Two-way tables and data handling: completing missing values using totals and subtotals across rows and columns
- Measures of central tendency and spread: calculating mean from incomplete data, identifying mode, and finding range
- Three-dimensional geometry: calculating cube side lengths from volume and surface area, and comparing dimensions

## How to use this paper for revision

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- Practise forming equations from word problems by identifying what you know and what you need to find, then assigning letters to unknown quantities.
- Revise your times tables up to  $12 \times 12$  and practise multiplying and dividing decimals by 10, 100, and 1000 without a calculator until these become automatic.
- For sequence questions, always check the relationship between consecutive terms: is it addition, multiplication, squaring, or a combination of operations?
- When working with isosceles triangles, remember that two sides are equal, which means two angles are also equal. Sketch the triangle and label what you know.
- In data-handling tables, use the totals to work backwards: if you know the total and some parts, subtract to find the missing value.
- Revise cube formulas: volume =  $\text{side}^3$  and surface area =  $6 \times \text{side}^2$ . Practise finding cube roots of perfect cubes (8, 27, 64, 125, 216, 343).
- Always show your working, even for questions that seem simple. Partial marks are often available for correct methods even if your final answer is wrong.

## Common mistakes to avoid

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- In Question 1, guessing the number of adults and children without setting up a systematic equation. Students must use the total cost and ticket prices methodically to avoid trial-and-error errors.
- Forgetting to convert 40% to an actual number in Question 2. Many pupils write '60%' as their answer instead of calculating how many children that represents.
- Misinterpreting the age relationships in Question 3. Students often confuse who is older than whom and make errors in the direction of the calculations.
- In Question 8, assuming there is only one answer. An isosceles triangle with one angle of  $64^\circ$  could have two equal angles of  $64^\circ$  or two equal angles of  $58^\circ$ , depending on which angle is given.
- Rushing through the table in Question 9 and not checking that rows and columns add up correctly. Small arithmetic errors cascade into multiple wrong answers.
- In Question 10a, forgetting that the mean is calculated over six weeks, so the total must be  $6 \times 8 = 48$ , not working backwards from the sum of five known weeks.

## Exam technique

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Begin by reading every question carefully and noting the marks available. Questions worth more marks (such as Questions 9, 10, and 11) will require more working and more

time, so plan to spend roughly one minute per mark. Start with the questions you find easiest to build confidence and secure those marks quickly, then return to tackle the harder problems.

Always write down your method, even for arithmetic. In Question 5, for example, forming the equation ' $3r + 4c = \text{total cost}$ ' earns marks even if you make a calculation error later. Use the margin or any blank space to sketch diagrams for geometry questions (such as the isosceles triangle in Question 8) and to jot down known formulas before substituting values.

Leave time at the end to check your answers. For Questions 9 and 10, verify that your completed table rows and columns sum correctly, and that your calculated mean, mode, and range make sense in context. If you are stuck on a question, move on and return to it later rather than losing valuable minutes. Remember that this is a non-calculator paper, so any answer requiring complex long division or decimals beyond two places is likely wrong.

## What to revise alongside this paper

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To prepare thoroughly for papers like this, revise **forming and solving linear equations** with one or two unknowns, including rearranging formulas and substituting values. Practise **mental arithmetic strategies** for multiplying and dividing by 10, 100, and other multiples, and ensure you are confident with **percentage conversions** (finding a percentage of a quantity and finding the whole from a part).

Geometry revision should cover **properties of triangles** (equilateral, isosceles, scalene, right-angled) and angle rules, including the fact that angles in a triangle sum to  $180^\circ$ . Extend your work on **three-dimensional shapes** by calculating volumes and surface areas of cubes, cuboids, prisms, and cylinders, and practise working backwards from a given volume or area to find a missing dimension.

For statistics, revisit **measures of central tendency and spread** (mean, median, mode, range) and practise reading and completing **two-way tables, bar charts, and pie charts**. Sequence work should include identifying and extending arithmetic, geometric, square, cube, and Fibonacci-style patterns, and expressing the  $n$ th term of simple sequences.

## Key terms

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**Equation, Variable, Percentage, Decimal multiplication, Sequence, Arithmetic progression, Geometric progression, Isosceles triangle, Two-way table, Mean, Mode, Range, Volume, Surface area, Cube root**

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**Answers**

1. One adult and three children

2. 150 people.

3. 2011

4. a. 35      b. 492      c. 90      d. 9.92      e. 15.23

5. a.  $3r + 4c$       b. £1.50

6.a. 6      b. 81      c. 16      d. 10      e. 5

7. 130 minutes (1 mark for 2 hrs 10 mins)

8.  $64^\circ$  or  $58^\circ$

9.

Colour	Pink	Red	Yellow	Blue	Green
Girls	5	10	8	5	1
Boys	2	4	7	5	1
Total	7	14	15	10	2

10. a. 8      b. 9

c. 5

11. 1cm

# 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

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This answer key provides the final answers and, where appropriate, partial marks for intermediate steps. **Mark each question against the guidance given**, awarding full marks only when the method and answer are both correct. If a student reaches the right answer through incorrect reasoning, award no more than one mark where the scheme allows it.

Distinguish between slips (a correct method spoiled by a single arithmetic error) and gaps in understanding (no clear method, or a fundamental misunderstanding of the question). The worked examples below explain **why each answer is correct** and highlight common traps.

Use the worked examples when a student's answer differs from the mark scheme or when you want to understand the reasoning behind a multi-step problem. They are especially helpful for questions 1, 3, 8, 9 and 11, which involve several logical steps.

## Score interpretation

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This paper carries 40 marks and is designed to be completed in 60 minutes without a calculator. A score of **32 or above (80 per cent)** suggests readiness for selective entry at 11+, provided the student showed clear working and did not rely on guesswork. Marks in the mid-twenties typically indicate solid foundational skills but a need for further practice in multi-step reasoning, particularly in questions 1, 3, 9 and 11.

Scores below 20 often reflect gaps in core arithmetic (multiplication, division, percentages) or difficulty translating word problems into equations. Review questions 2, 4, 5 and 7 to identify whether the issue is conceptual or procedural.

Remember that this is a **non-calculator paper**, so fluency with mental and written methods is essential. A high score here is a better predictor of exam success than a high score achieved with a calculator, because it demonstrates number sense and confidence under time pressure.

## Worked examples

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### Word problems and reasoning, Q1-3

These questions test whether a student can translate a real-world scenario into arithmetic or logical steps. **Markers reward clear working**; even if the final answer is wrong, partial

marks are available in question 1 if the equations are set up correctly. Many students lose marks by guessing combinations instead of solving systematically, or by misreading relationships (for example, confusing 'older than' with 'younger than' in question 3).

**Q1** : One adult and three children

Let  $a$  be adults and  $c$  be children. Then  $24.50a + 12c = 60.50$ . Testing small whole numbers: one adult costs £24.50, leaving £36 for children.  $£36 \div 12 = 3$  children. Check:  $£24.50 + £36 = £60.50$ . **Systematic trial within constraints** is faster than random guessing.

**Q3** : 2011

Angel was born in 1999. Tom is 16 years younger, so Tom was born in  $1999 + 16 = 2015$ . Martha is four years older than Tom, so Martha was born in  $2015 - 4 = 2011$ . Students often add instead of subtract at the second step, or forget that '**younger**' **reverses the direction** of the calculation.

### Arithmetic and algebra, Q4-5

Question 4 tests fluency with decimals and the effects of multiplying or dividing by powers of ten. **Each part carries one mark**, so accuracy matters more than showing working. Question 5 builds an algebraic expression and then solves it; students must convert between pence and pounds carefully. Marks are lost when students write  $3r + 4c$  but then forget that  $r$  and  $c$  were defined in pence, not pounds.

**Q5b** : £1.50

From part (a), the cost is  $3r + 4c$  pence, or  $(3r + 4c)/100$  pounds. Four compasses at £1 each cost £4, so  $3r/100 = 5.50 - 4 = 1.50$ , giving  $3r = 150$  and  $r = 50$  pence. **The question asks for the cost in pounds**, so the answer is £1.50 for three rubbers, or 50p each. Many students write 50p and lose a mark.

### Sequences and patterns, Q6

Each sequence follows a different rule (arithmetic, geometric, square numbers, decreasing differences, Fibonacci-style). **One mark per part** means that a single slip costs a full mark. The most common error is continuing a pattern without checking whether it fits all the given terms; for example, assuming question 6d is simply 'subtract 10' when in fact the differences grow by 10 each time.

**Q6b** : 81

The sequence 1, 3, 9, 27 multiplies by 3 each time (powers of 3:  $3^0, 3^1, 3^2, 3^3$ ). The next term is  $27 \times 3 = 81$ . Students who write 54 have mistakenly added 27 instead of multiplying.

**Q6d** : 10

The differences are  $-10, -20, -30$ . The next difference is  $-40$ , so  $50 - 40 = 10$ . This is **not** a simple arithmetic sequence; recognising the pattern in the gaps is the key skill.

### Time, angles and data, Q7–9

Question 7 rewards students who convert hours to minutes before subtracting. Question 8 tests knowledge that an isosceles triangle has two equal angles and that all three sum to  $180^\circ$ ; **there are two valid configurations**, so both answers earn full marks. Question 9 is a multi-step data table: students must use row and column totals to deduce missing values. Six marks are available, one per missing cell; arithmetic errors propagate quickly, so check totals carefully.

**Q7** : 130 minutes

From 08:20 to 10:30 is 2 hours 10 minutes. Converting to minutes:  $2 \times 60 + 10 = 130$ . Writing '2 hrs 10 mins' earns only one mark because **the question asks for the answer in minutes**.

**Q8** :  $64^\circ$  or  $58^\circ$

Case 1: the  $64^\circ$  angle is one of the two equal angles, so the triangle has  $64^\circ, 64^\circ$  and  $180 - 128 = 52^\circ$ . Case 2: the  $64^\circ$  angle is the unique angle, so the two equal angles are each  $(180 - 64) \div 2 = 58^\circ$ . **Both answers are correct**; writing only one earns one mark.

**Q9 (Girls, Pink)** : 5

The total for Pink is 7 and Boys, Pink is 2, so Girls, Pink =  $7 - 2 = 5$ . The table is solved by working systematically through rows and columns, using each total as a constraint. Students often guess instead of calculating.

### Mean, mode, range and cube problems, Q10–11

Question 10 requires understanding that the mean is the total divided by the number of values; students must work backwards to find the missing data point. Mode and range are then read from the complete list. Question 11 combines cube volume and surface area:

**students must recall both formulae** (volume = side<sup>3</sup>, surface area = 6 × side<sup>2</sup>) and solve for the side length in each case before finding the difference. Four marks reflect the multi-step nature.

**Q10a** : 8

Mean = total ÷ 6 = 8, so total = 48. The sum of weeks 1 to 5 is 7 + 5 + 9 + 10 + 9 = 40. Therefore week 6 = 48 – 40 = 8. Students who forget to multiply the mean by 6 will subtract 8 from 40, giving an impossible negative answer.

**Q11** : 1 cm

First cube: volume = side<sup>3</sup> = 343, so side =  $\sqrt[3]{343} = 7$  cm. Second cube: surface area = 6 × side<sup>2</sup> = 216, so side<sup>2</sup> = 36 and side = 6 cm. Difference = 7 – 6 = 1 cm. **Many students confuse the two formulae** or forget that a cube has six faces, not four.

## Next steps

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After marking, sit down with your child and review any question where marks were lost. **Ask them to explain their method aloud**; often they will spot their own mistake as they talk through it. For arithmetic slips (correct method, wrong final answer), set three or four similar problems for practice. For questions where no clear method was shown, work through the corresponding worked example together, then try a parallel problem from a practice book or past paper.

If the score is below 24, prioritise fluency with times tables, decimal arithmetic and percentage calculations before attempting another full paper. If the score is above 32, challenge your child with multi-step problems from GL or Bond 11+ extension books, and introduce unfamiliar question types (for example, ratio, speed or area problems) to build resilience and adaptability under exam conditions.

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