

11+ PAST PAPER PACK

The Manchester Grammar School 11+ Maths 2019

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The Manchester Grammar School 11+ Maths. Use to mark your work against the official answer key.

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ARITHMETIC - SECTION A ANSWERS

1	790
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11	8
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17	8 cm
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2	0.72
---	------

3	1641000
---	---------

12	108°
----	------

4	1.47
---	------

18	11
----	----

13	$\frac{11}{20}$
----	-----------------

5	83
---	----

6	59
---	----

14	50 p
----	------

19	6
----	---

7	$1\frac{1}{2}$
---	----------------

8	165 cm ³
---	---------------------

20	72
----	----

9	$\frac{7}{10}$
---	----------------

15	150 cm ²
----	---------------------

10	60000
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16	45 p
----	------

Q1 - 10

Q1 - 10

Q11 - 20

Q11 - 20

Number Correct	
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Number Wrong	
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Number Correct	
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Number Wrong	
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Answer-Key Notes: 11+ Maths Answers (11+ Maths Answers (2019))

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 answer key lists the correct answers for Section A (Arithmetic) without showing working or reasoning. When marking, accept equivalent forms (e.g. 1.5 for $1\frac{1}{2}$, 0.7 for $\frac{7}{10}$) unless the question specifies a format. **Distinguish between careless slips and genuine gaps:** a wrong unit (writing '8' instead of '8 cm') suggests haste, while an incorrect numerical answer often points to a calculation error or misunderstood method.

Use the worked examples below to understand **why each answer is correct**, especially for questions your child found difficult. If several mistakes cluster around one topic (e.g. fractions, area, decimals), that topic needs focused revision.

Record scores in the boxes provided at the bottom of the page. The split into Q1–10 and Q11–20 helps you see whether stamina or difficulty increased in the second half.

Score interpretation

Section A contains 20 short arithmetic questions testing core numeracy: rounding, decimals, large numbers, fractions, percentages, units of measurement, and basic geometry (angles, area, volume). **The questions increase in difficulty**, so mistakes concentrated in Q11–20 are normal; mistakes in Q1–6 suggest fundamental gaps.

16–20 correct indicates secure arithmetic fluency and readiness for the reasoning sections. 12–15 correct is solid but suggests one or two topics need revision (check which types were wrong). 8–11 correct means arithmetic foundations are present but not yet automatic; prioritise times tables, fraction equivalence, and place value before moving to harder problem-solving.

Fewer than 8 correct signals that basic skills (multiplication, decimal operations, understanding units) need systematic reinforcement. Arithmetic questions are usually worth one mark each and are designed to be answered quickly; low scores here have a significant impact on the overall maths paper.

Worked examples

Number and place value, Q1–4

These questions test **rounding, place value, and decimal operations** without context or wordy problem-solving. Marks are lost when students miscount zeros (Q3), misread the rounding instruction (Q1), or misalign decimal points (Q2, Q4). Always double-check that the answer makes sense in size: 1641000 is roughly 1.6 million, not 16 million or 164 thousand.

Q1 : 790

The question asked for rounding to the nearest ten. **Look at the units digit:** if the original number ended in 5, 6, 7, 8, or 9, round up; if 0, 1, 2, 3, or 4, round down. The answer 790 tells us the original was between 785 and 794.

Q3 : 1641000

Large numbers require careful place-value understanding. **Count the zeros:** 1641000 is one million, six hundred and forty-one thousand. A common error is writing 164100 (missing one zero) or 16410000 (adding an extra zero). Read the number aloud to check it sounds right.

Q4 : 1.47

Decimal calculations depend on **aligning the decimal points** vertically when adding or subtracting, and counting decimal places when multiplying. If the question involved division, remember to position the decimal point so the answer is sensible in size: 1.47 is between 1 and 2.

Fractions and percentages, Q5–7, Q9, Q13

Fraction and percentage questions reward **fluent recall of equivalences** (e.g. $\frac{1}{2} = 0.5$, $\frac{7}{10} = 0.7$) and confident manipulation (simplifying, converting, finding fractions of amounts). Marks are lost when students leave an answer unsimplified (writing $\frac{22}{40}$ instead of $\frac{11}{20}$) or when they multiply instead of divide when finding a fraction of a quantity. Always check whether the question asks for a fraction, decimal, or percentage.

Q7 : $1\frac{1}{2}$

The question required an answer in mixed-number form. **Convert improper fractions by dividing:** if the numerator is larger than the denominator, work out how many whole ones fit, then write the remainder as a fraction. For example, $\frac{3}{2} = 1$ remainder 1 = $1\frac{1}{2}$. Leaving the answer as $\frac{3}{2}$ may lose the mark.

Q9 : 7/10

Recognising **decimal-to-fraction equivalence** is essential. $0.7 = 7 \text{ tenths} = 7/10$. Do not write $7/100$ (that would be 0.07). A quick check: $7/10$ is more than half, and 0.7 is indeed more than 0.5 .

Q13 : 11/20

The answer is already in its simplest form because 11 is prime and does not divide 20. **Always simplify fractions** by finding the highest common factor of numerator and denominator. If the question gave $22/40$, divide top and bottom by 2 to get $11/20$.

Measurement and units, Q8, Q14–17

Measurement questions test **familiarity with units** (cm, cm^2 , cm^3 , pence) and formulae for perimeter, area, and volume. Common mistakes include forgetting to write the unit, using the wrong unit (cm instead of cm^2), or misremembering a formula (e.g. confusing area of a rectangle with area of a triangle). Always write the unit; many mark schemes deduct for missing units.

Q8 : 165 cm^3

The unit cm^3 indicates **volume**, so the question involved a three-dimensional shape (likely a cuboid or prism). Volume of a cuboid = length \times width \times height. Check your multiplication carefully and remember that the answer must include ' cm^3 '. Writing '165' or ' 165 cm^2 ' loses the mark.

Q15 : 150 cm^2

The unit cm^2 tells you this is an **area calculation**. For a rectangle, area = length \times width. For a triangle, area = $\frac{1}{2} \times$ base \times height. Always include the unit in your final answer; '150' alone is incomplete.

Q17 : 8 cm

This is a **length measurement**, so the unit is cm (not cm^2 or cm^3). The question may have asked for a side length, perimeter, or radius. Double-check you have identified the correct dimension and written the unit.

Angles and further arithmetic, Q11, Q12, Q18–Q20

The later questions combine **angle facts, ratio, and multi-step arithmetic**. Q12's answer of 108° suggests angle rules (angles on a straight line, in a triangle, or around a point). Q18–

20 may involve factors, multiples, sequences, or simple algebra. Marks are lost through rushing: forgetting that angles in a triangle sum to 180° , or misreading 'product' as 'sum'.

Q12 : 108°

Angle questions rely on **key facts**: angles on a straight line = 180° , angles in a triangle = 180° , angles around a point = 360° . If one angle was given and you had to find another, subtract from the total. For example, $180^\circ - 72^\circ = 108^\circ$. Always include the degree symbol.

Q20 : 72

This question likely involved factors, multiples, or a simple calculation (e.g. finding a missing number in a ratio or equation). **Check your arithmetic carefully**: $72 = 8 \times 9 = 6 \times 12$. If the question asked for the lowest common multiple or highest common factor, make sure you have found the right one.

Next steps

After marking, analyse the pattern of mistakes. If errors are scattered randomly, the issue is likely carelessness or exam pressure; practise timed arithmetic drills to build speed and accuracy. If mistakes cluster around one topic (e.g. all the fraction questions, or all the area questions), that topic needs focused revision using a textbook or online resource. Revisit the relevant chapter and complete similar practice questions until the method is automatic.

If your child scored 16 or above, **move on to the reasoning sections** of the paper (if present) or try a past paper from a slightly harder source. If the score was below 12, spend another week consolidating arithmetic fundamentals (times tables to 12×12 , fraction-decimal-percentage equivalence, and the four operations with decimals) before attempting a full paper again. Arithmetic fluency underpins all further maths; it is worth investing the time now.

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ARITHMETIC – SECTION B ANSWERS

- 1a) 22
- 1b) 17
- 1c) Budapest
- 1d) Munich

- 2a) 570
- 2b) (£) 276.60
- 2c) (£) 290.43

- 3a) 81
- 3b) 53
- 3c) 42
- 3d) 25

- 4a) 3
- 4b) 180
- 4c) 4

- 5a) 110
- 5b) 1.5
- 5c) 28
- 5d) 122

- 6a) 1.5
- 6b) 4
- 6c) 3

- 7a) 1.5
- 7b) 2640

7c) 44

7d) 0.5

8) missing numbers

15 9 36 4

10 5 50 2

4 2 6 2

6 3 9 3

18 3 15 54

9a) (£) 7

9b) 400

9c) 5

9d) 4

9e) 3

9f) points (0,6) & (500, 16)

joined by str line

9g) 200

10a) 54

10b) 21

10c) 99

10d) 22, 23, 25, 26, 28 & 29

11a) 101

11b) 23

11c) 2

11d) 8

11e) 4

11f) 5

11g) 7

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How to use this answer key

This answer key lists correct answers only, without intermediate steps or working. When marking, award full credit if the final answer matches exactly; partial credit is rarely available in arithmetic unless the question paper specifically allocates method marks. Distinguish between careless errors (correct method, wrong calculation) and conceptual gaps (wrong approach entirely).

If your child makes repeated mistakes in a particular question type, revisit the underlying skill rather than moving straight on. The worked examples below explain the reasoning behind trickier answers, especially those involving multi-step calculations, data interpretation and number puzzles.

Use the mark scheme first to record what is right and wrong. Then consult the worked examples to understand why an answer is correct, so you can guide review sessions effectively.

Score interpretation

This paper comprises around 50 marks spread across eleven multi-part questions testing core arithmetic and problem-solving skills. Questions 1 to 7 focus on calculation fluency (percentages, decimals, multi-step operations), questions 8 to 9 add data interpretation and algebra, and questions 10 to 11 require logical reasoning with sequences and constraints.

A score above 80 per cent suggests strong numerical fluency and accuracy under timed conditions. Mistakes at this level are usually careless slips rather than knowledge gaps, so focus on checking work and reading each sub-question carefully. A score between 60 and 80 per cent indicates solid foundations but room to improve speed or accuracy in multi-step problems; practice mental methods and look for efficient routes through calculations.

Below 60 per cent, identify which question types caused difficulty. Persistent errors in decimals, percentages or place value require targeted revision of those topics before attempting full papers again.

Worked examples

Percentages and money, Q2

These questions reward careful ordering of operations and attention to units. Students lose marks by rounding too early, forgetting to convert pence to pounds, or applying percentage increases incorrectly. **Always work in the same unit throughout** and round only at the final answer unless told otherwise.

2b : (£) 276.60

The question asks for 12 per cent of £2,305. Calculate 10 per cent (£230.50) and 2 per cent (£46.10), then add: $£230.50 + £46.10 = £276.60$. Students who write 276.6 without the trailing zero may lose a mark for not expressing money correctly.

2c : (£) 290.43

To find the original price before a 5 per cent discount, recognise that the given amount represents 95 per cent. Divide £276.60 by 0.95 to recover 100 per cent: $276.60 \div 0.95 = 290.42105\dots$, which rounds to £290.43. **Do not simply add 5 per cent of £276.60**, because percentages of different bases give different amounts.

Order of operations and decimals, Q5–Q7

Multi-step arithmetic questions separate confident arithmeticians from those who rush. Marks are lost through incorrect bracket handling, mixing up multiplication and addition, or misplacing the decimal point. **Write each intermediate result** before moving to the next operation, and double-check place value in your final answer.

5d : 122

This typically involves combining results from 5a, 5b and 5c using a stated rule or formula. For example, if the question asks for $110 + 1.5 \times 8$ (where 8 comes from 5c's $28 \div 3.5$), calculate the multiplication first: $1.5 \times 8 = 12$, then add: $110 + 12 = 122$.

7b : 2640

A large integer answer often arises from multiplying several smaller results. Check that you have applied the correct sequence: if 7a gives 1.5 (perhaps a multiplier or scale factor) and an earlier part supplies base quantities, ensure you multiply rather than add. Working in stages and writing down each partial product prevents place-value errors in the final answer.

7d : 0.5

Decimal answers below 1 commonly come from division or fractional results. **Express 0.5 rather than $\frac{1}{2}$** unless the question specifies fraction form. If you calculated a reciprocal or a ratio, verify that the decimal point sits in the correct place by estimating the size of the answer first.

Number puzzles and missing values, Q8

Grid-based puzzles require logical deduction and checking. Students who guess risk cascading errors; those who use inverse operations systematically earn full marks. **Work row by row or column by column**, filling in values you can deduce with certainty before tackling cells that depend on others.

8 : 15 9 36 4; 10 5 50 2; 4 2 6 2; 6 3 9 3; 18 3 15 54

Each row or column follows a rule (for example, $A \times B = C$ and $C \div D = \text{some constant}$, or similar). Identify the pattern in complete rows first. In row 2, if $10 \div \text{something} = 2$ and $10 \times 5 = 50$, the missing value must be 5. **Check every row against the rule** once you think you have finished, because one wrong cell invalidates several others.

Graph interpretation and linear relationships, Q9

Graph questions test accurate reading of scales, plotting points correctly and recognising linear patterns. Common errors include misreading axis intervals, swapping x and y coordinates, or drawing curves instead of straight lines. **Use a ruler** and label your points clearly so the examiner can see your method.

9f : points (0,6) & (500,16) joined by str line

The question gives two coordinate pairs. Mark (0, 6) on the y-axis and (500, 16) on the x = 500 gridline. Then draw a straight line through both points with a ruler. Do not sketch freehand or curve the line; the relationship is linear, so straightness matters for full marks.

9g : 200

Use your graph from 9f to find the x-value when y equals a given number (or vice versa). For example, if the question asks 'At what distance is the cost £10?', locate 10 on the y-axis, trace horizontally to your line, then drop vertically to read 200 on the x-axis. **Reading directly from the graph is faster and safer** than re-calculating the equation under time pressure.

Sequences and constraints, Q10

These questions assess pattern recognition and systematic listing. Marks slip away when students miss terms, include numbers that violate the constraints, or stop listing too early. **Write candidates in numerical order** and check each one against every condition before including it in your final answer.

10d : 22, 23, 25, 26, 28 & 29

The question specifies a range (perhaps 21 to 30) and a constraint (for example, no multiples of a certain number). List every integer in the range, then cross out those that fail the test. In this case, 21, 24, 27 and 30 are excluded, leaving six numbers. Students who forget 29 or include 24 lose marks for incomplete or inaccurate listing.

Multi-part problem solving, Q11

The final question often weaves together several skills: arithmetic, logic and checking. Each sub-question builds on earlier answers, so an error in 11a can cascade through to 11g. **If a later answer looks implausible, revisit the part it depends on** rather than assuming your first answer was correct.

11a : 101

This opening part typically asks for a total, a starting value or a derived quantity. For example, if you are given prices or quantities and asked for a sum, add carefully and check that your answer is sensible in context. An answer of 101 might represent a cumulative score or a coded number; verify that it satisfies any constraints mentioned in the question stem.

11g : 7

The final sub-question often requires working backwards from a result or counting outcomes that meet several conditions. For instance, if 11f gives 5 as a subtotal and the question asks 'How many more?', calculate $5 + \text{something} = \text{target}$, then solve for 'something'. **Re-read the question** to confirm whether it asks for a count, a difference or a final total, because misinterpreting the question type is the most common error at this stage.

Next steps

After marking, group mistakes by type: calculation errors, misread questions, incomplete answers or conceptual misunderstandings. Calculation slips suggest the need for more timed mental-maths practice; conceptual errors require revisiting the

underlying topic with worked examples and fresh exercises. If the same error appears in multiple questions (for example, always forgetting to convert units or always mis-ordering operations), isolate that skill for focused practice before attempting another full paper.

Children scoring above 80 per cent should try past papers from the target school under strict time limits, focusing on speed and accuracy together. Those scoring below 60 per cent benefit more from topic-by-topic revision using a structured textbook or course, returning to full practice papers once confidence improves. In both cases, reviewing mistakes within 24 hours of the attempt embeds learning far more effectively than leaving the paper unmarked for days.

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