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2019 national curriculum tests

# Key stage 2

# Mathematics test mark schemes

Paper 1: arithmetic
Paper 2: reasoning
Paper 3: reasoning

Standards & Testing Agency

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# 1. Introduction

The Standards and Testing Agency (STA) is responsible for the development and delivery of statutory tests and assessments. STA is an executive agency of the Department for Education.

The 2019 tests assess the national curriculum. This test has been developed to meet the specification set out in the test framework[1] for mathematics at key stage 2.

A new test and new mark schemes will be produced each year.

Key stage 2 tests are marked by external markers, who receive training to ensure the published mark schemes are applied consistently and fairly. The mark schemes are provided to show teachers how the tests are marked. The pupil examples are based on responses gathered from the test trialling process.

Scaled score conversion tables are not included in this document. Conversion tables will be produced as part of the standards maintenance process. Scaled score conversion tables[2] for the 2019 tests will be published in July 2019. The standards confirmation meeting will take place in June 2019.

# 2. Structure of the test

The test comprises:

- Paper 1: arithmetic (40 marks)
- Paper 2: reasoning (35 marks)
- Paper 3: reasoning (35 marks).

# 3. Content domain coverage

The 2019 test meets the specification in the test framework. Table 1 sets out the areas of the content domain that are assessed in papers 1, 2 and 3.

The references are taken from the test framework. A question assessing 4C7, for example, sets out to 'multiply two-digit and three-digit numbers by a one-digit number using a formal written layout' and is taken from the year 4 programme of study.

1 www.gov.uk/government/publications/key-stage-2-mathematics-test-framework
2 www.gov.uk/guidance/scaled-scores-at-key-stage-2

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**Table 1: Content domain coverage of the 2019 key stage 2 mathematics test**

Where two references are given, the primary reference is given first.

| Paper 1: arithmetic | |
|---|---|
| **Qu.** | **Content domain reference** |
| **1** | 4N3a |
| **2** | 4C2 |
| **3** | 3N3 |
| **4** | 3C4/3C1 |
| **5** | 4C7 |
| **6** | 5F8 |
| **7** | 4C6b |
| **8** | 4C6a |
| **9** | 4C6b |
| **10** | 5C6a |
| **11** | 3C2 |
| **12** | 3C4/3C1 |
| **13** | 4C6b |
| **14** | 6F9a |
| **15** | 6C9 |
| **16** | 5C5d |
| **17** | 5C6b |
| **18** | 6R2 |
| **19** | 4F8 |
| **20** | 6F9a |
| **21** | 4F8 |
| **22** | 6F4 |
| **23** | 6C7a |
| **24** | 6F4 |
| **25** | 6C7b |
| **26** | 6F4 |
| **27** | 6R2 |
| **28** | 6F4 |
| **29** | 6R2 |
| **30** | 6C7a |
| **31** | 6F5b |
| **32** | 6F4 |
| **33** | 6R2 |
| **34** | 5F5 |
| **35** | 5F5 |
| **36** | 6C7b |

| Paper 2: reasoning | |
|---|---|
| **Qu.** | **Content domain reference** |
| **1** | 3C6 |
| **2** | 4N2b |
| **3** | 6N2 |
| **4** | 5P2 |
| **5** | 5C1/6A3 |
| **6** | 4F1/3C8 |
| **7** | 3M2c |
| **8a** | 6A3 |
| **8b** | 6A3 |
| **9** | 4C3/5C7b |
| **10** | 6A2/6C9 |
| **11a** | 4F6a |
| **11b** | 4M9/3M9a |
| **12** | 5F6b/5F6a |
| **13** | 6G3a |
| **14** | 5N4 |
| **15** | 5F12/5S1 |
| **16** | 6C9 |
| **17** | 6M7a/5M7b |
| **18** | 5C5c |
| **19** | 6R1/6M5 |
| **20** | 6F11 |
| **21** | 6G3a/5C5d |
| **22a** | 5S2/3F1b |
| **22b** | 6S3/5F10 |
| **23** | 6M8a/6C8 |

| Paper 3: reasoning | |
|---|---|
| **Qu.** | **Content domain reference** |
| **1** | 4N2b/3N2b |
| **2a** | 6N3 |
| **2b** | 6N4 |
| **3** | 6A1 |
| **4** | 5F8/3M1b |
| **5** | 3C4/3N3 |
| **6** | 4F10b/4M9 |
| **7a** | 3M1b/4S2 |
| **7b** | 5S1 |
| **8** | 4C4/4C2 |
| **9** | 4S2/4N4a |
| **10a** | 6P3/4P3b |
| **10b** | 6P2/5P2 |
| **11** | 6C5 |
| **12** | 6R3/5M9b |
| **13** | 4G4 |
| **14** | 3M4e |
| **15** | 6M6/6R1 |
| **16** | 5M9c/5M9a |
| **17** | 6A4 |
| **18** | 5F3 |
| **19** | 6C8 |
| **20** | 6C7b/6C8 |
| **21a** | 5G2a/4P3a |
| **21b** | 5G2a/4P3a |
| **22** | 6G2a/5G2a |
| **23** | 6R1 |

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# 4. Explanation of the mark schemes

The marking information for each question is set out in the form of tables (sections 7, 8 and 9).

The purpose of the mark scheme is to define the acceptable answers for each question within the test. Answers other than those listed may be acceptable if they meet the marking criteria.

The '**Qu.**' column on the left-hand side of each table provides a quick reference to the question number and part.

The '**Requirement**' column may include two types of information:

- a statement of the requirements for the award of each mark, with an indication of whether credit can be given for an appropriate method
- examples of some different types of correct answer.

The '**Mark**' column indicates the total number of marks available for each question part.

The '**Additional guidance**' column indicates alternative acceptable answers and guidance, such as the range of acceptable answers, where necessary. This column may also provide details of specific types of answer which are unacceptable. For most questions, however, there will be unacceptable answers that are not listed.

# 5. General marking guidance

## 5.1 Applying the mark schemes

To ensure consistency of marking, the most frequent procedural queries are listed in section 5.2 along with the action the marker will take. This is followed by further guidance in section 6 relating to marking questions involving money, time and other measures. Unless otherwise specified in the mark scheme, markers will apply these guidelines in all cases.

A small number of general marking principles have been changed this year to clarify the guidance. This does not change the underlying principles or how they are applied.

**Recording marks awarded**

Pupils' test papers are scanned so that marking can be conducted on screen by trained markers.

For each question, markers record the award of 3, 2, 1 or 0 marks as appropriate, according to the mark scheme criteria. There is provision in the software to record questions not attempted. The software aggregates marks automatically.

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## 5.2 General marking principles

**Table 2: General marking principles for all papers**

| | |
|---|---|
| **1. The answer does not match closely any of the examples given in the mark scheme.** | Markers will use their judgement to decide whether the answer corresponds with details in the 'Requirement' column of the mark scheme. Reference will also be made to the 'Additional guidance' column. |
| **2. The answer is provided in a non-standard way.** | Pupils may provide evidence in any form as long as its meaning can be understood. Diagrams, symbols or words are acceptable for explanations or for presenting an answer. |
| **3. The correct answer or working has been crossed out or erased and not replaced.** | The mark(s) will not be awarded for crossed-out or erased answers or working. |
| **4. More than one answer is given.** | If all answers given are correct (or a range of answers is given, all of which are correct), the mark(s) will be awarded unless the mark scheme states otherwise. If both correct and incorrect answers are given, the mark(s) will not be awarded unless the mark scheme states otherwise. |
| **5. No answer is given in the expected place, but the correct answer is given elsewhere.** | Where a pupil has unambiguously indicated the correct answer, the mark(s) will be awarded. In particular, where a word or number is expected, a pupil may meet the requirement by annotating a graph or labelling a diagram elsewhere in the question. |
| **6. The answer is correct, but the wrong working is shown.** | A correct final answer will be awarded the mark(s). |
| **7. The pupil has used alternative notation for a decimal point in a number.** | No alternative notation is accepted as representing a decimal point in a number, e.g. a comma.<br><br>Refer to section 6 for guidance on marking specific types of question. |
| **8. The pupil has used a symbol as a thousands separator.** | If the pupil has used a comma as a thousands separator (positioned either correctly or incorrectly) and the digits are in the correct order, then the mark(s) will be awarded.<br><br>If any other symbol, e.g. decimal point or apostrophe, is used, the mark(s) will not be awarded, although method marks may still be available. |

| | |
|---|---|
| **9. The answer in the answer box is wrong due to a transcription error.** | A transcription error occurs when a pupil miscopies their answer from the end of their working into the answer box.<br><br>Each part (integer, numerator, denominator) of a mixed number is considered separately when applying transcription error rules.<br><br>Where appropriate, detailed guidance will be given in the mark scheme. For questions with no guidance, marks will only be awarded for a transcription error if the wrong answer is due to:<br><br>• transposed digits in a number (e.g. 243 is written as 324)<br><br>**OR**<br><br>• one digit changed in a number of 4 or more digits (e.g. 2,345 is written as 2,845).<br><br>The mark(s) will not be awarded for any other transcription error including:<br><br>• a decimal point positioned incorrectly (e.g. 12.34 is written as 1.234 or 1234)<br>• a change by a power of 10 (e.g. 200 is written as 20 or 2,000)<br>• a digit added or removed (e.g. 123,456 written as 1233,456 or 12,456)<br>• a negative sign added or removed. |
| **10. The answer is numerically or algebraically equivalent to the answer in the mark scheme.** | Answers should be given as single values in their simplest form unless the mark scheme states otherwise, e.g. for $\square$ = 536 – 30, the answer 500 + 6 will not be awarded the mark.<br><br>For integer answers, e.g. 20, the answer $\frac{20}{1}$ will be awarded the mark; $\frac{80}{4}$ will not be awarded the mark.<br><br>For decimal answers that include recurring digit(s), there must be an unambiguous indication of the recurring digit(s). For example, for $\frac{1}{6}$, $0.1\dot{6}$ or $0.1\overline{6}$ will be awarded the mark and for $\frac{1}{7}$, $0.\dot{1}42857\dot{}$ or $0.\overline{142857}$ will be awarded the mark.<br><br>For fraction answers that can be expressed as a mixed number, the fraction paired with the integer must be a proper fraction, e.g. $1\frac{6}{4}$ will not be awarded the mark although method marks may still be available.<br><br>Where alternative responses are acceptable, this will be indicated in the 'Additional guidance' column. |

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**Table 3: General marking principles for paper 1 only (arithmetic)**

| | |
|---|---|
| **11. The answer in the answer box is wrong due to a misread of numbers given in the question.** | Misreads are not allowed in Paper 1; the mark(s) will not be awarded. |
| **12. The pupil has not recorded their working beneath the given long multiplication or long division.** | If a pupil carries out their working somewhere on the page other than beneath the given question as expected, then the pupil must start by rewriting the original question in order for it to be considered as a formal method.<br><br>Please note that the operation sign does not need to be given for long multiplication, provided the pupil's working shows the intention to multiply. |
| **13. The answer to the long division question expresses a remainder.** | If a pupil reaches an integer answer using a formal method with no more than one arithmetic error, for example 25, then the mark(s) will be awarded for 25 r0 or 25.0, but the mark(s) will not be awarded for an answer of 250<br><br>For answers with a remainder, the remainder must be expressed correctly.<br><br>If a pupil shows a remainder that is the same size as the divisor or larger, for example, a remainder of 28 or 29 when dividing by 28, the mark(s) will not be awarded because the method is incomplete.<br><br>If a pupil reaches a non-integer answer using a formal method with no more than one arithmetic error, for example when dividing by 28, the pupil reaches the answer 6 r14, then the mark(s) will be awarded for $6\frac{14}{28}$ or 6.5, but the mark(s) will not be awarded for 6 r$\frac{14}{28}$ or 6.14 or 614 |
| **14. The long division method involves subtracting chunks of different sizes.** | If a pupil's formal method involves subtracting chunks, it is not necessary to show a separate addition of the chunks. If the answer is not the correct total for their chunks, then that is treated as one arithmetic error.<br><br>A method is considered as chunking when the size of the chunks are shown alongside the algorithm.<br><br>It should be noted that this method will only be accepted if all chunks are of different sizes. |

**Table 4: General marking principles for papers 2 and 3 only (reasoning)**

| | |
|---|---|
| **15. More than one method is given.** | If a pupil gives more than one method, then the intended method is taken as the one which leads to the answer in the answer box or an identified answer elsewhere. If no answer is given, then all methods must be appropriate for the method mark(s) to be awarded. |
| **16. There appears to be a misread of numbers or information given in the question that affects the pupil's working and/or explanation.** | This occurs when a pupil misreads a number given in the question and consistently uses a different number that does not alter the original intention or difficulty of the question. For example, if 243 is misread and written as 248, both numbers may be regarded as comparable in difficulty. However, if 243 is misread and written as 245 or 240, the misread number may be regarded as making the question easier. The misread of a number may affect the award of marks. Any misread number must be seen, not implied.<br><br>Where appropriate, detailed guidance will be given in the mark scheme. If no guidance is given, markers will examine each case to decide whether the mark(s) will be awarded.<br><br>The mark(s) will not be awarded if:<br>• it is a **ONE-mark** question<br>• there is more than one misread number in a question<br>• the mathematics is simplified<br>• it is an 'explain' question<br>• it is a misread of other information (not numbers)<br>• the misread number is the same as any other number in the question.<br><br>For **TWO-mark** questions that have a method mark, one mark will be awarded if an appropriate method is correctly followed through with the misread number to give the correct follow-through answer, provided the mathematics has not been simplified.<br><br>For **THREE-mark** questions, refer to the additional guidance. |
| **17. A misread or an arithmetic error results in an answer with multiple decimal places.** | In some instances, a misread or an arithmetic error in a method leads to an answer with one or more decimal places. In such cases, the method mark(s) will be awarded for an answer that is correctly truncated or rounded provided the method is appropriate and the additional guidance does not specify otherwise. For example, 1.2345 is truncated to 1.2 |

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| | |
|---|---|
| **18. The pupil has reversed values within a calculation involving subtraction or division.** | When values within the calculation are reversed, the mark(s) will only be awarded when the answer corresponds to the correct calculation. For example, if the correct calculation is 12 ÷ 4, the method mark(s) may be awarded for 4 ÷ 12 = 3, but not for an answer other than 3<br><br>Reversed values within a calculation are not acceptable in 'explain' questions. |
| **19. The pupil omits an operation sign within their working.** | If the correct sign of +, − , ×, or ÷ for an arithmetic operation is missing, then the mark(s) will only be awarded if the working shown by the pupil is clear enough to indicate that the required operation has been performed. This applies even if the results of the required operation are incorrect. Where carrying or decomposition figures are seen, this is evidence of intention. For example, where the following is seen in working, the layout of the response implies addition or subtraction:<br><br>456<br>123<br>———<br><br>• if the answer is larger than the greater of the given values, e.g. 679, then addition is implied<br>• if the answer is less than the first given value, e.g. 323, then subtraction is implied. |

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| | |
|---|---|
| **20. The pupil has used 'an appropriate method'.** | For some questions, the mark scheme allows the award of the method mark(s) for 'evidence of an appropriate method', even if the answer is missing or incorrect. Refer to the 'Additional guidance' column where appropriate.<br><br>For the award of the method mark(s) for an appropriate method, there must be evidence of **all** the steps of the appropriate method (i.e. any method that would lead to the correct answer if there were no arithmetic errors and no additional steps).<br><br>This means that, for every step, either:<br>• the appropriate calculation to be carried out must be shown<br>**OR**<br>• if the calculation has not been written down, the correct answer or correct follow-through answer must be shown.<br><br>Where the calculation shown would lead to a correct final answer, even if the processed numbers do not appear to be taken from the question, a method mark may be awarded unless the mark scheme specifies otherwise. |
| **21. The pupil has used a trial and improvement method.** | 'Trial and improvement' is regarded as an acceptable method, unless the mark scheme states otherwise.<br><br>For a 'trial and improvement' method to be awarded the method mark(s):<br>• there must be at least 3 trials, carried out correctly, which all reduce the range in which the answer is known to lie<br>• there can be additional trials, which are correctly or incorrectly carried out, and which may not reduce the range in which the answer is known to lie<br>• a final answer is not needed, unless the mark scheme states otherwise. |

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| | |
|---|---|
| **22. The answer in the answer box is wrong but the correct answer is reached in the working.** | Extra working occurs when a pupil writes the correct answer in their working, and then continues to process the information further.<br><br>When the answer in the answer box is wrong and does not match the answer reached in the working, it is impossible to know why the pupil has written a different answer and it is assumed that extra working has occurred. GMP 9 on transcription errors still applies.<br><br>If the extra working does not contradict the pupil's appropriate method, the method mark(s) will be awarded.<br><br>If the extra working contradicts the pupil's appropriate method, the method mark(s) will not be awarded. |
| **23. The pupil miscopies a value from one part of their method into the next part.** | There will be instances when a pupil reaches a value in their working, then restarts from a different value.<br><br>The mark(s) will not be awarded if:<br>• it is a **ONE-mark** question<br>• there is more than one miscopy in the working<br>• the miscopy does not follow transcription error rules (see GMP 9).<br><br>The method mark(s) will only be awarded if an appropriate method is correctly shown using the miscopied number (which must follow transcription error rules). |
| **24. The correct answer is embedded in the working.** | An embedded answer occurs when a pupil shows the correct answer within their working but then selects the wrong answer from their working as their final answer or leaves the answer box blank. For example, if a pupil shows $2.5 \times 6 = 3 \times 5$ in the last line of their working and writes 5 in the answer box, whereas the correct answer is 3, then this will affect the award of marks.<br><br>Where appropriate, detailed guidance will be given in the mark scheme. If no guidance is given, markers will examine each case to decide whether the mark(s) will be awarded.<br><br>For **ONE-mark** questions, the mark will not be awarded.<br><br>For **TWO-mark** questions that have a method mark, one mark will be awarded, provided the pupil does not give redundant extra working that contradicts work already done or which adds to their appropriate method.<br><br>For **THREE-mark** questions, refer to the additional guidance. |

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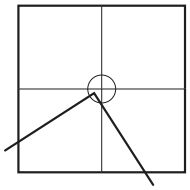
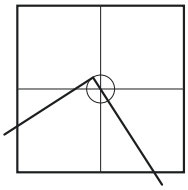
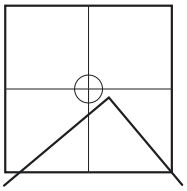
| | |
|---|---|
| **25. The phrase 'sight of' is used in the mark scheme.** | For some questions, the mark scheme allows the mark(s) to be awarded for sight of a particular number or numbers within a method. Such numbers are the correct answers to partial steps within a method. |
| **26. The answer correctly follows through from earlier incorrect work.** | 'Follow-through' marks for an answer will only be awarded when specifically stated in the mark scheme. |
| **27. The pupil has drawn lines which do not meet at the correct point.** | Where the mark scheme states that 'slight inaccuracies in drawing' should be accepted, this means that the mark(s) will be awarded for responses marked within or on a circle of radius 2mm with its centre at the correct point.<br>  <br>within the circle - accepted<br>  <br>on the circle - accepted<br>  <br>outside the circle - not accepted |

# 6. Marking specific types of question: summary of additional guidance

## 6.1 Answers involving money

| | Accept | Do not accept |
|---|---|---|
| **Where the £ sign is given, e.g.**<br>£3.20, £7<br>£ | £3.20 £7<br>£7.00<br>Any unambiguous indication of the correct amount, e.g.<br>£3.20p<br>£3 20 pence<br>£3 20<br>£3-20<br>£3:20<br>£3;20 | Incorrect placement of pounds or pence, e.g.<br>£320<br>£320p<br>Incorrect placement of decimal point or incorrect use or omission of 0 or use of comma as a decimal point, e.g.<br>£3.2<br>£3 200<br>£32 0<br>£3-2-0<br>£3,20 |
| **Where the p sign is given, e.g.**<br>40p<br>p | 40p<br>Any unambiguous indication of the correct amount, e.g.<br>£0.40p<br>0 40p<br>£0-40p<br>0:40p<br>£0;40p | Incorrect or ambiguous use of pounds or pence or use of comma as a decimal point, e.g.<br>0.40p<br>£40p<br>£0,40p |

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| | Accept | Do not accept |
|---|---|---|
| **Where a unit is not given, e.g.**<br>£3.20, 40p<br>☐ | £3.20 40p<br>320p £0.40<br>Any unambiguous indication of the correct amount, e.g.<br>£3.20p £0.40 pence<br>£3 20 pence £0 40p<br>£3 20 £0-40<br>£3-20 £0:40<br>£3:20 £0;40<br>£3;20 £.40<br>3.20 0.40<br>320 40<br>3 pounds 20 | Incorrect or ambiguous use of pounds or pence or use of comma as a decimal point, e.g.<br>£320 £40<br>£320p £40p<br>£3.2 0.4<br>3.20p 0.40p<br>£3,20 0,40<br>£0,40p |

## 6.2 Answers involving time

| | Accept | Do not accept |
|---|---|---|
| **A time interval, e.g.**<br>2 hours 30 minutes | 2 hours 30 minutes<br>Any unambiguous, correct indication, e.g.<br>(0)2 h 30 150 minutes<br>(0)2 h 30 min 150<br>(0)2 30 2.5 hours<br>(0)2-30 $2\frac{1}{2}$ hours<br>Digital electronic time, e.g.<br>(0)2:30 (0)2;30 | Incorrect or ambiguous time interval or use of comma as a decimal point, e.g.<br>2.30 230<br>2.3 2.30 min<br>2.3 hours 2,5 hours<br>2.3 h 2,30<br>2 h 3 1 h 90 min |

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| | Accept | Do not accept |
|---|---|---|
| **A specific time, e.g.**<br>8:40 am, 17:20 | (0)8:40 am<br>(0)8:40<br>twenty to nine<br>Any unambiguous, correct indication, e.g.<br>(0)8.40<br>(0)8;40<br>0840<br>(0)8 40<br>(0)8-40<br>Unambiguous change to 12 or 24-hour clock, e.g.<br>17:20 as 5:20 pm or 17:20 pm | Incorrect time, e.g.<br>8.4 am<br>8.40 pm<br>Incorrect placement of separators, spaces, etc. or incorrect use or omission of 0 or use of a comma as a decimal point, e.g.<br>840<br>8:4:0<br>8.4<br>084<br>8,40 |

## 6.3 Answers involving measures

| | Accept | Do not accept |
|---|---|---|
| **Where units are given, e.g.**<br>8.6 kg<br>**kg**<br>**m**<br>**l** | 8.6 kg<br>Any unambiguous indication of the correct measurement, e.g.<br>8.60 kg<br>8.6000 kg<br>8 kg 600 g | Incorrect or ambiguous use of units or use of comma as a decimal point, e.g.<br>8600 kg<br>8 kg 600<br>8,60 kg<br>8,6000 kg |

If a pupil gives an answer with a unit different from the unit in the answer box, then their answer must be equivalent to the correct answer provided, unless otherwise indicated in the mark scheme.

If a pupil leaves the answer box empty but writes the answer elsewhere on the page without any units, then that answer is assumed to have the units given in the answer box, subject to the conditions listed above.

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# 7. Mark schemes for Paper 1: arithmetic

| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 1 | 6,090 | 1m | |
| 2 | 8,357 | 1m | |
| 3 | 20 | 1m | |
| 4 | 336 | 1m | |
| 5 | 369 | 1m | |
| 6 | 8.993 | 1m | |
| 7 | 60 | 1m | |
| 8 | 10 | 1m | |
| 9 | 0 | 1m | |
| 10 | 13 | 1m | |
| 11 | 22 | 1m | **Do not** accept –22 |
| 12 | 8 | 1m | |
| 13 | 110 | 1m | |
| 14 | 253.4 | 1m | |
| 15 | 10 | 1m | |
| 16 | 27 | 1m | |
| 17 | 101,000 | 1m | |
| 18 | 600 | 1m | **Do not** accept 600% |
| 19 | 4.75 | 1m | |
| 20 | 0.009 | 1m | |
| 21 | 7.1 | 1m | |
| 22 | $\frac{6}{7}$ | 1m | Accept equivalent fractions or an **exact** decimal equivalent, e.g. $0.\overline{857142}$ (accept any unambiguous indication of the recurring digits).<br><br>**Do not** accept rounded or truncated decimals. |

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| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| **23** | Award **TWO** marks for the correct answer of 22,572<br><br>If the answer is incorrect, award **ONE** mark for a formal method of long multiplication with no more than **ONE** arithmetic error, e.g.<br><br>• 836 × 27 = 5852 + 16720 = 22602 *(error)*<br><br>**OR**<br><br>• 836 × 27 = 5612 *(error)* + 16720 = 22332 | **Up to 2m** | Working must be carried through to reach a final answer for the award of **ONE** mark.<br><br>**Do not** award any marks if the error is in the place value, e.g. the omission of the zero when multiplying by tens:<br><br>836 × 27 = 5852 + 1672 *(place value error)* = 7524 |
| **24** | $\frac{19}{20}$ | **1m** | Accept equivalent fractions or an **exact** decimal equivalent, e.g. 0.95 |

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| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 25 | Award **TWO** marks for the correct answer of 24<br><br>If the answer is incorrect, award **ONE** mark for the formal methods of division with no more than **ONE** arithmetic error, i.e.<br><br>• long division algorithm, e.g.<br>$\begin{array}{r} 23 \text{ r}29 \\ 37\overline{)888} \\ -\ \underline{740} \\ 140 \\ -\ \underline{111} \\ 29 \end{array}$ *(error)*<br><br>**OR**<br><br>$\begin{array}{r} 42 \\ 37\overline{)888} \\ -\ \underline{740} \\ 148 \\ -\ \underline{148} \\ 0 \end{array}$ *(error)* $\begin{array}{l} \\ \\ 20 \times 37 \\ \\ 4 \times 37 \\ \\ \end{array}$<br><br>• short division algorithm, e.g.<br>$\begin{array}{r} 2\ 3 \text{ r}27 \\ 37\overline{)88^{14}8} \end{array}$ *(error)* | Up to 2m | Working must be carried through to reach a final answer for the award of **ONE** mark.<br><br>Short division methods **must** be supported by evidence of appropriate carrying figures to indicate the use of a division algorithm, and be a complete method. The carrying figure **must** be less than the divisor. |
| 26 | $3\frac{3}{10}$<br><br>**OR**<br><br>$\frac{33}{10}$ | 1m | Accept equivalent mixed numbers, fractions or an **exact** decimal equivalent, e.g. 3.3 |
| 27 | 112 | 1m | **Do not** accept 112% |
| 28 | $\frac{23}{36}$ | 1m | Accept equivalent fractions or an **exact** decimal equivalent, e.g. $0.63\dot{8}$ (accept any unambiguous indication of the recurring digits).<br><br>**Do not** accept rounded or truncated decimals. |
| 29 | 459 | 1m | **Do not** accept 459% |

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| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| **30** | Award **TWO** marks for the correct answer of 215,016<br><br>If the answer is incorrect, award **ONE** mark for the formal method of long multiplication with no more than **ONE** arithmetic error, e.g.<br><br>• 3468 × 62 = 6936, 208080, 214016 *(error)*<br><br>**OR**<br><br>• 3468 × 62 = 6934 *(error)*, 208080, 215014 | **Up to 2m** | Working must be carried through to reach a final answer for the award of **ONE** mark.<br><br>**Do not** award any marks if the error is in the place value, e.g. the omission of the zero when multiplying by tens:<br><br>• 3468 × 62 = 6936, 20808 *(place value error)*, 27744 |
| **31** | $\frac{2}{9}$ | **1m** | Accept equivalent fractions or an **exact** decimal equivalent, e.g. $0.\dot{2}$ (accept any unambiguous indication of the recurring digits).<br><br>**Do not** accept rounded or truncated decimals. |
| **32** | $1\frac{3}{4}$<br><br>**OR**<br><br>$\frac{7}{4}$ | **1m** | Accept equivalent mixed numbers, fractions or an **exact** decimal equivalent, e.g. 1.75 |
| **33** | 162 | **1m** | **Do not** accept 162% |

| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| **34** | $17\frac{1}{2}$<br><br>**OR**<br><br>$\frac{70}{4}$ **OR** $\frac{35}{2}$ | **1m** | Accept equivalent mixed numbers, fractions or an **exact** decimal equivalent, e.g. 17.5 |
| **35** | 450 | **1m** | |
| **36** | Award **TWO** marks for the correct answer of 97<br><br>If the answer is incorrect, award **ONE** mark for the formal methods of division with no more than **ONE** arithmetic error, i.e.<br><br>• long division algorithm, e.g.<br><br>96 r82<br>83 \| 8051<br>– 7470<br>580 *(error)*<br>– 498<br>82<br><br>**OR**<br><br>• <br><br>47 *(error)*<br>83 \| 8051<br>– 4150 50 × 83<br>3901<br>– 3320 40 × 83<br>581<br>581 7 × 83<br>0<br><br>• short division algorithm, e.g.<br><br>9 6 r73<br>83 \| 805$^{57}$1 *(error)* | **Up to 2m** | Working must be carried through to reach a final answer for the award of **ONE** mark.<br><br>Short division methods **must** be supported by evidence of appropriate carrying figures to indicate the use of a division algorithm, and be a complete method. The carrying figure **must** be less than the divisor. |

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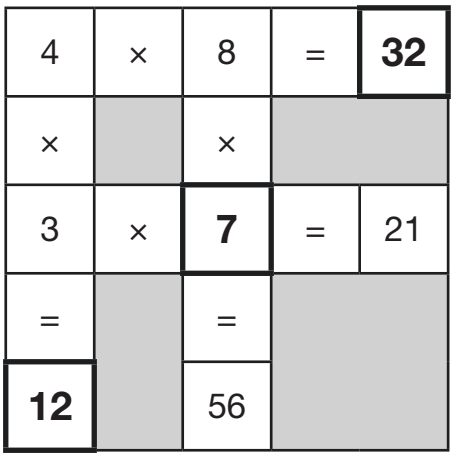
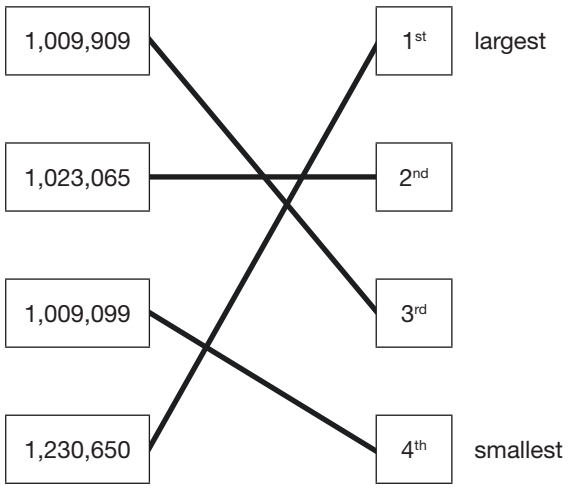
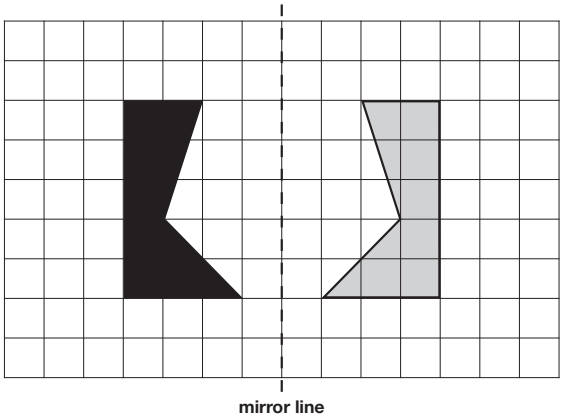
# 8. Mark schemes for Paper 2: reasoning

| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 1 | Award **ONE** mark for three correct answers, as shown:<br>  <br> | 1m | |
| 2 | 8,072 | 1m | |
| 3 | Award **ONE** mark for the four numbers matched correctly, as shown:<br>  <br> | 1m | Lines need not touch the numbers and ordinals, provided the intention is clear.<br>**Do not** accept any number which has been matched to more than one ordinal. |

| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 4 | Diagram completed, as shown:<br>  <br> | 1m | Accept slight inaccuracies in drawing (see page 13 for guidance).<br>Shape need not be shaded for the award of **ONE** mark. |
| 5 | Award **TWO** marks for three correct numbers, as shown:<br>**110** 155 200 245 **290** **335**<br>Award **ONE** mark for:<br>• any two numbers correctly placed<br>**OR**<br>• if box 1 is correct, accept correct follow-through for box 3 from the incorrect value in box 2. | Up to 2m | **Do not** accept misreads for this question. |
| 6 | 10 | 1m | |
| 7 | 2.5 or $2\frac{1}{2}$ | 1m | Refer to section 6.3 on page 16 for additional guidance on marking answers involving measures. |
| 8a | 11 written in the first box, as shown:<br>**11** 25 53 | 1m | |
| 8b | 109 written in the last box, as shown:<br>25 53 **109** | 1m | |
| 9 | Award **TWO** marks for the correct answer of 124<br>If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g.<br>• 953 – 85 = 868<br>868 ÷ 7 | Up to 2m | Answer need not be obtained for the award of **ONE** mark.<br>If the pupil's evaluation contradicts the appropriate method, the method mark will not be awarded. |

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| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| **10** | Second box only ticked correctly, as shown:<br>number of tickets × 3 + 24 ☐<br>number of tickets × 24 + 3 ✓<br>number of tickets + 3 × 24 ☐<br>number of tickets + 24 × 3 ☐ | **1m** | Accept alternative unambiguous positive indication of the correct answer, e.g. Y. |
| **11a** | 0.25 | **1m** | **Do not** accept $\frac{1}{4}$ or any other fraction.<br>Refer to section 6.3 on page 16 for additional guidance on marking answers involving measures. |
| **11b** | 65(p) **OR** (£)0.65 | **1m** | Refer to section 6.1 on pages 14 and 15 for additional guidance on marking answers involving money. |
| **12** | Both symbols correct, as shown:<br>$\frac{7}{10}$ [ > ] 0.07<br>$\frac{23}{1000}$ [ < ] 0.23 | **1m** | |

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<table>
<tr><th>Qu.</th><th>Requirement</th><th>Mark</th><th>Additional guidance</th></tr>
<tr><td>13</td><td>Award TWO marks for a completed triangle that has all of the following three points:<ul><li>an angle in the range 33° to 37° inclusive for the angle marked 35°</li><li>an angle in the range 88° to 92° inclusive for the right angle</li><li>the triangle has been drawn on an 8cm line (either on the given line or a line drawn), provided they have constructed both angles within the tolerance of the line 7.9cm to 8.1cm.</li></ul>If the answer is incorrect, award ONE mark for a completed triangle and two of the three points correct.</td><td>Up to 2m</td><td>Accept drawings where any side has been extended past a vertex.<br><br>When considering whether the triangle is completed, do not accept:<ul><li>a quadrilateral or another shape drawn</li></ul>OR<ul><li>a curved line that is used to complete the shape</li></ul>OR<ul><li>sides not meeting to form a vertex.</li></ul></td></tr>
<tr><td>14</td><td>Award TWO marks for the correct completion of the three numbers in the table, as shown:<br><br><table><tr><th></th><th>Round 39,476</th></tr><tr><td>to the nearest 10,000</td><td>40,000</td></tr><tr><td>to the nearest 1,000</td><td>39,000</td></tr><tr><td>to the nearest 100</td><td>39,500</td></tr></table><br>If the answer is incorrect, award ONE mark for any two of the numbers rounded correctly.</td><td>Up to 2m</td><td>Do not accept 9,000 or 500 for the second and third entries.</td></tr>
<tr><td>15</td><td>25</td><td>1m</td><td></td></tr>
<tr><td>16</td><td>4</td><td>1m</td><td></td></tr>
</table>

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| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| **17** | Award **TWO** marks for the correct answer of 144<br><br>If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g.<br>• 8 × 6 = 48<br>48 ÷ 4 = 13 *(error)*<br>13 × 13 = 169<br><br>**OR**<br><br>Award **ONE** mark for:<br>• evidence for the side length of the square calculated correctly, i.e. 12 | **Up to 2m** | Answer need not be obtained for the award of **ONE** mark. |
| **18** | Award **ONE** mark for a correct explanation of why the 95 **AND** 87 are **NOT** prime, e.g.<br>• 87 is divisible by 3 and/or 29 **AND** 95 is divisible by 5 and/or 19<br>• 87 is in the 3 times table **AND** 95 is in the 5 times table<br>• 95 is divisible by five because every number in the five times table ends in five or zero. 87 is divisible by three because 9 is in the three times table so is ninety. Ninety minus three is 87<br>• 8 + 7 = 15 and 15 is divisible by 3 **AND** 95 is divisible by 5 | **1m** | No mark is awarded for circling '89' alone.<br><br>Both non-primes must be explained correctly for the award of the mark.<br><br>**Do not** accept vague or incomplete explanations, e.g.<br>• The other 2 numbers have more than 2 factors (vague)<br>• 87 is divisible by 3 (incomplete).<br><br>**Do not** accept explanations which include incorrect mathematics or incorrect information that is relevant to the explanation, e.g.<br>• 3 × 27 = 87<br>• 89 has three factors<br>• no numbers go into 89 |

| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 19 | Award **TWO** marks for the correct answer of 3.75<br><br>If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g.<br>• 60 ÷ 4 = 15<br>250 × 15 = 3750<br>3750 ml ÷ 1000 =<br>**OR**<br>• 250 ÷ 4 = 62.5 ml per second<br>62.5 × 60 = 3750<br>3750 ml ÷ 1000 =<br>**OR**<br>• 60 ÷ 4 = 15, so there are 15 lots of 4 seconds in 1 minute so there are 15 bottles per minute.<br>There are 4 bottles in 1 litre<br>15 ÷ 4 = | **Up to 2m** | Accept for **TWO** marks, 3,750ml for final answer in working and the answer box blank **OR** 3,750 in the answer box where the litres has been replaced with millilitres.<br><br>Accept for **ONE** mark 3,750 litres (l) in the answer box **OR** the final answer in working and answer box blank.<br><br>Answer need not be obtained for the award of **ONE** mark. |
| 20 | Award **TWO** marks for two boxes ticked correctly, as shown:<br>$\frac{1}{20}$ ☐<br>$\frac{20}{40}$ ☐<br>$\frac{1}{5}$ ☑<br>$\frac{3}{15}$ ☑<br>$\frac{2}{100}$ ☐<br><br>If the answer is incorrect, award **ONE** mark for:<br>• only one box ticked correctly and no incorrect boxes ticked<br>• two boxes ticked correctly and one incorrect box ticked. | **Up to 2m** | Accept alternative unambiguous positive indication of the correct answer, e.g. Y. |

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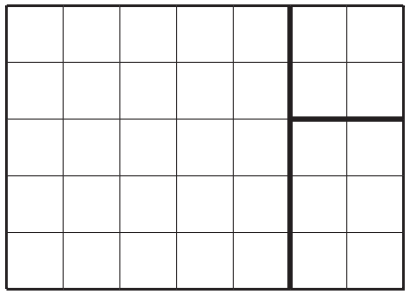
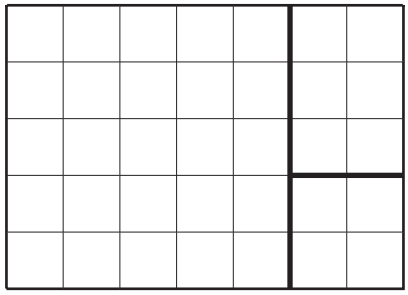
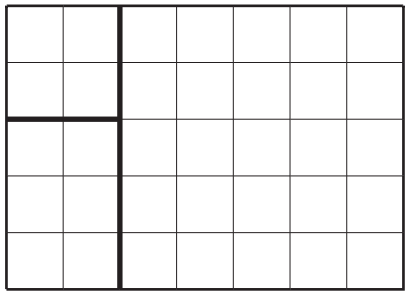
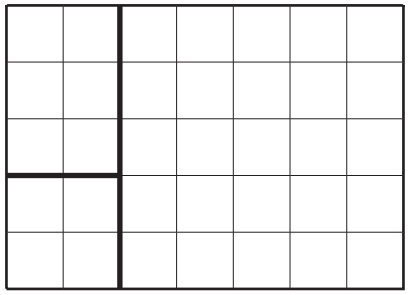
| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 21 | Rectangle divided, as shown:<br>  <br>**OR**<br>  <br>**OR**<br>  <br>**OR**<br>  | **1m** | Accept slight inaccuracies in drawing provided the intention is clear. |

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| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| **22a** | $\frac{2}{5}$ | **1m** | Accept equivalent fractions and decimals e.g. $\frac{4}{10}$ and 0.4 |
| **22b** | Award **TWO** marks for the correct answer of 10.7<br>If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g.<br>• 8.1 + 9.3 + 11.9 + 11.8 + 12.4 = 53.5<br>53.5 ÷ 5 | **Up to 2m** | Answer need not be obtained for the award of **ONE** mark.<br>Any correct rounding or truncating does not negate an appropriate method.<br>Any value which does not result from correct rounding or truncating implies an additional step not shown. |
| **23** | Award **TWO** marks for the correct answer of 720<br>If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g.<br>• 3 × 4 × 6 = 72<br>8 × 9 × 11 = 792<br>792 – 72 =<br>Award **ONE** mark for sight of 792 | **Up to 2m** | Answer need not be obtained for the award of **ONE** mark. |

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# 9. Mark schemes for Paper 3: reasoning

| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 1 | £7,899 | 1m | Refer to section 6.1 on pages 14 and 15 for additional guidance on marking answers involving money. |
| 2a | 7 | 1m | **Do not** accept 70,000 or 70 thousands. |
| 2b | 4,000,000 | 1m | Accept 4 million or four million<br>**Do not** accept the answer 4 |
| 3 | Award **ONE** mark for the correct box ticked, as shown:<br>**Tick one.**<br>$10 + a$ ☐<br>$10 \div a$ ☐<br>$a - 10$ ☐<br>$10 - a$ ☑<br>$a \times 10$ ☐ | 1m | Accept alternative unambiguous positive indication of the correct answer, e.g. Y. |
| 4 | Masses in correct order, as shown:<br>**0.009 kg** **0.99 kg** **1.025 kg** **1.25 kg**<br>**lightest** | 1m | All masses must be in the correct order for the award of **ONE** mark.<br>Accept for **ONE** mark the masses written in reverse order **AND** the label lightest has been changed to follow suit.<br>Misreads and transcription errors are **not** allowed. |
| 5 | Addition completed, as shown<br>**1** 2 **8** + **7** 2 = 2 0 0 | 1m | All numbers must be correct for the award of the mark. |

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<table>
<tr><th>Qu.</th><th>Requirement</th><th>Mark</th><th>Additional guidance</th></tr>
<tr><td>6</td><td>Award TWO marks for the correct answer of £6.87<br><br>If the answer is incorrect, award ONE mark for evidence of an appropriate method, e.g.<br>• £1.49 + £1.64 = £3.13<br>£10 – £3.13 =<br>OR<br>• £10 – £1.49 = £8.51<br>£8.51 – £1.64 =<br>OR<br>• £10 – 164p – 149p =</td><td>Up to 2m</td><td>Answer need not be obtained for the award of ONE mark.<br><br>Accept for ONE mark an answer of £687 OR £687p as evidence of an appropriate method.<br><br>Refer to section 6.1 on pages 14 and 15 for additional guidance on marking answers involving money.</td></tr>
<tr><td>7a<br><br>7b</td><td>155<br><br>Table completed with three correct numbers, as shown:<br><table><tr><th>Mass in g</th><th>Number of kittens</th></tr><tr><td>250–299</td><td>2</td></tr><tr><td>300–349</td><td>3</td></tr><tr><td>350–399</td><td>2</td></tr><tr><td>400–449</td><td>1</td></tr></table></td><td>1m<br><br>1m</td><td>All three numbers must be correct for the award of the mark.<br><br>Do not accept tally marks on their own.</td></tr>
<tr><td>8</td><td>Award TWO marks for the correct answer of 1,356<br><br>If the answer is incorrect, award ONE mark for evidence of an appropriate method, e.g.<br>• 4289 + 355 = 4644<br>6000 – 4644 =<br>OR<br>• 6000 – 4289 – 355 =<br><br>OR<br>• 6000 – 4289 = 1711<br>1711 – 355 =</td><td>Up to 2m</td><td>Answer need not be obtained for the award of ONE mark.</td></tr>
</table>

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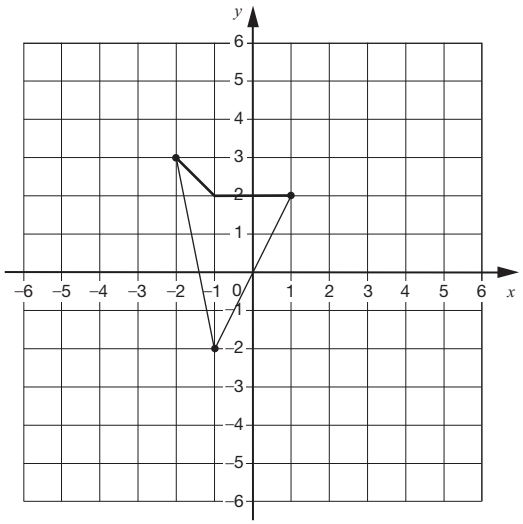
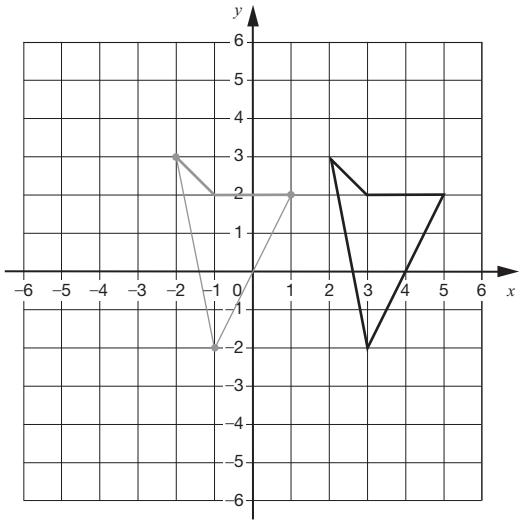
| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 9 | 2,250 | 1m | **Do not** accept $2000\frac{1}{4}$ **OR** $2\frac{1}{4}$ **OR** 2.25 |
| 10a | Quadrilateral completed, as shown:<br>  | 1m | Accept slight inaccuracies in drawing provided the intention is clear.<br>(See page 13 for guidance.) |
| 10b | Quadrilateral translated correctly, as shown:<br>  | 1m | Accept slight inaccuracies in drawing provided the intention is clear.<br>(See page 13 for guidance.)<br>Award **ONE** mark if the answer to (b) is a quadrilateral with sides drawn and is a correct translation of their answer to (a). |

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| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 11 | Award **TWO** marks for all four given numbers placed completely correctly 7 times, as shown:<br><br>Prime numbers: 2 **3 5**<br>Factors of 12: 2 **3 4 6**<br>Factors of 15: **3 5**<br><br>If the answer is incorrect, award **ONE** mark for three of the given numbers all placed completely correctly, e.g.<br><br>Prime numbers: 2 **3 5**<br>Factors of 12: 2 **3 4**<br>Factors of 15: **3 5**<br><br>**OR**<br><br>Prime numbers: 2 **3 5 6**<br>Factors of 12: 2 **3 4 6**<br>Factors of 15: **3 5**<br><br>**OR**<br><br>Prime numbers: 2 **3**<br>Factors of 12: 2 **3 4 6**<br>Factors of 15: **3 5** | **Up to 2m** | Accept the numbers in any order.<br><br>Ignore any additional numbers not given in the question. |

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| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 12 | Award **ONE** mark for two correct answers, as shown:<br>length = **19 cm**<br>width = **9.1 cm** | 1m | Refer to section 6.3 on page 16 for additional guidance on marking answers involving measures. |
| 13 | An explanation that includes a correct counter example, e.g.<br>• When you double 10° it is not obtuse<br>• 2 × 27° = 54°<br>• Double 45° is a right angle not obtuse<br>**OR**<br>An explanation that demonstrates where the statement in the question is not correct, e.g.<br>• If the acute angle is less than 45° then doubling it will be less than 90°, so it won't be obtuse (more than 90°). | 1m | **Do not** accept vague or incomplete explanations, e.g.<br>• Sometimes it will be acute<br>• Some acute angles are half an obtuse angle, but not all<br>• When you double an acute angle, you get a right angle<br>**Do not** accept explanations which include incorrect mathematics or incorrect information that is relevant to the explanation, e.g.<br>• 20°C × 2 = 40°C<br>• 20% x 2 = 40% |
| 14 | 91 | 1m | |
| 15 | 400 | 1m | |

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| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| **16** | Award **TWO** marks for the correct answer of £1.85<br><br>If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g.<br>• $1\frac{1}{2} \times$ £1.50 = £2.25<br>$\frac{1}{2}$ of £1.80 = 70p *(error)*<br>£2.25 + 70p = £2.95<br>£5 – £2.95 =<br>**OR**<br>• £1.50 + 75 = £2.25<br>£2.25 + 90 = 415p *(error)*<br>£5.00 – 415p =<br>**OR**<br>• sight of £3.15 **OR** 315p as evidence of evaluating the correct cost of the potatoes and carrots. | **Up to 2m** | **Do not** accept misreads for this question.<br><br>Answer need not be obtained for the award of **ONE** mark.<br><br>Accept for **ONE** mark an answer of £185 or £185p as evidence of an appropriate method.<br><br>Refer to section 6.1 on pages 14 and 15 for additional guidance on marking answers involving money. |
| **17** | Award **ONE** mark for any pair of whole numbers less than 10 that satisfy the equation, i.e.<br>$x = 8$ **AND** $y = 6$<br>**OR**<br>$x = 6$ **AND** $y = 7$<br>**OR**<br>$x = 4$ **AND** $y = 8$<br>**OR**<br>$x = 2$ **AND** $y = 9$ | **1m** | |

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| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 18 | Award **TWO** marks for three boxes ticked correctly, as shown:<br>$\frac{1}{2}$ ✓<br>$\frac{2}{8}$ ✓<br>$\frac{3}{4}$ ☐<br>$\frac{7}{16}$ ✓<br>$\frac{24}{32}$ ☐<br>Award **ONE** mark for:<br>• only two boxes ticked correctly and no incorrect boxes ticked<br>**OR**<br>• three boxes ticked correctly and one incorrect box ticked. | **Up to 2m** | Accept alternative unambiguous positive indication of the correct answer, e.g. Y. |

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| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 19 | Award **THREE** marks for the correct answer of 7,174<br><br>If the answer is incorrect, award **TWO** marks for:<br><br>• evidence of an appropriate complete method which contains no more than one arithmetic error, e.g.<br><br>$\begin{array}{r} 53 \\ \times\ 68 \\ \hline 3504 \end{array}$ *(error)* $\qquad$ $\begin{array}{r} 105 \\ \times\ 34 \\ \hline 3570 \end{array}$<br><br>3,504 + 3,570 = 7,074<br><br>Award **ONE** mark for:<br><br>• evidence of an appropriate method with more than one arithmetic error.<br><br>**OR**<br><br>• sight of 3,604 as evidence of long multiplication step (68 × 53) completed correctly.<br><br>**OR**<br><br>• sight of 3,570 as evidence of long multiplication step (105 × 34) completed correctly. | **Up to 3m** | Answer need not be obtained for the award of **ONE** mark.<br><br>A misread of a number may affect the award of marks. No marks are awarded if there is more than one misread or if the mathematics is simplified.<br><br>**TWO** marks will be awarded if an appropriate method with the misread number is followed through correctly.<br><br>**ONE** mark will be awarded for evidence of an appropriate method with the misread number followed through correctly with no more than one arithmetic error. |

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| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| **20** | Award **TWO** marks for the correct answer of 29<br><br>If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g.<br>• 2 × 500 = 1,000<br>1,000 ÷ 34 =<br>**OR**<br>• 2 × 500 ÷ 34 =<br>**OR**<br>• 500 ÷ 34 = 14 r23 *(error)*<br>14 r23 × 2 = 28 r46<br>**OR**<br>• 34 × 10 = 340<br>34 × 30 = 1,020<br><br>Answer = 30 booklets *(error)* | **Up to 2m** | Answer need not be obtained for the award of **ONE** mark.<br><br>Answer does not need to have been rounded or rounded correctly for the award of **ONE** mark.<br><br>If a pupil reaches a non-integer answer, for example 28 r2 and expresses it as 28.2 without further working, this is considered a notation error and is condoned.<br><br>Within an appropriate method, if the pupil's remainder from 500 divided by 34 is less than 17 and this remainder is ignored before doubling, this is acceptable for **ONE** mark. If the pupil's remainder is 17 or more and it has been ignored before doubling, this is **not** acceptable for **ONE** mark.<br><br>**Do not** accept a trial and improvement method. |
| **21a** | Award **ONE** mark for<br><br>**B** is (55, 30) | **1m** | |
| **21b** | Award **ONE** mark for<br><br>**D** is (55, 14)<br><br>If B and D are incorrect, **ONE** mark may be given for the correct $y$ coordinate for both B and D and the same $x$ coordinate (incorrect) for both points, i.e.<br>• D is (same $x$ as B, 14) | **1m** | |
| **22** | 10.5 (cm) | **1m** | Accept $10\frac{1}{2}$ |

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| Qu. | Requirement | Mark | Additional guidance |
|---|---|---|---|
| 23 | An explanation that gives the correct values for PQ and/or QR, e.g.<br>• PQ = 640m<br>• QR is 160, 160 times 4 is not 600m<br>• <br><br>**OR**<br>An explanation recognising PR is 800m and must be 5 times QR, e.g.<br>• the total distance is 800m. Divide by 5 to give 160 for distance between Q and R, so P and Q is 4 × 160 = 640m (not 600m)<br>• if QR is 200m, then PR is 1000m not 800m<br>• if PQ is 600m then QR is 800 – 600 = 200m. Then PR is 5 × 200 = 1000m but it is only 800m.<br>**OR**<br>An explanation that PQ is not 600m, e.g.<br>• if it was 600m then the shorter distance would be 200m if added to make 800m, 600m is 3 times 200, not 4 times<br>• Olivia is not correct because 600 ÷ 4 = 150 and 600 + 150 doesn't equal 800<br>• Olivia is not correct because 800 – 600 = 200 and 600 is not 4 times 200 | 1m | **Do not** accept vague, incomplete or incorrect explanations, e.g.<br>• Olivia is not correct because you can't divide 600 by 4 like you can for 800<br>**Do not** accept explanations which include incorrect mathematics or incorrect information that is relevant to the explanation. |

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