2024 national curriculum tests

Key stage 1

Mathematics test mark schemes

Paper 1: arithmetic
Paper 2: reasoning

Standards & Testing Agency

Contents

1. Introduction

The Standards and Testing Agency (STA) is responsible for the development and delivery of key stage 1 and 2 statutory and optional tests. STA is an executive agency of the Department for Education.

The 2024 optional 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 1.

This key stage 1 2024 test is not statutory. The key stage 1 tests can be marked internally within schools to inform teacher assessment. The evidence from the test can be used to help inform this teacher assessment.

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

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 2024 tests will be published in June 2024.

The mark schemes should be used to mark pupils' responses. The pupil examples are based on responses gathered from the test trialling process. It is important when marking to refer to the general marking principles, the additional guidance and the exemplars section to ensure marking is accurate and consistent.

2. Structure of the test

The optional key stage 1 mathematics test comprises:

- Paper 1: arithmetic (25 marks)
- Paper 2: reasoning (35 marks)

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

3. Content domain coverage

The 2024 test meets the specification in the test framework. Table 1 sets out the areas of the content domain that are assessed in Papers 1 and 2.

The references below are taken from the test framework. For example, a question with reference 2N6 assesses 'Using place value and number facts to solve problems' and is taken from the Y2 programme of study.

Table 1: Content domain coverage for Paper 1 and Paper 2

Paper 1: arithmetic	
Question	**Content domain reference**
1	1C2a/2C1
2	2N1/2N6
3	2C6
4	1N1b/2N1
5	2C1/2C2a
6	2N6/2C1
7	2C6
8	2C2b/2C2a
9	2C2b
10	2C2b
11	2C6
12	2N1
13	2C6
14	2C3/2C2b
15	2F1a/1F1a
16	2C2b
17	2C2b
18	2C2b
19	2C6
20	2C2b/2C2a
21	2C3/2C2b
22	2F1a
23	2C2b
24	2C2b
25	2C3/2C2b

Paper 2: reasoning	
Question	**Content domain reference**
1	2N3
2	1M4c/1M4b
3	2F1a/2F1b
4	2C4/1M1/1C1
5	2C2b
6	2G3
7	2S1
8	1C4/1C2a
9	1N1a/1N2b
10	2P1
11	2N6/2C1/2C4
12	1M3
13	2C4/2C2a
14	2M3b/2C4
15	2N6/2N3/2N4
16	2C8/2C6
17	2C3/2C4
18	2C9a/2C1
19	2C7/2C6/2C8
20	2C1
21	2N6/2N1
22	2C8/2N1
23	2C8/2M9
24	2M2/2F1a
25	2C2b/2C1
26	2G2a/2G1a
27	2F1a/2F2
28	2F2
29	2F1b
30	2M3a/2C8/2N1
31	2C4/2F1a
32	2C8/2M2
33	2M9/2C8/2C4

4. Explanation of the mark schemes

Those marking the tests should familiarise themselves with the marking guidance in section 5 of this document before applying the mark schemes.

The practice questions are not marked as they are completed by the pupils together with the test administrator as an introduction to the test.

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

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 partial credit can be given for a correct 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 provides details of specific types of answer that are unacceptable. Other guidance, such as the range of acceptable answers, is provided as necessary.

5. General marking guidance

5.1 Applying the mark schemes

To ensure consistency of marking, the most frequent procedural queries are listed in Table 2, along with the action you should take. Unless otherwise specified in the mark scheme, you should apply these guidelines in all cases.

Example responses are also included in section 9 for the two working mark questions and one other question in Paper 2: reasoning. These should act as your guide when you are marking these questions.

5.2 General marking principles

Table 2: General marking principles

Possible issues when marking	
1. The answer does not closely match any of the examples in the mark scheme.	Those marking the test will use their judgement to decide whether the answer corresponds with details in the 'Requirement' column of the mark scheme. Refer also to the 'Additional guidance' column and to the examples of responses where appropriate.
2. The pupil has answered 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 ways to present an answer.
3. The answer is correct, but the wrong working is shown.	Always award the mark for a final response that is correct.
4. No answer is provided in the expected place, but the correct answer is given elsewhere.	Where a word or number response is expected, a pupil may meet the requirement by annotating a graph or labelling a diagram elsewhere in the question.
5. The correct answer has been crossed (or rubbed) out and not replaced.	You should not award any marks for crossed out answers or working.
6. The answer in the answer box is wrong, but the correct answer is shown in the working.	Give precedence to the response provided in the answer box over any other workings. However, in a 2-mark question, one mark may still be awarded for evidence of a complete, correct method or a partial step, as indicated in the 'Requirement' column.

Possible issues when marking	
7. More than one answer is given.	If all provided answers are correct (or a range of answers is given, all of which are correct), a mark will be awarded unless the mark scheme states otherwise. If both correct and incorrect responses are given, no mark will be awarded unless the mark scheme states otherwise.
8. There appears to be a misread of numbers that affects the pupil's working.	A misread 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 43 is misread as 48, both numbers may be regarded as comparable in difficulty. However, if 43 is misread as 40 or 45, the misread number may be regarded as making the question easier, depending on the question. For example, 26 + 40 is easier than 26 + 48. The misread of a number will affect the award of marks. No marks are awarded if there is more than one misread in a question or if the mathematics is simplified by the misread. For **1-mark** questions: no mark is awarded for one or more misreads. For **2-mark** questions that have a method mark: one mark is awarded if the correct method is correctly implemented with the misread number, provided this does not simplify the mathematics.
9. The answer is numerically 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, for example, for □ = 12 – 5, the answer 4 + 3 will not be accepted. Where alternative expressions are acceptable, these will be indicated in the additional guidance column.
10. The pupil reverses a digit in their answer.	A reversed digit is acceptable if it is clearly recognisable as the digit intended. For example, a reversed 2 must clearly show the characteristics of a 2 rather than a 5. As a further example, where the answer is 61 and the response ∂1 is given, then this should be awarded the mark. You should make a decision based upon your knowledge of the pupil's writing.

Possible issues when marking	
11. The pupil transposes digits in their answer.	A pupil transposes digits by reversing their order, for example, 83 instead of 38. For questions where no working is shown, an answer with transposed digits should not be awarded the mark. For example, a response of 16 or 1∂ when the answer is 61 should not be marked as correct.
12. The pupil has worked out the answer correctly, but then copied the wrong answer into the answer box.	A transcription error can occur when the pupil miscopies the correct answer from the end of their working into the answer box. Give precedence to the answer given in the answer box over any other workings. There may be cases where the incorrect answer is a transcription error, in which case you may check the pupil's intention and decide whether to award the mark(s).
13. The answer correctly follows through from earlier incorrect work.	'Follow through' marks for an answer may only be awarded when specifically stated in the mark scheme.

6. Internal moderation procedures

We recommend those who are involved in marking the key stage 1 tests undertake moderation activity to ensure marking is consistent across their school.

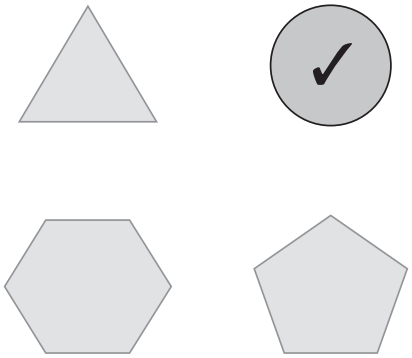
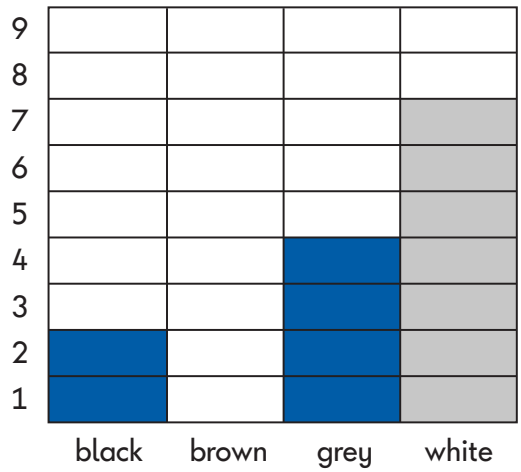
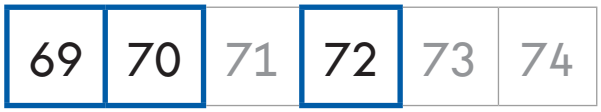
7. Mark schemes for Paper 1: arithmetic

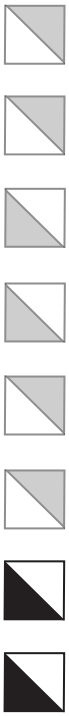
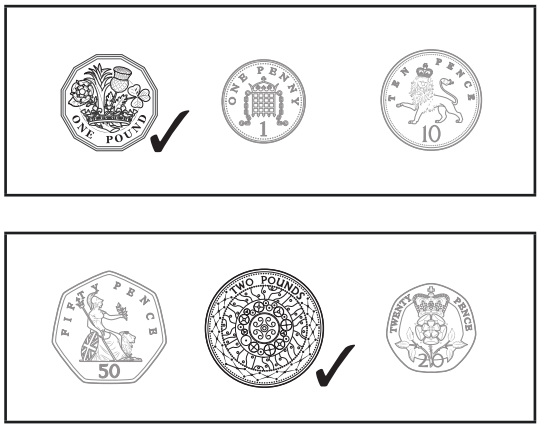
Equivalent answers are **not** acceptable, for example, 10 + 4 instead of 14. When marking the arithmetic questions, refer specifically to general marking principles 9, 10, 11 and 12. No misreads are allowed for 1-mark questions.

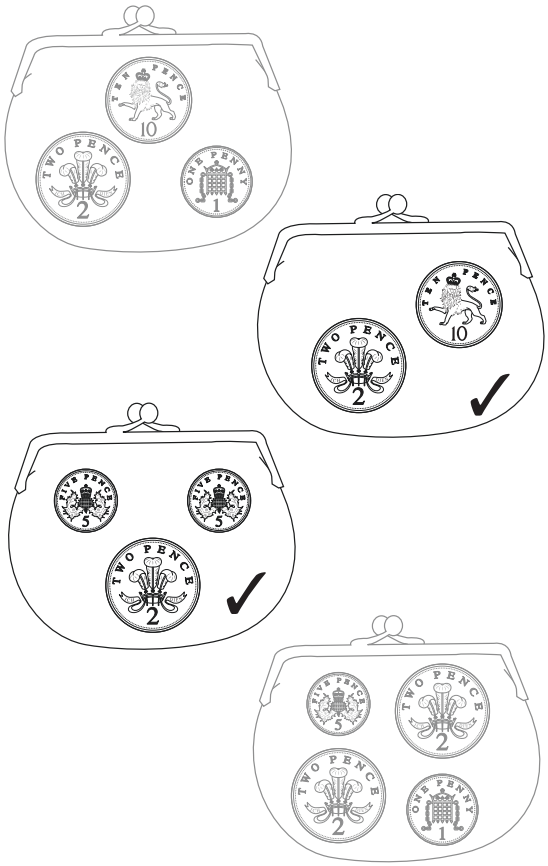
Qu.	Requirement	Mark	Additional guidance
P	6	**none**	Practice question
1	4	**1m**	
2	52	**1m**	
3	8	**1m**	
4	65	**1m**	
5	70	**1m**	
6	90	**1m**	
7	20	**1m**	
8	36	**1m**	
9	83	**1m**	
10	53	**1m**	
11	18	**1m**	
12	25	**1m**	
13	2	**1m**	
14	6	**1m**	
15	12	**1m**	
16	70	**1m**	
17	12	**1m**	
18	61	**1m**	
19	9	**1m**	
20	95	**1m**	
21	23	**1m**	
22	25	**1m**	
23	15	**1m**	
24	7	**1m**	
25	45	**1m**	

8. Mark schemes for Paper 2: reasoning

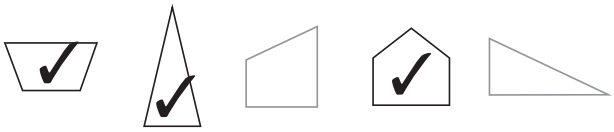
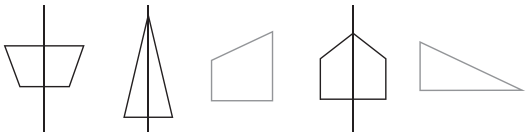
Qu.	Requirement	Mark	Additional guidance
	Aural questions		
P		**none**	Practice question
1	3 (tens)	**1m**	
2	Correct date circled as shown: August Sun Mon Tues Wed Thurs Fri Sat 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 **(26)** 27 28 29 30 31	**1m**	Accept any other clear way of indicating the correct date as long as the pupil's intention is clear. **Do not** award the mark if additional dates are indicated, unless it is clear the correct date is the pupil's final choice.
3	Correct fraction written as shown: $\frac{1}{4}$	**1m**	
4	5 (metres)	**1m**	
5	Three correct numbers circled as shown: (2) (4) 5 (6) 7	**1m**	All three numbers must be correct for the award of the mark. **Do not** award the mark if additional numbers are indicated, unless it is clear the correct numbers are the pupil's final choice.

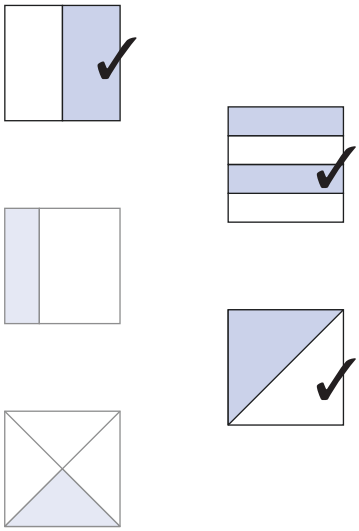
Qu.	Requirement	Mark	Additional guidance
	Written questions		
6	Correct shape ticked as shown: 	**1m**	Accept any other clear way of indicating the correct shape as long as the pupil's intention is clear. **Do not** award the mark if additional shapes are indicated, unless it is clear the correct shape is the pupil's final choice.
7	Two correct blocks added to the black column **AND** four correct blocks added to the grey column as shown: 	**1m**	The block chart must be correct for the award of the mark. Accept any other clear way in drawing the blocks in the appropriate columns as long as the pupil's intention is clear. (Use the example responses on pages 20–21.)
8	11 (ducks)	**1m**	
9	Number pattern completed correctly as shown: 	**1m**	All three numbers must be correct for the award of the mark. Accept reversed digits as long as they are clearly recognisable as intended digits. (Refer to general marking principle 10 on page 7.)

Qu.	Requirement	Mark	Additional guidance
10	Shape pattern completed correctly as shown: 	1m	Both shapes must be correctly shaded for the award of the mark. Accept slight inaccuracies in shading as long as the pupil's intention is clear.
11	40 (marbles)	1m	
12	Both correct coins ticked as shown: 	1m	Both coins must be correctly indicated for the award of the mark. Accept any other clear way of indicating the correct coins as long as the pupil's intention is clear. **Do not** award the mark if additional coins are indicated, unless it is clear the correct coins are the pupil's final choice.

Qu.	Requirement	Mark	Additional guidance
13	Any three numbers written within each circle, that total 14, e.g. • 9 + 1 + 4 • 7 + 2 + 5 • 1 + 10 + 3 • 4 + 8 + 2	1m	Numbers can be given in any order as long as the three numbers total 14. Accept the use of repeated numbers that total 14, e.g. • 6 + 6 + 2 • 10 + 2 + 2 Accept the use (or repeated use) of zero as long as the three numbers total 14, e.g. • 7 + 7 + 0 • 14 + 0 + 0 Also accept answers that go beyond the key stage 1 curriculum, e.g. • –2 + –2 + 18
14	Correct purses ticked as shown: 	1m	Both purses must be correctly indicated for the award of the mark. Accept any other clear way of indicating the correct purses, including evaluating only the two correct amounts, i.e. writing 12 (p) alongside each of the two correct purses. **Do not** award the mark if other purses have been evaluated, and the correct two have not been indicated. **Do not** award the mark if more than two purses are indicated, unless it is clear that the correct purses are the pupil's final choice.

Qu.	Requirement	Mark	Additional guidance
15	68 (marbles)	1m	
16	Number sentence completed correctly as shown: 5 × 1 = 5	1m	
17	6 (strawberries)	1m	
18	Award the mark for drawing a cross on 3 – 20 as shown: 9 + 8 ; 8 + 9 ; 20 – 3 ; 3 – 20 ✗	1m	Accept any other clear way of indicating 3 – 20 as long as the pupil's intention is clear, e.g. ticking. **Do not** award the mark if other calculations have been evaluated, and 3 – 20 has not been indicated. **Do not** award the mark if more than one calculation is indicated, unless it is clear that 3 – 20 is the pupil's final choice.
19	Number sentence completed as shown: 5 × 8 = 40 seats **OR** 8 × 5 = 40 seats	1m	The number sentence must be completed for the award of the mark.
20	Diagram completed correctly as shown: 20 6 ; 14 9 ; 11 12 ; 8	1m	Both numbers must be correctly placed in the diagram for the award of the mark.

Qu.	Requirement	Mark	Additional guidance
21	Both correct numbers circled as shown: 57 (circled) 66 75 97 (circled)	1m	Accept any other clear way of indicating the correct numbers as long as the pupil's intention is clear, e.g. ticking.
22	6 (packs)	1m	
23	4 (badges)	1m	
24	50 (ml)	1m	
25	Both calculations ticked as shown: 50 + 50 ✓ 80 + 30 75 + 15 35 + 65 ✓	1m	Accept any other clear way of indicating the correct calculations as long as the pupil's intention is clear. **Do not** award the mark if other calculations have been evaluated, and the correct two have not been indicated. **Do not** award the mark if more than two calculations are indicated, unless it is clear that the correct calculations are the pupil's final choice.
26	Three correct shapes ticked as shown: 	1m	All three correct shapes must be indicated for the award of the mark. Accept any other clear way of indicating the correct three shapes as long as the pupil's intention is clear, e.g.  **Do not** award the mark if additional shapes have been indicated, unless it is clear that the correct shapes are the pupil's final choice.

Qu.	Requirement	Mark	Additional guidance
27	Correct shapes ticked as shown: 	1m	All three correct shapes must be indicated for the award of the mark. Accept any other clear way of indicating the correct shapes. **Do not** award the mark if additional shapes are indicated, unless it is clear that the correct shapes are the pupil's final choice.
28	Correct number sentence circled as shown: $\frac{1}{4} = \frac{1}{2}$ $\frac{2}{4} = \frac{1}{3}$ $\frac{3}{4} = \frac{1}{2}$ $\frac{2}{4} = \frac{1}{2}$	1m	Accept any other clear way of indicating the correct number sentence, e.g. ticking. **Do not** award the mark if additional number sentences have been indicated, unless it is clear that the correct number sentence is the pupil's final choice.

Qu.	Requirement	Mark	Additional guidance
29	$\frac{3}{4}$ of 8 = 6	1m	
30	20 (coins)	1m	
31	Award **TWO** marks for the correct answer of 6 (horses). If the answer is incorrect or missing, award **ONE** mark for evidence of a complete, correct method, e.g. • Half (of) 30 = 15 15 – 9 = (*incorrect or no answer*) • $\frac{1}{2}$ (of) 30 = 10 (*error*) 10 – 9 = **OR** Award **ONE** mark for any of these partial methods correctly evaluated, e.g. • $\frac{1}{2}$ (of) 30 = 15 • 15 + 9 = 24 • 30 – 9 = 21 **OR** • Sight of 15, 24 or 21 (as evidence of a partial method completed correctly)	2m **OR** 1m	(Refer to general marking principle 6 on page 6.) (Use the example responses on pages 22–23.)

Qu.	Requirement	Mark	Additional guidance
32	5 (kg)	**1m**	
33	Award **TWO** marks for the correct answer of 15 (p). If the answer is incorrect or missing, award **ONE** mark for evidence of a complete, correct method, e.g. • 20 (p) × 4 = 80 (p) 80 (p) – 65 (p) = (*incorrect or no answer*) • 4 × 20 = 90 (*error*) 90 – 65 = • 65 – 20 – 20 – 20 = 5 20 – 5 = (*incorrect or no answer*) **OR** Award **ONE** mark for any of these partial methods correctly evaluated, e.g. • 20 × 4 = 80 • 20 + 20 + 20 + 20 = 80 **OR** • Sight of 80 (p) (as evidence of a partial method completed correctly)	**2m** **OR** **1m**	(Refer to general marking principle 6 on page 6.) (Use the example responses on pages 24–25.)

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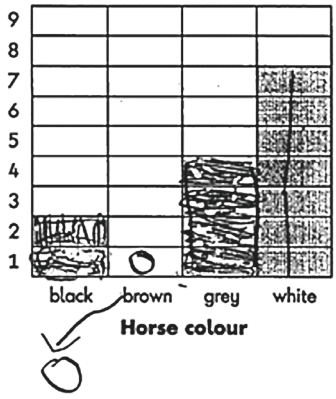
9. Example responses

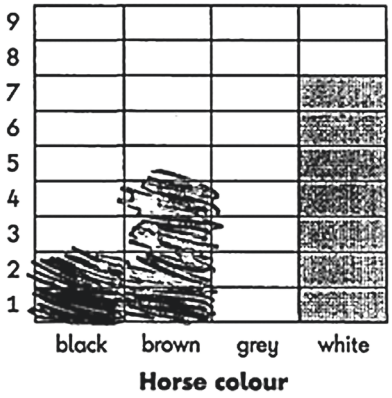
9.1 Examples of responses from question 7

Parminder: 1 mark



1

Nancy: 0 marks



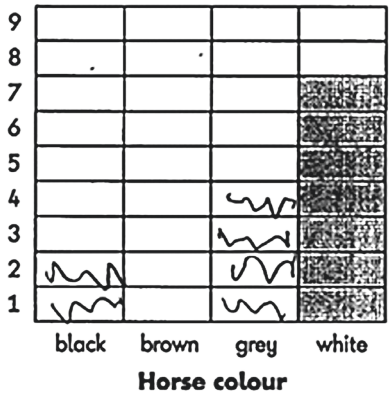
0

Both Parminder and Nancy have made different responses in completing the block chart.

Parminder has populated the correct number of blocks for the black and grey columns and has indicated that there are no blocks for the brown column (this can be ignored). Therefore, Parminder is awarded **ONE mark**.

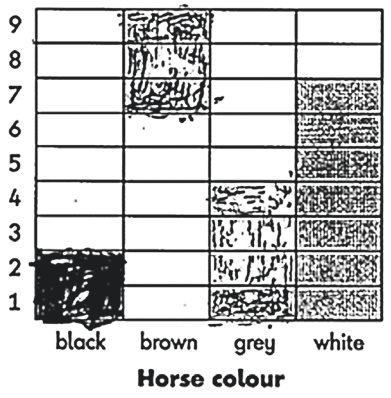
Nancy has added two blocks correctly to the black column, but has incorrectly populated the brown column instead of the grey column. Therefore, **no marks** are awarded.

Daryl: 1 mark



1

Ezra: 0 marks



0

Daryl has populated the correct number of blocks for the black and grey columns and has indicated that there are no blocks for the brown column. Therefore, Daryl is awarded **ONE mark**.

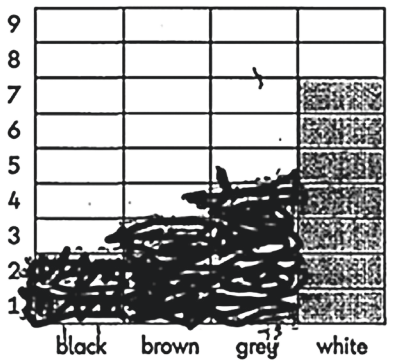
In comparison, Ezra has populated the correct number of blocks for the black and grey columns. However, three blocks have also been shaded in the brown column. As a result, Ezra is awarded **no marks**.

9.1 Examples of responses from question 7 (continued)

Zahra: 1 mark

1

Teia: 0 marks



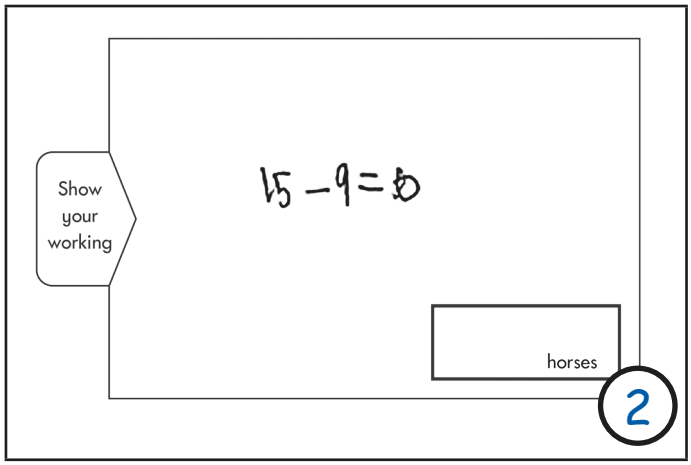
0

Zahra has populated the correct number of blocks for the black and grey columns and has indicated that there are no blocks for the brown column. Although the entire blocks have not been shaded, the intention is clear. Zahra is awarded **ONE mark**.

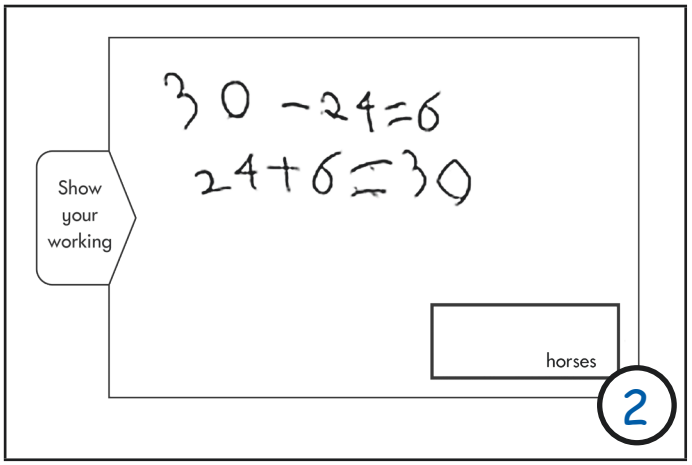
Teia has populated the correct number of blocks for the black and grey columns. However, three blocks have also been shaded in the brown column. As a result, Teia is awarded **no marks**.

9.2 Examples of responses from question 31

Cathal: 2 marks



Shannon: 2 marks

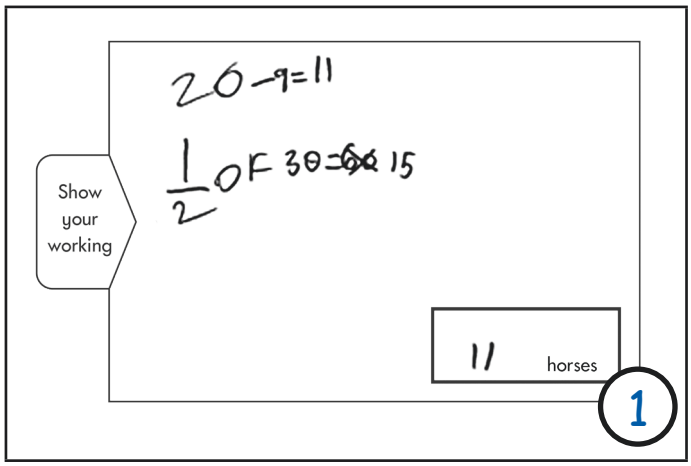


Both Cathal and Shannon have provided an answer, without writing in the answer box.

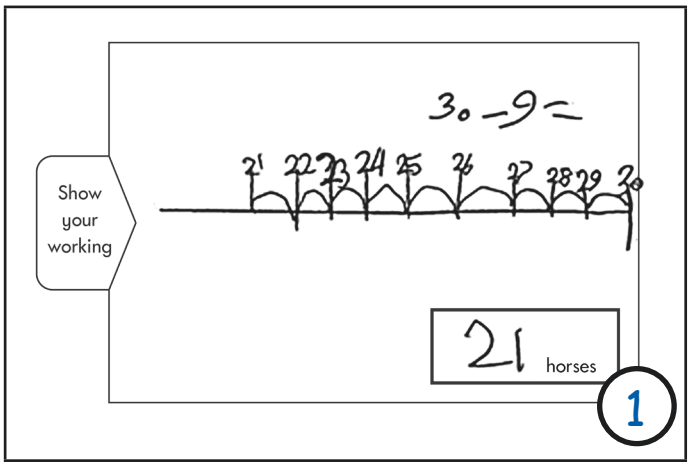
Cathal has provided a complete correct method, even though his first step (half of 30) is unseen, it is correct. The correct answer of 6 is unambiguously his final answer. Therefore, Cathal is awarded **TWO marks**.

Similar to Cathal, Shannon has provided a complete method with two correct steps unseen, (half of 30 + 9 = 24). She has checked her final answer of 6 by completing an inverse calculation (24 + 6). Therefore the correct answer of 6 is unambiguously her final answer, **TWO marks** are also awarded.

Marko: 1 mark



Lisa: 1 mark



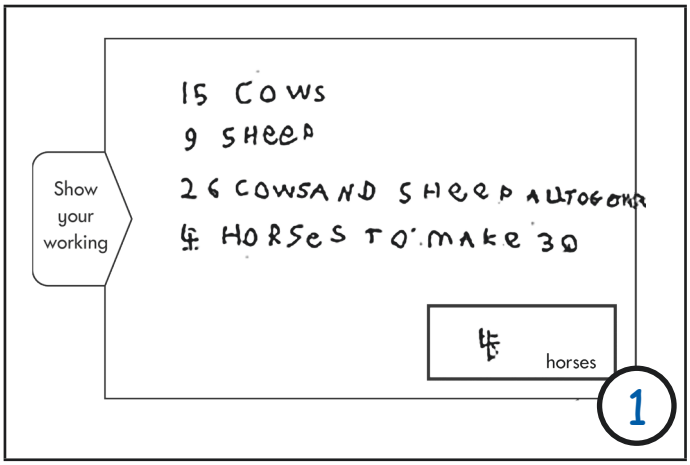
Both Marko and Lisa have been awarded **ONE mark** for a first step completed correctly.

In his method, Marko has completed a first step correctly to reach 15. Although the next step of the method is not correct, Marko is awarded **ONE mark** for sight of 15 as evidence of a partial method completed correctly.

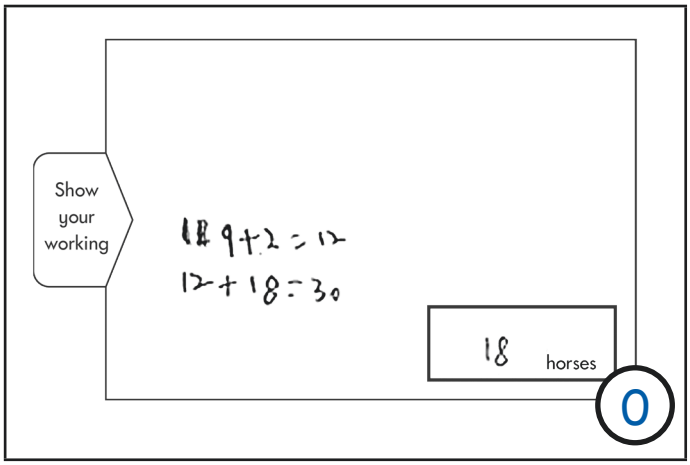
Lisa has provided a number line where she has subtracted the number of sheep from the total number of animals. Although her method is incomplete, **ONE mark** is awarded for a partial method completed correctly.

9.2 Examples of responses from question 31 (continued)

Simone: 1 mark



Aadi: 0 marks



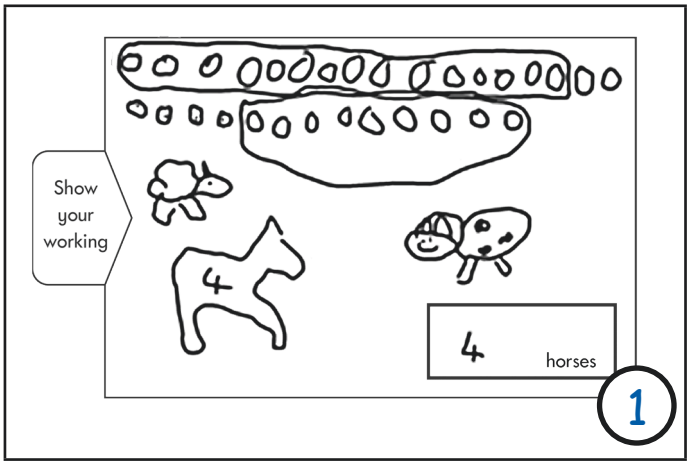
Simone and Aadi have used different methods to reach their answer.

In Simone's method, she has made an arithmetic error adding 15 and 9, but has added 4 to correctly complement to 30. Therefore, the method is complete and Simone is awarded **ONE mark**.

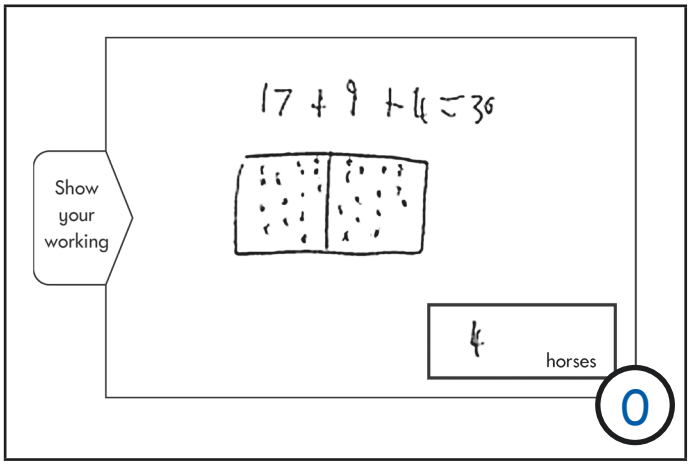
Note: Simone would have received **ONE mark** for sight of 15 as evidence of a partial method completed correctly, regardless of the complete method.

Aadi has not used an appropriate method and he has not shown evidence of a partial method completed correctly. Unfortunately, he is awarded **no marks**.

Kwame: 1 mark



Danny: 0 marks



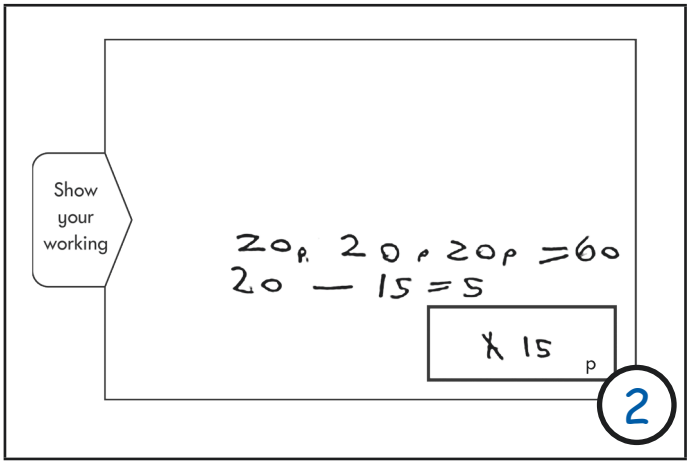
Kwame and Danny have both used pictorial methods to calculate their answer.

Kwame has drawn circles to represent the 30 animals and has clearly indicated 15 cows and 9 sheep by circling them. Kwame has then miscounted the 6 remaining circles and provided the incorrect answer of 4. Since the method is appropriate, Kwame is awarded **ONE mark**.

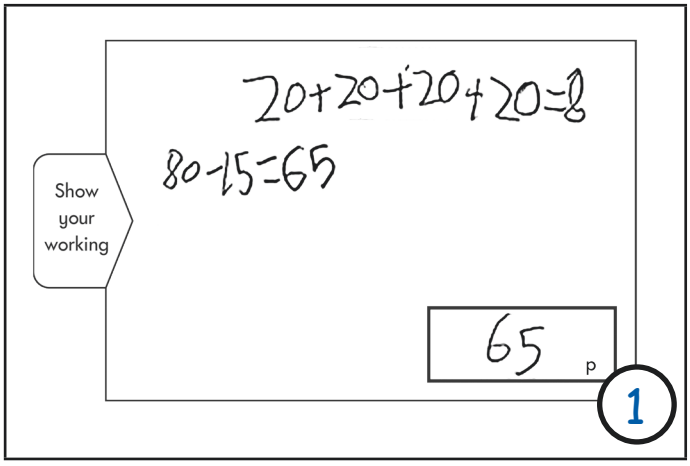
In contrast, Danny has used a pictorial method to halve 30. However, the number of dots in each group do not total 15. Therefore, a mark cannot be awarded for an appropriate method and there is no evidence of a partial method completed correctly. Danny is awarded **no marks**.

9.3 Examples of responses from question 33

Jared: 2 marks



Paul: 1 mark

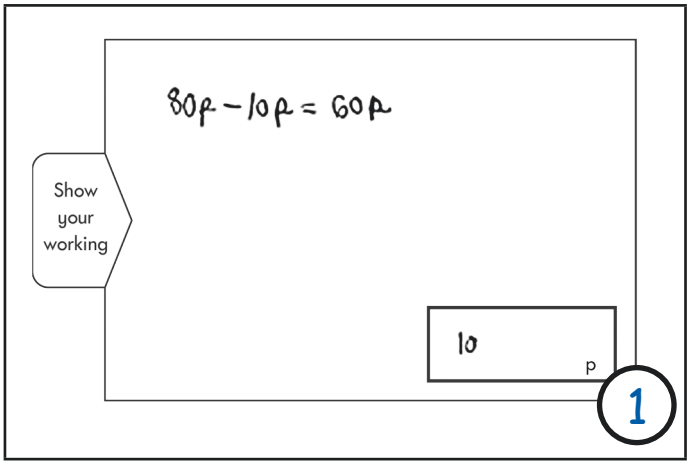


Jared and Paul have used different methods to calculate their answers.

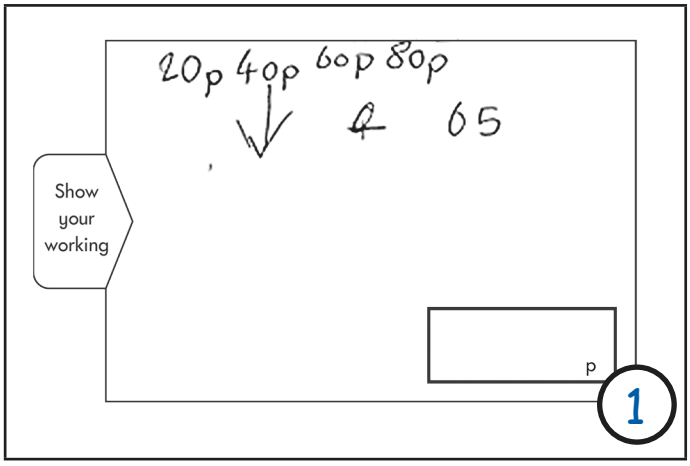
Jared has shown an appropriate method that has led to the correct answer of 15 (p). **TWO marks** are awarded.

Paul has also shown appropriate calculations that could lead to the correct answer. However, Paul has selected the incorrect answer of 65 (p), therefore only **ONE mark** can be awarded for an appropriate method.

Angela: 1 mark



Jennifer: 1 mark



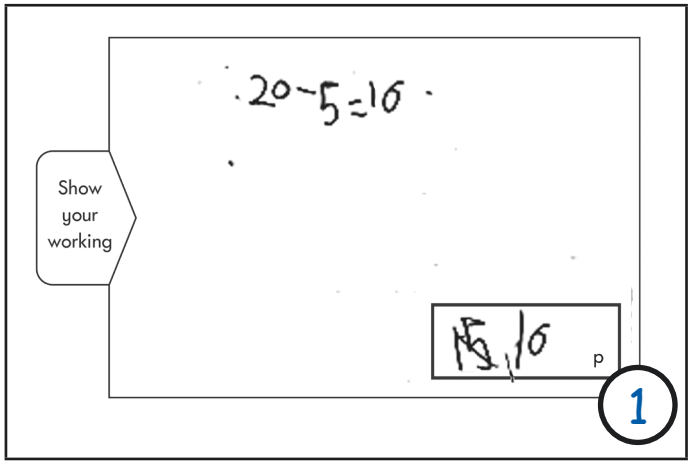
Both Angela and Jennifer have been awarded **ONE mark** for a first step completed correctly.

In Angela's method, her first step unseen is correct (20 × 4 = 80), however her final step (80 – 10) is inappropriate. However, Angela is awarded **ONE mark** for sight of 80 (p) as evidence of a partial step completed correctly.

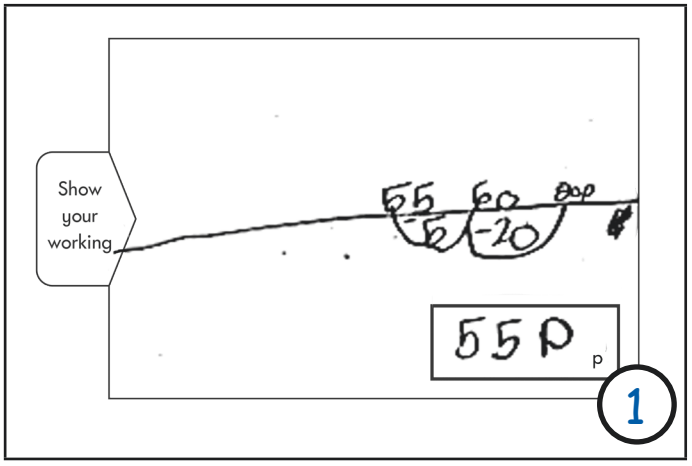
Jennifer has not provided an answer and there is no evidence of a complete, correct method. However, Jennifer is also awarded **ONE mark** for the sight of 80 (p) as evidence of a partial step completed correctly.

9.3 Examples of responses from question 33 (continued)

Katey: 1 mark



Jake: 1 mark

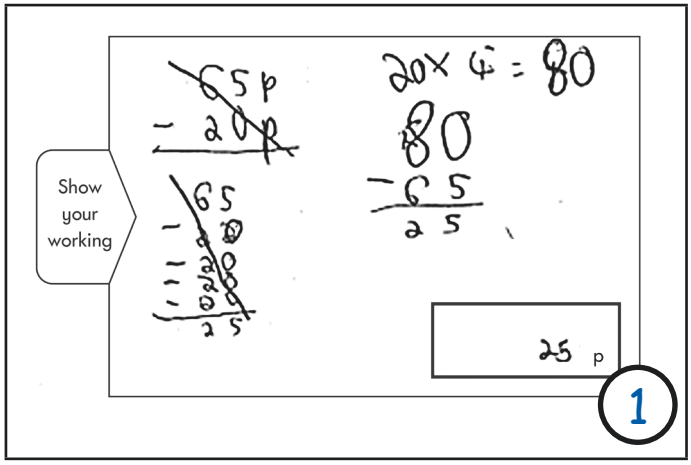


Katey and Jake have used different methods to reach their answer.

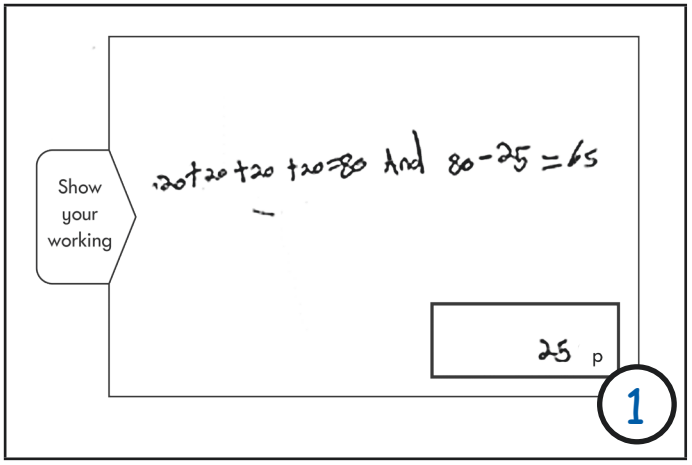
Katey has made a correct unseen first step as part of her method, subtracting 60 (p) from the 65 (p). However, in her final step of her correct method, she has made an arithmetic error (20 – 5) so full marks cannot be awarded. Therefore, Katey is awarded **ONE mark**, for a complete correct method.

Jake has also provided an incorrect answer. Although his method is not correct, Jake can be awarded **ONE mark** for the sight of 80 (p) as evidence of a partial step completed correctly.

Finbar: 1 mark



Kira: 1 mark



Both Finbar and Kira have used different methods to reach their answer.

Finbar has provided an incorrect answer. However, he has evaluated the total of four 20 pences and subtracted 65 pence. Since the method is correct and complete, Finbar is awarded **ONE mark**.

Kira has provided an incorrect answer and there is no evidence of a complete, correct method. However, Kira is awarded **ONE mark** for the sight of 80 (p) as evidence of a partial step completed correctly.

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