

# NUMERACY

**Y3**

**Reasoning  
sample  
materials**

**National Numeracy Tests**



**Llywodraeth Cymru  
Welsh Government**

## Reasoning sample materials: Guidance for teachers

The reasoning tests will be first introduced in schools in 2014. It is therefore important that teachers and learners become increasingly familiar with the requirements in the framework to identify processes and connections, to represent and communicate, and to review.

Sample items have been produced for each year group to illustrate different question types and formats for response. Each year group contains one stimulus item, presented through PowerPoint, which requires information to be shown by the teacher immediately before the test begins.

The purpose of the stimulus material is to allow learners to engage with unfamiliar contexts. A teacher script is provided but teachers may use their own words provided no help is given with the numeracy that is to be assessed.

The sample items are representative of the anticipated level of demand. However, they are not complete papers: the number of marks within the live tests will be about 20 for each year group, with one stimulus item followed by between four and eight additional questions. In 2014 each reasoning test will last 30 minutes. The time taken to deliver the stimulus is in addition to this assessment time.

### • *How to use the sample items*

The sample items can be printed and used for practice before the tests. Strengths and areas for improvement can then be identified and used to provide additional classroom learning and teaching activities, where appropriate.

The reasoning sample items can also be used as a basis for classroom discussion, to illustrate good test techniques. These include the importance of reading the question carefully, where to write the answers, the importance of showing working to enable others to understand the reasoning applied, good time management and the benefits of checking answers.


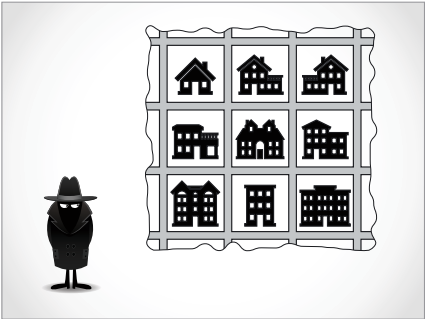
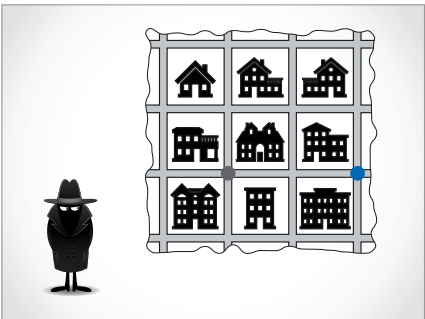
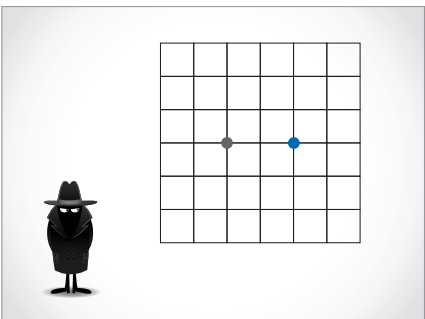
As importantly, the sample items can be used to promote understanding of good responses to open questions. For example, teachers could anonymise and photocopy a range of responses and ask learners to work in small groups to rank from 'best' to 'worst', identifying what is good about each and why.

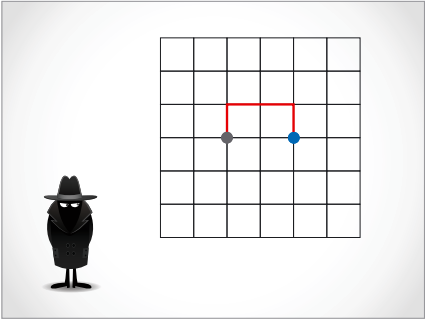
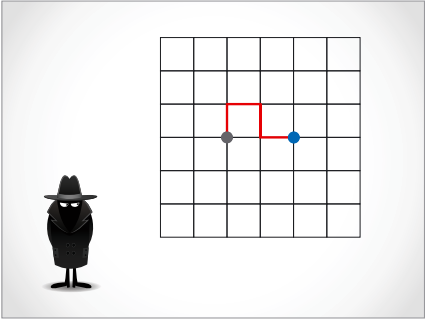
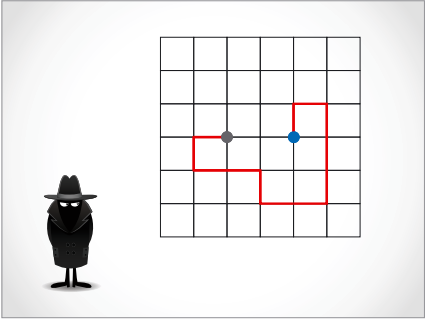
### • *Marking of the sample items*

A markscheme is provided which is typical of those to be used alongside the live tests. It includes a range of likely responses with clear guidance on when and how partial credit should be applied. General marking guidance provides principles of marking to facilitate consistency across schools.

## Presentation to be shown to learners before doing question 1

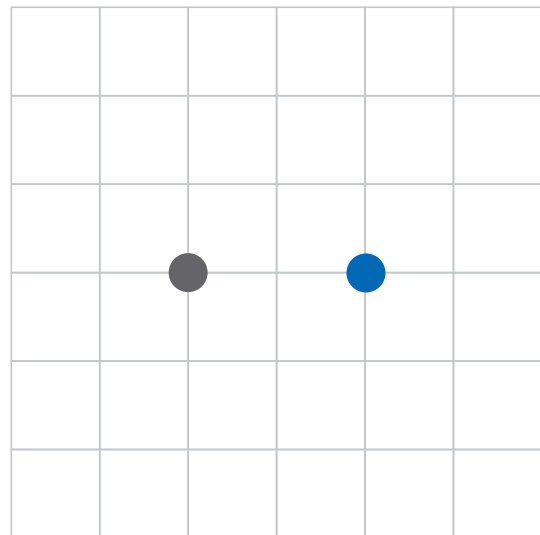
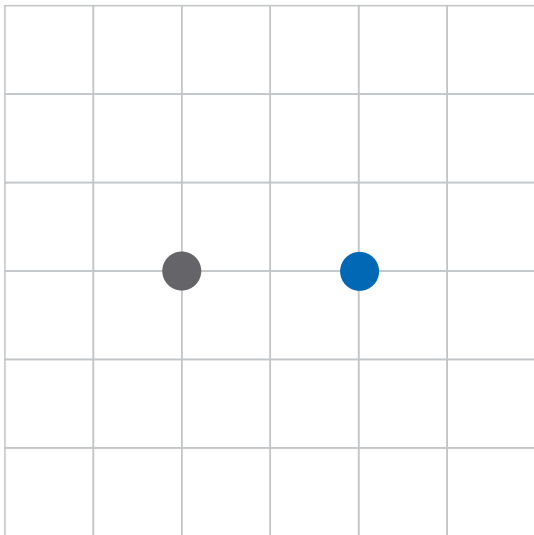
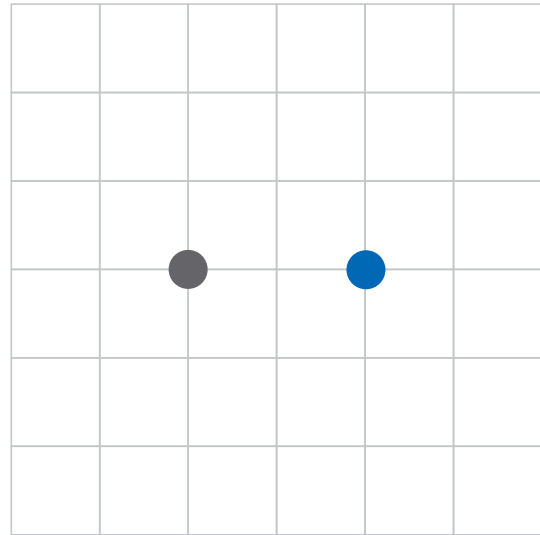
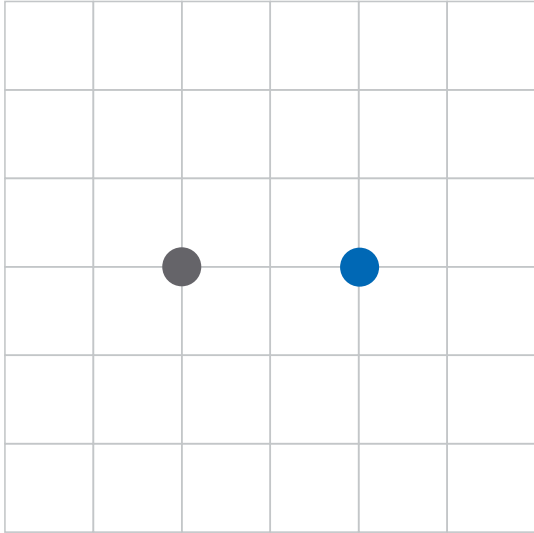
The text in the right-hand boxes should be read to learners. Teachers can use their own words, or provide additional explanation of contexts, if necessary. However, no help must be given with the numeracy that is to be assessed.

<p>Slide 1</p>		<p>This is Sping. She is a spy!</p>
<p>Slide 2</p>		<p>She lives in a town that has roads that go straight across and straight up (<i>point</i>).</p>
<p>Slide 3</p>		<p>Every day Sping the Spy walks from here (<i>point to the grey circle at the intersection of two roads</i>) and she finishes here (<i>the blue circle</i>).</p> <p>There are many more roads than this in Sping's town ... the roads continue in all directions.</p>
<p>Slide 4</p>		<p>Here you can see more roads in Sping the Spy's town.</p> <p>Where does she start her walk? (<i>grey circle</i>)</p> <p>Where does she finish? (<i>blue circle</i>)</p>

<p>Slide 5</p>		<p>The red lines show one way that Sping the Spy can walk. She walks four blocks. <i>(Show by counting that each unit is a block.)</i></p> <p>Of course because she is a spy she never uses the same route twice. The next day she goes a different way.</p>
<p>Slide 6</p>		<p>How many blocks is this walk? <i>(Again, count them to show there are four blocks.)</i></p>
<p>Slide 7</p>		<p>Sometimes Sping the Spy goes long distances. How many blocks is this walk? <i>(Count together to show that the walk has 12 blocks.)</i></p> <p><i>Make sure each learner understands how blocks are counted as they need this understanding to complete the first part of the assessment.</i></p> <p>Now you are going to answer some questions about Sping the Spy. All the information you need is in your booklet. Remember to show your working so that someone else can understand what you are doing and why. When you have finished there are other questions to answer.</p>

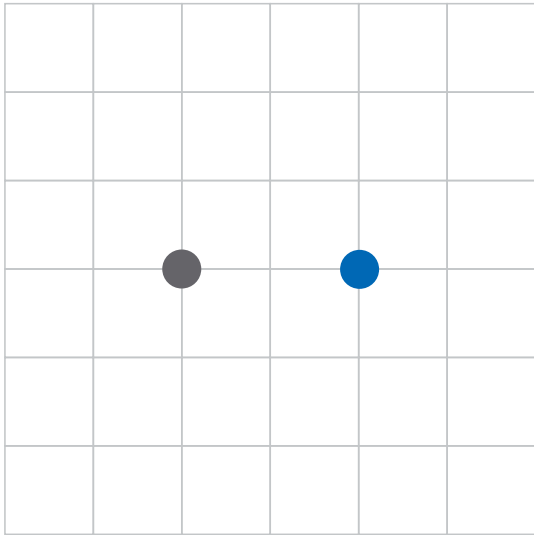
1 Show four **different** walks from ● to ●

Each walk must be **6** blocks.



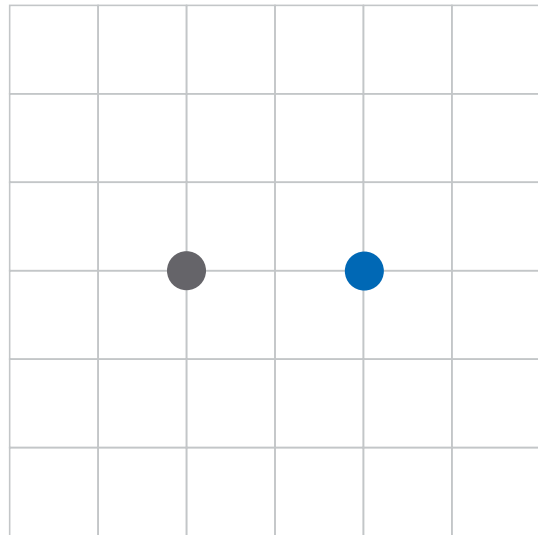
Show an **8** blocks walk

from ● to ●



Show an **10** blocks walk

from ● to ●



I did an **11** blocks walk  
from ● to ●

Write why Sping the Spy **must** be wrong.



2



How many slices of my cheese pizzas would you like?

2 please.

2 please.

7 for me.

6 for me.




You can buy whole pizzas or slices.

There are **8 slices** in a whole pizza. It costs **£5**

**1 slice** costs **£1**

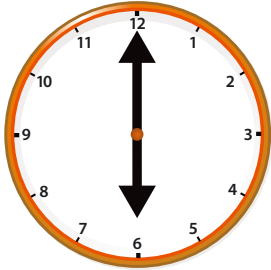
How much does the family pay?



£

3m

3 Mrs Jones loves drinking tea!



At **6am** she drinks **two** cups.

Then **every two hours** she drinks **three more** cups until



at **10pm** she drinks **two** cups before bed.

Altogether, how many cups of tea does she drink in one day?

cups





## Reasoning sample materials: Marking guidance

It is important that the tests are marked accurately. The questions and answers below help to develop a common understanding of how to mark fairly and consistently.

- ***Must learners use the answer boxes?***

Provided there is no ambiguity, learners can respond anywhere on the page. If there is more than one answer the one in the answer box must be marked, even if incorrect. However, if the incorrect answer is clearly because of a transcription error (e.g. 65 has been copied as 56), mark the answer shown in the working.

- ***What if learners use a method that is not shown within the markscheme?***

The markschemes show the most common methods, but alternative approaches may deserve credit – use your professional judgement. Any correct method, however idiosyncratic, is acceptable.

- ***Does it matter if the learner writes the answer differently from that shown in the markscheme?***

Numerically equivalent answers (e.g. eight for 8, or two quarters or 0.5 for half) should be marked as correct unless the markscheme states otherwise.

- ***How should I mark answers involving money?***

Money can be shown in pounds or pence, but a missing zero, e.g. £4.7, should be marked as incorrect.

- ***How should I mark answers involving time?***

In the real world, specific times are shown in a multiplicity of ways so accept, for example, 02:30, 2.30, half past 2, etc. Do not accept 2.3 as this is ambiguous. The same principle should be used for marking time intervals, e.g. for two and a half hours accept 2.5 but not 2.5pm.

- ***What if the method is wrong but the answer is correct?***

Unless the markscheme states otherwise, correct responses should be marked as correct even if the working is incorrect as learners may have started again without showing their revised approach.

- ***What if the learner has shown understanding but has misread information in the question?***

For a two (or more) mark item, if an incorrect answer arises from misreading information given in the question and the question has not become easier as a result then deduct one mark only. For example, if the 2 mark question is  $86 \times 67$  and the learner records  $96 \times 67$  then gives the answer 6432, one mark only should be given. In a one mark question, no marks can be given.

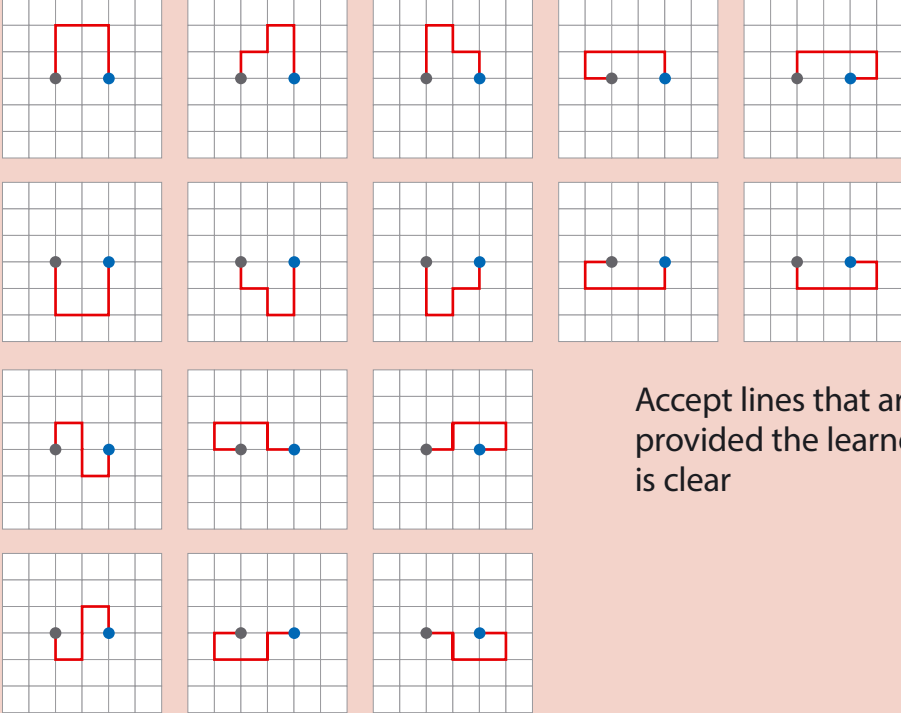
- ***What should I do about crossed out work?***

Working which has been crossed out and not replaced can be marked if it is still legible.

- ***What is the difference between a numerical error and a conceptual error?***

A numerical error is one in which a slip is made, e.g. within  $86 \times 67$  the learner works out  $6 \times 7 = 54$  within an otherwise correct response. A conceptual error is a more serious misunderstanding for which no method marks are available, for example if  $86 \times 60$  is recorded as 516 rather than 5160

## Year 3 Reasoning sample materials: Markscheme

Q	Marks	Answer	Comments
1i	4m	<p>Shows any four of the following routes:</p> 	<p>Accept lines that are not accurate provided the learner's intention is clear</p>
	<b>Or</b> 3m	<p>Shows any 3 of the routes above</p> <p>Or</p> <p>Consistently miscounts the number of blocks but draws 4 different diagrams of that number of blocks</p>	
	<b>Or</b> 2m	<p>Shows any 2 of the routes above</p> <p>Or</p> <p>Consistently miscounts the number of blocks but draws 3 different diagrams of that number of blocks</p>	
	<b>Or</b> 1m	<p>Shows any 1 of the routes above</p> <p>Or</p> <p>Consistently miscounts the number of blocks but draws 2 different diagrams of that number of blocks</p>	

Q	Marks	Answer	Comments
1ii	1m	Shows an 8 block walk	
1iii	1m	Shows a 10 block walk	
1iv	1m	Explains why a 11 block walk is not possible, e.g. <ul style="list-style-type: none"> <li>• She can only walk even numbers</li> <li>• 11 is odd</li> <li>• If you go up one you have to come down one so it is in pairs</li> <li>• She can do 10 and 12 but not 11</li> </ul>	
2	3m	£11	
	<b>Or</b> 2m	Shows understanding that 2 whole pizzas can be ordered, e.g. <ul style="list-style-type: none"> <li>• 6 + 2 make a whole one and then you can put another slice with the 7 to make a whole one</li> <li>• <math>17 = 8 + 8 + 1</math></li> </ul>	
	<b>Or</b> 1m	Shows understanding that 17 slices are needed, e.g. <ul style="list-style-type: none"> <li>• 17 seen</li> <li>• Answer of £17</li> </ul>	
3	3m	25	
	<b>Or</b> 2m	Shows that from 8am to 8pm inclusive she drinks 21 cups of tea Or Shows a correct method even if there are numerical errors, e.g. <ul style="list-style-type: none"> <li>• <math>7 \times 3 = 18</math> (error), then add 2, then add 2</li> <li>• <math>2 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 2 = 20</math> (error)</li> </ul>	
	<b>Or</b> 1m	Shows understanding of when she is drinking tea, e.g. <ul style="list-style-type: none"> <li>• 8, 10, 12, 2, 4, 6, 8 marked on the clock</li> </ul>	

