

# Teacher support materials

## Avoiding the test pitfalls

As teachers everywhere know, being successful in tests does not just entail 'knowing your stuff' in relation to the content. It also means being able to **show** you know it.



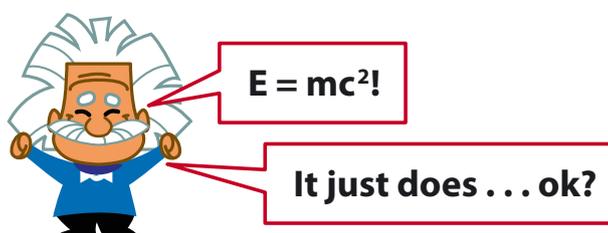
Learners who are inexperienced in formal testing often fail to show their ability and knowledge purely because they lack test strategy and awareness. This short document aims to go some way to addressing this problem through highlighting examples of some of the most common pitfalls that learners can fall into when taking any test.

It has been written by the developers of both the National Numeracy Tests (Reasoning) and the Reasoning in the classroom support materials for teachers, and is built on their extensive experience of both assessment and teaching, and also their findings from trials of the National Numeracy Tests (Reasoning) in Welsh schools in 2013.

We have no doubt that many teachers will already be aware of much of the content of this document: there is nothing that is groundbreaking or surprising. However, the pitfalls we have included are the ones that were seen time and time again in the 2013 school trials and are therefore worth revisiting.

## Failing to communicate effectively

The ability to communicate effectively is a key element of numerical reasoning: that is why Represent and communicate is one of the three elements of Developing numerical reasoning within the numeracy component of the National Literacy and Numeracy Framework (LNF). Being able to explain how you have arrived at a solution is crucial in the real world.



And failing to show their workings or explain them in a way that is understandable to someone else is one of the biggest test pitfalls of all for learners of all ages.

## No communication

The most common example of failing to communicate in tests is simply not communicating at all. A learner may well know exactly what to do, using all their reasoning skills just as you would wish. However, if they then just write the answer in the box, no one else has a clue how they went about a thing. That may not be a problem if the marks are linked directly to the answer, but in the National Numeracy Tests (Reasoning) marks are often awarded for method. As a result, the bright learner who has worked it all out in their head but just inserts the solution loses out, scoring some but not all marks just because they haven't shown their working.

Or worse, they may lose out completely, if their method is spot-on but they make one small error which results in an answer that is incorrect. The National Numeracy Tests (Reasoning) markschemes give partial credit for the steps that learners go through in order to arrive at their solution, even if that end solution is incorrect: again, if they don't show those steps, and make one small mistake, they get no partial credit at all – zero marks.

## Rambling communication

Learners may well have absorbed the message 'show your working', but not understand what that means. It is common in test papers to find 'mini-essays':



Well, what I did was I thought to myself that first I should do  $523 \times 16$  and I did that on my calculator and the answer was 8368 and then I did add 15 and I did that in my head and the answer was 8383 but then I thought that was in grams but I want it in kg and I know that there are 1000 g in a kg so I do  $\div 1000$  and that is what I did to get my answer.

8.383 kg

Responses such as this represent a serious time penalty for the learner.

## Illegible communication

Sharp pencil; pen that doesn't smudge; ruler for straight lines; no writing in highlighter pen . . . All these may be obvious, but not necessarily to learners.

A further really important aspect of test strategy that seems to pass by a great many learners is that of changing their work. It is common for markers to spend an age trying to decipher what was intended just because the learner's amendments are so unclear.

In contrast, some learners think that their test papers should look perfect – they rub out anything of which they are unsure, even when that working shows partial understanding. If markers can't read what was written they can't give credit.

Crossing out to change work is a better strategy, as within the National Numeracy Tests (Reasoning) marks are awarded for evidence of understanding, even if that evidence is then crossed through. However, it needs to be legible, so **neat** crossing out, not impenetrable scribble.

## Not reading the question properly

The National Numeracy Tests (Reasoning) have been carefully designed to ensure accessibility for learners. The layout and the text have been chosen to highlight what is most important so that learners can readily assimilate what to do. Sadly, very often they don't!

Most of us can empathise with the learner who opens the test paper, scans through the first question, then panics. The stimulus materials that start the National Numeracy Tests (Reasoning) are there specifically to address that wholly natural response. They don't just provide information that is essential to the first set of questions; they also help engage learners in the test and reduce test anxiety. The outcome should be that learners (and particularly the younger ones) approach the papers with less trepidation and don't panic. (The delivery of the stimulus materials is therefore crucial, which is why preparation by the test administrator is emphasised within the Test administration guidance.)

Reading and **thinking** before rushing into a question is a key test strategy, as is reading to the end of the information and not leaping to inaccurate conclusions on the basis of not very much at all! One common response in the trials was that of 'if in doubt, add . . .' – any numbers, however irrelevant.

## Poor timing

Time, as we know, can be a very tricky construct. Thirty minutes at lunchtime can seem very different to 30 minutes sat in a dentist's chair. And it is the same in the test situation. For some, the 30 minutes that comprise the National Numeracy Tests (Reasoning) rush by and they don't get time to finish. For others it is an eternity, as they hurtle through, abandon all hope and give up after 10 minutes.

For the former group, a major issue can be that they get stuck on one question and just fail to move on. It isn't easy letting go, especially if you feel you should be able to respond, but learners need to understand that moving on, then returning to the question they missed, is a far better test strategy than sitting there anxiously plodding on and consequently missing out on questions they could answer.

For the group that 10 minutes into the test announce they have finished and can't do any more, perhaps the biggest learning point is to go back and try again. In trials of the National Numeracy Tests (Reasoning), we often found that learners who were encouraged to take this approach discovered to their surprise that going back and really thinking about a question opened their eyes on what to do. Self-belief is undoubtedly a strong influence here: test confidence comes from believing that you 'can' and it's worth having a go, whatever your ability.

Learners have 30 minutes: they should use them, but use them wisely, not giving up without really thinking about a question, making sure they have read through all the information and know what is required, or conversely not getting so bogged down they fail to reach the end of the paper.

## Not using a calculator

This warrants its own short section because it is so important a pitfall to avoid.

Learners in Years 5 to 9 can use a calculator in the National Numeracy Tests (Reasoning). This is clearly indicated on the papers and in the accompanying Test administration guidance. However, not only **can** they use a calculator, they **should** use one whenever it is appropriate.

In these tests, we are assessing the learner's ability to use their numerical knowledge to solve problems and arrive at solutions. We are not testing their ability to do the mechanics of numeracy: that is done through the National Numeracy Tests (Procedural), where no calculators are allowed.

Knowing when and how to use a calculator is an important numerical skill. Trying to carry out complex calculations without one very frequently introduces numerical errors, as well as incurring a self-imposed and often excessive time penalty.

However, learners need also to understand that if they are using a calculator, they still must write down their working, otherwise the issue of 'one error, no marks' comes in if all they record in the answer box is the final number in their calculator.

## Not checking work

The third element of the Developing numerical reasoning strand of the *National Literacy and Numeracy Framework* is entitled 'Review'.

Teachers everywhere implore their learners to review and check their work. The problem in tests is that sometimes those learners don't seem to understand what that means. When prompted, they might go back to the start of the paper and read through their responses, but that is all. They don't revisit their working and make sure they have made no mistakes.

Maybe that is because they have no real understanding of the benefits of checking – they haven't experienced the relief of finding and putting right something that would have denied them marks. One Year 6 learner in the trials said on discovering a very silly mistake '**Now** I understand why I need to check my work!'

There is a strong emphasis on reviewing work in the [Reasoning in the classroom](#) support materials for teachers (available on the Learning Wales website). Many of the classroom activities include learners checking each other's work and reviewing and refining their own. Reflecting in this way is an important learning skill, as well as an essential life skill – and it helps prepare for the tests.

And while on the subject of refining responses – something that learners seem to suffer from is a lack of awareness of what we call 'maths sense'. Coming up with a solution that there are 22.5 children in a class should trigger an internal alarm bell. Unfortunately, very often it doesn't.

An important message for learners is that checking doesn't just mean going back to those questions they didn't complete, it means looking at all of them for accuracy and also whether they make sense.

## Helping learners avoid the pitfalls

Clearly the first thing is to make sure they know what those pitfalls are and can therefore avoid them.

However, the most important thing is that learners experience numerical reasoning on a day-to-day basis. Teaching numeracy in this way equips learners to use their numeracy in real-world situations, and also helps them apply the same skills of reflection and reasoning to the test scenario.

The Reasoning in the classroom materials have been developed to support teachers to embed a numerical reasoning approach within the classroom. The materials will help prepare learners for the tests, but the emphasis always is on the learning that the tests assess, not the other way around.

[Reasoning in the classroom](#) support materials for teachers can be accessed via the Learning Wales website.