Waddington Diagnostic Mathematics Tests 1 & 2 eBooks

eBook editions now available. Although having similar content to past editions, there have been many minor updates and the Introduction has been re-written. All 1:1 scaled images have been improved so that measuring tasks will be accurate to the millimetre. Answer ebooks now have coloured answers to make marking easier

The Waddington Diagnostic Mathematics Module Tests are primarily criterion-referenced based, as opposed to norm-referenced. Our Diagnostic Standard and Advanced Reading and Spelling Tests 1 & 2 are norm-referenced tests. As the math tests are criterion-referenced, it means they relate closely to an efficient mathematical curriculum outline of essential skills and understandings. In short, they follow an extensive and reliable mathematical scope and sequence. There is no strict time limit for each test, however, there is a set range of tests for particular age/year levels. Being criterion-referenced, also means that essentially, students should be able to achieve a high degree of success with the tests assigned to their particular age/year level. Teachers may also need to read out the questions to students (without guiding them in how to answer). In particular, junior primary teachers may need to gauge the reading competency of their group and decide whether to have all the students complete the sections as they are read out.

Complex concepts are supported by lower order concepts in earlier tests. For example, children who have trouble telling the time need to understand foundation concepts such as recognising numerals, understanding quantity and order, counting by ones, fives and tens, event sequencing, even understanding exactly what half and quarter actually mean. All these essential foundation skills are covered before clock-face time is introduced. This is how all the tests have been designed to work and that is why they remain as popular as ever. Given these tests can be efficiently used on a group or one-to-one basis, they will quickly highlight student strengths and weaknesses. If used on a cross-school basis, student results can be recorded and compared year to year using the Maths subject section of our now FREE* School Data Express (* Free with any ebook purchase). Please note that Version 3 of School Data Express allows for the automated graphing of student Math percentage results over time. Student results can be compared against the average results of any found group (or all records) in your school.

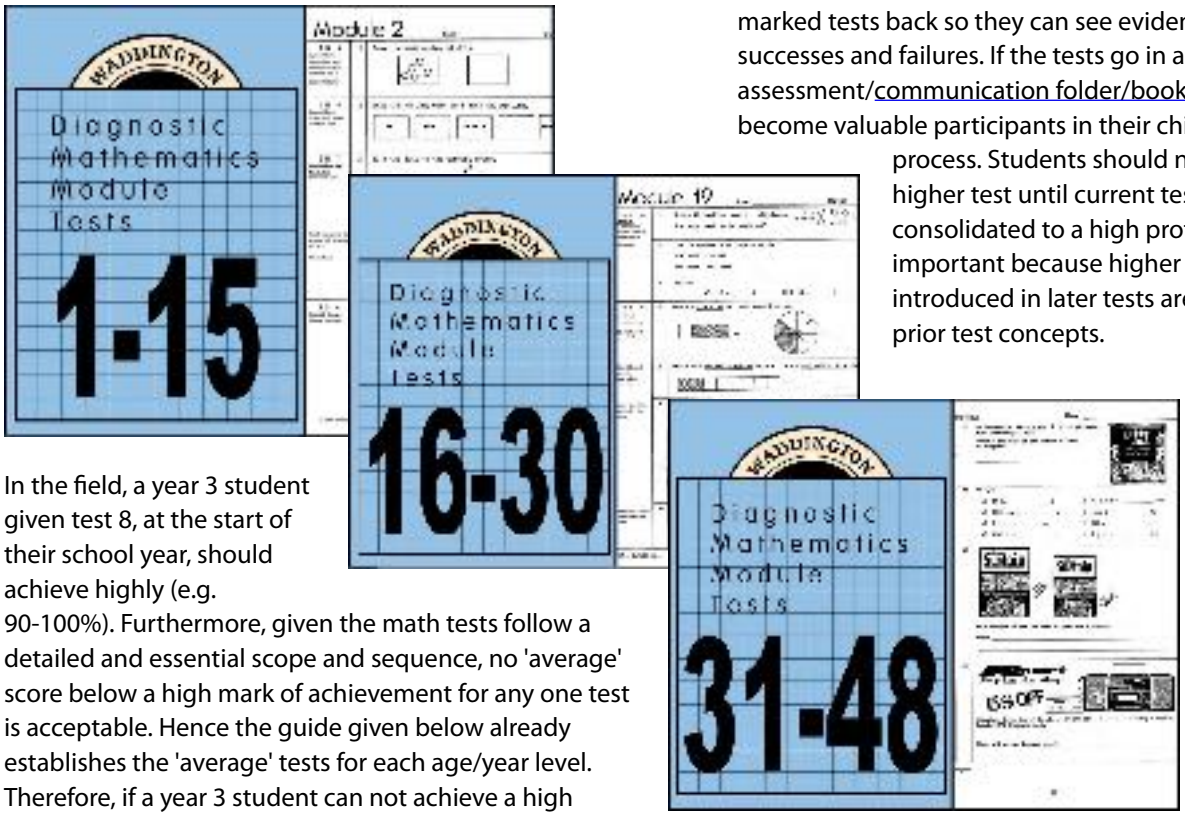
The following table has been reproduced from the Help section of School Data Express. This information is supplied in response to teachers wanting to know the approximate age levels for each test. An approximate Maths Age can be derived from the table. The data has been established via field use of the scope and sequence of each test, by many teachers, over a 25 year period. Math test books currently selling (since June 2005) have this table printed in the Introduction. It must be stressed that all students, regardless of age, most likely will need checking with Tests 1-15 before progressing to tests beyond 16.

APPROXIMATE GRADE / AGE / TEST GUIDE

For example, all Year 2 students could be given Test 5 at the start of a school year, Year 3 students would be given Test 8 at the start of their school year and so on. However, where older students have not gained any solid foundation, then start them off at Test 5 or even Test 1.
Maximum raw score relates to the total marks for the tests listed for each year level if a full mark is given for each question, based on the student's performance on all examples. A half mark may be given if at least half of the question examples are correct. Students should not progress to next test until a high mark is obtained (e.g. at least 80% success rate).

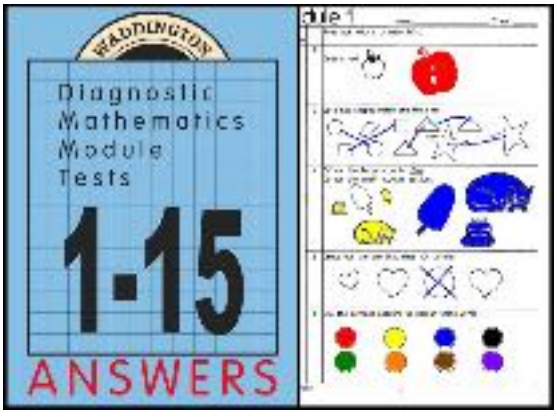
Grade	Age	Tests	Max Raw Score
Pre/Rec	5	1 - 3	73
Year 1	6	4 - 6	56
Year 2	7	7 - 9	54
Year 3	8	10 - 13	72
Year 4	9	14 - 17	80
Year 5	10	18 - 21	83
Year 6	11	22 - 25	69
Year 7	12	26 - 29	74
Year 8	13	30 - 33	113
Year 9	14	34 - 38	139
Year 10	15	39 - 43	152
Year 11	16	44 - 48	147

Even teenagers with a history of poor performance should be put through the lower tests so you are sure they have essential foundation skills in place. It is important that all students function at or below their independent competency range to ensure skills are absorbed properly and reapplied appropriately to minimize or eliminate frustration or the prospect of higher order skills becoming too challenging or impossible to understand with some ease as you progress. I have worked with teenagers in the past who have needed to start at Test 1 and it can be quite surprising to discover many building block foundation skills that are missing entirely. No wonder they have struggled for years on end because no one had taken the time to thoroughly understand the serious gaps in their mathematical conceptual knowledge! These tests will highlight those deficiencies and point to areas in need of remediation before progressing to the next test. See backup materials below for remediation at each test level.



In the field, a year 3 student given test 8, at the start of their school year, should achieve highly (e.g. 90-100%). Furthermore, given the math tests follow a detailed and essential scope and sequence, no 'average' score below a high mark of achievement for any one test is acceptable. Hence the guide given below already establishes the 'average' tests for each age/year level. Therefore, if a year 3 student can not achieve a high success rate with test 8 and 9, yet obtains a high success rate with test 7, you can assume that the student has achieved beginning year 2 concepts and is operating approximately a year behind, that being middle year 2.

The maximum raw score is based on the total number of question sections. In the case of Test 16, there are 19 question sections but a total of 71 examples. There may be two or more problem examples for each question section. It is up to individual teachers to decide how they score the tests. It is also important for teachers to make informed judgements about a student's understanding of particular concepts as well as their degree of applied skill. This may not always be apparent on face value and may necessitate the teacher running brief student conferencing or allowing students time to revisit test items (particularly if they have overlooked items or failed to comprehend the direct meaning of a task in the first instant). It is recommended that a mark be given for a question section where more than half of the examples are answered correctly and/or demonstrate understanding by the student. Therefore, question section 1 has 15 response examples. If the student answers 8 correctly, the teacher may give half a mark for question section 1. If the student answers 13 correctly, the teacher may give a full mark for that section. Once all the marks are added up, a student may score 17 out of 19 for Test 16. This approximate 90% success rate quickly demonstrates the time is right for the student to move on to harder skill learning phases and/or the next test. A score of less than 17 means failed test sections would need to be revisited with appropriate learning opportunities. Unlike norm-referenced tests, students should be given their marked tests back so they can see evidence of their successes and failures. If the tests go in a school-home assessment/communication folder/book, then parents also become valuable participants in their child's learning process. Students should not move on to a higher test until current test concepts are consolidated to a high proficiency rate. This is important because higher order concepts introduced in later tests are dependent on prior test concepts.



The Waddington Diagnostic Mathematics Module Tests and the National Australian Mathematics Curriculum

The Waddington Diagnostic Mathematics Module Tests have not been redesigned to fit the current national curricula but surprisingly they fit extremely well, even down to the concept of similar lateral and cross-ways strands (where building block sub-skills are covered within and across related core disciplines before their associated higher order more complex skills) which the Waddington tests have always embodied. The Waddington tests have stood the test of time over 25 years, are revised when necessary and stand on their own as efficient testing devices. The National Curriculum will continue to undergo further development. I'm confident that the Waddington Mathematics Tests are inclusive enough of the essential skills, in the right order and at the right lateral and cross-ways strand positions, for efficient diagnosis and remediation of students struggling with math concepts. The tests are arranged in a unique way so that they cover sub-skills prior to their higher order counterparts, either in later parts of the same test or in later tests. These building blocks are presented lengthways along with their associated strands. The first column shows the strand (e.g. N for Number) and what is underlined is the sub-strand and then under that are the specific skills and concepts which also form part of the elaborations as outlined in the Australian Curriculum – Mathematics. From discussions I have had, and continue to do so, along with sales of the tests themselves, I believe many professionals have recognised just how relevant the tests are today compared to when I first created them. The tests also cater for more capable students who need to power ahead. The National Curriculum is more focussed on what should be taught at each year level, as opposed to looking at children as individuals first, which is what the Waddington tests do on a diagnostic level. The Waddington Mathematics Tests revisit and reapply certain building block skills in a sequential year pattern and do not omit important constructive skills in any year level.

The Waddington Diagnostic Mathematics Module Tests have been around for many years (approximately since 1988), with the assurance of evidence that they have been deemed appropriate at each year level of mathematical learning due to a great deal of in-class anecdotal record keeping and actual in-class use across many classrooms and many schools. The tests are highly useful for diagnosing student strengths and weaknesses. The weaknesses will show up as incorrect student responses, thus highlighting gaps in their conceptual understandings within test sections. If tested with early enough tests, these gaps can be remediated more easily and more efficiently. If the gaps show up in tests which are too hard for the student, then remediating will either be very complex or will require testing using much earlier tests.

Although the tests are primarily criterion-referenced, they can be used to highlight age/year level functioning ability because they have been used for many years with wide ranges of students and classes of students, and the fact that they reflected a math curriculum that was very successful for more than two decades in SA. A Test/Age/Year level guide is provided to show what would be expected of students at various growth points/age/year levels. Although it is only a guide, it does group 3 or 4 tests per year level, so those tests assigned to an age/year level are much more relevant than any other test which might purport to categorize a student's performance based on a single test for any one age, year level or range of ages or year levels. I stand firmly in my belief that you can not create a single test to adequately reflect what an average grade 3 child should know by the end of their grade 3 year for example. At the classroom level, given there are at least 3 or 4 tests per year level, any error of measurement for the tests would still be well within the true range in supporting the validity of the existing approximate Grade/Age/Test Guide. This would be particularly so if compared to other math tests which attempt to reduce a number of years of learning into a single test. All of the tests focus on essential/important skills. There is no hard and fast way in which teachers must guide their implementation. That is, new and changing technologies as well as terminology used in the National Curriculum can still be used to solve the problems in the Waddington tests. Teachers can use their own judgement in assessing how individual students have arrived at their responses and whether they have applied broader and/or newer learning techniques.

To give further example for how I would expect teachers to be following up testing for students needing remediation or individual planning, please find below some links to student workbooks that have been constructed/modified to meet general student needs for the module numbers shown. This shows how work can be created to meet not only the goals of the tests, but other goals relevant to other planning measures which would take into account current curriculum needs. For example, pages are put together using ideas form various sources. Some pages have open ended tasks. Many examples rely on students sourcing equipment/math aids from areas within the classroom (e.g. measurement shelf stocked with different tape measures, rulers, scales, weights, jugs etc..). Students should be given a variety of 'math language' just as we should not expect all students to do long division if they find short division easier or if you have a special student (such as a child with autism) who can do their work on a touch screen device using a PDF editor but not on paper with a pen. We want to give students the tools and abilities to work efficiently, productively and creatively without expecting them to conform or be confined to a single common denominator. I believe the Waddington Mathematics Module Tests give students the core tools and abilities to do this and be successful.

Neil J Waddington