

# Calculating learners' scores Procedural Numeracy Tests Years 7–9

National Numeracy Tests

**2018**



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Llywodraeth Cymru  
Welsh Government

## Purpose of this document

The purpose of this booklet is to enable schools to convert raw scores from the tests to age-standardised scores and progress measures where these have not been collected via the Welsh National Tests Data Collection (WNTDC). This will be relevant for independent schools. It will also be relevant where a learner has taken a test outside of the test window or an out-of-year test for diagnostic purposes.

Please note: only progress measures can be calculated for learners taking out-of-year tests.

## Calculating learners' scores from national tests

The age-standardised scores and the progress measures were established using the data submitted by all schools in Wales with learners who had taken the 'live' procedural numeracy tests in April/May 2018.

## Age-standardised scores

The age-standardised score scales make it possible to compare an individual learner's performance on the test in 2018 with the performance of all other learners of the same age, in years and completed months, taking the test.

Age-standardised scores are adjusted for age.

## Working out age at date of test

You can use the 'age calculator' tool at <http://learning.gov.wales/resources/browse-all/reporting-and-interpreting-national-test-results-2018/?lang=en> to calculate age at date of test using the learner's date of birth and the date on which the test was taken. This will give you the learner's age in years and completed months.

## Working out an age-standardised score

To work out the age-standardised score for an individual learner you will need:

- their raw score (total number of marks awarded when the test was marked)
- their age on the date the test was taken in years and **completed** months.

Use Tables 1–3 to look up the corresponding age-standardised score. Using the appropriate table for the test taken, locate the learner's raw score on the left-hand side of the table. Then read across the row to the column headed by the learner's age. The age-standardised score for this learner is in the cell where the row and column intersect. For example, a learner who has taken test 7EP18/7CG18 and is 12 years and 3 months (12.03) and has a raw score of 18 would have an age-standardised score of 105.

## Interpreting an age-standardised score

When age-standardised score scales are developed, the average raw score for all the learners of a given age taking the test is set to be equivalent to a standardised score of 100. About 68 per cent of learners would be expected to have age-standardised scores

between 85 and 115. An age-standardised score lower than 85 **might** suggest some difficulty with procedural numeracy as measured on the test. An age-standardised score greater than 115 **might** suggest that a learner is performing well in comparison with other learners of the same age and that it may be appropriate to provide them with more challenging procedural numeracy activities.

Very low age-standardised scores are shown in the table as \* which can be interpreted as 'less than 70' and very high scores are shown as \*\*, which can be interpreted as 'more than 140'. The tests are designed to measure the range of performance in procedural numeracy that would be expected from learners in the specified year groups. In the case of learners whose procedural numeracy skills are developing more slowly than would be expected for their age or learners who achieve very highly on the tests, their scores cannot be determined as accurately as those for learners scoring within the range expected. If a school wishes to calculate class averages, the use of 69 or 141 would be accurate enough estimates for these learners.

**Table 1: 7EP18/7CG18 raw score to age-standardised score conversion table**

<b>Year 7 Procedural Numeracy 7EP18/7CG18</b>													
<b>Raw score</b>	<b>Age in years and (completed) months</b>												
	<b>11.08</b>	<b>11.09</b>	<b>11.10</b>	<b>11.11</b>	<b>12.00</b>	<b>12.01</b>	<b>12.02</b>	<b>12.03</b>	<b>12.04</b>	<b>12.05</b>	<b>12.06</b>	<b>12.07</b>	<b>12.08</b>
0	*	*	*	*	*	*	*	*	*	*	*	*	*
1	76	76	76	76	76	75	75	75	75	75	75	75	74
2	81	80	80	80	79	79	79	78	78	77	77	77	76
3	84	84	83	83	82	82	81	81	81	80	80	80	79
4	87	86	86	85	85	85	84	84	83	83	82	82	81
5	89	89	88	88	87	87	86	86	85	85	84	84	83
6	91	91	90	90	89	89	88	88	87	87	86	86	85
7	93	93	92	91	91	90	90	89	89	88	88	87	87
8	95	95	94	93	93	92	91	91	90	90	89	89	88
9	97	96	96	95	94	94	93	93	92	91	91	90	90
10	98	97	97	96	96	95	95	94	94	93	92	92	91
11	100	99	98	98	97	97	96	96	95	94	94	93	93
12	101	101	100	99	99	98	97	97	96	96	95	95	94
13	102	102	101	101	100	99	99	98	97	97	96	96	95
14	104	103	102	102	101	101	100	100	99	98	98	97	96
15	105	105	104	103	103	102	101	101	100	100	99	98	98
16	106	106	105	105	104	103	103	102	102	101	100	100	99
17	107	107	106	106	105	105	104	103	103	102	102	101	100
18	108	108	107	107	106	106	105	105	104	103	103	102	102
19	110	109	109	108	107	107	106	106	105	105	104	103	103
20	111	110	110	109	109	108	107	107	106	106	105	105	104
21	112	112	111	111	110	109	109	108	108	107	106	106	105
22	113	113	112	112	111	111	110	109	109	108	108	107	107
23	115	114	113	113	112	112	111	111	110	109	109	108	108



**Table 2: 8EP18/8CG18 raw score to age-standardised score conversion table**

<b>Year 8 Procedural Numeracy 8EP18/8CG18</b>													
<b>Raw score</b>	<b>Age in years and (completed) months</b>												
	<b>12.08</b>	<b>12.09</b>	<b>12.10</b>	<b>12.11</b>	<b>13.00</b>	<b>13.01</b>	<b>13.02</b>	<b>13.03</b>	<b>13.04</b>	<b>13.05</b>	<b>13.06</b>	<b>13.07</b>	<b>13.08</b>
0	*	*	*	*	*	*	*	*	*	*	*	*	*
1	76	76	76	76	76	76	75	75	75	75	75	75	75
2	81	81	80	80	80	79	79	79	78	78	78	78	77
3	84	84	84	83	83	83	82	82	82	81	81	81	80
4	87	87	86	86	85	85	85	84	84	84	83	83	83
5	89	89	89	88	88	87	87	86	86	86	85	85	84
6	91	91	90	90	90	89	89	88	88	88	87	87	86
7	93	93	92	92	91	91	90	90	90	89	89	88	88
8	95	94	94	94	93	93	92	92	91	91	90	90	90
9	96	96	95	95	94	94	94	93	93	92	92	91	91
10	98	97	97	96	96	95	95	95	94	94	93	93	92
11	99	99	98	98	97	97	96	96	95	95	95	94	94
12	100	100	99	99	98	98	98	97	97	96	96	95	95
13	102	101	101	100	100	99	99	98	98	97	97	96	96
14	103	102	102	101	101	100	100	100	99	99	98	98	97
15	104	104	103	102	102	102	101	101	100	100	99	99	98
16	106	105	104	104	103	103	102	102	101	101	100	100	99
17	107	106	106	105	105	104	103	103	102	102	102	101	101
18	108	108	107	107	106	105	105	104	104	103	103	102	102
19	109	109	108	108	107	107	106	106	105	105	104	103	103
20	111	110	110	109	109	108	107	107	106	106	105	105	104
21	112	112	111	110	110	109	109	108	108	107	107	106	106
22	113	113	112	112	111	111	110	110	109	109	108	107	107
23	115	114	114	113	113	112	112	111	111	110	109	109	108



**Table 3: 9EP18/9CG18 raw score to age-standardised score conversion table**

<b>Year 9 Procedural Numeracy 9EP18/9CG18</b>													
<b>Raw score</b>	<b>Age in years and (completed) months</b>												
	<b>13.08</b>	<b>13.09</b>	<b>13.10</b>	<b>13.11</b>	<b>14.00</b>	<b>14.01</b>	<b>14.02</b>	<b>14.03</b>	<b>14.04</b>	<b>14.05</b>	<b>14.06</b>	<b>14.07</b>	<b>14.08</b>
0	*	*	*	*	*	*	*	*	*	*	*	*	*
1	75	75	75	75	75	74	74	74	74	74	74	73	73
2	80	80	80	79	79	79	78	78	78	77	77	76	76
3	84	84	84	83	83	82	82	82	81	81	81	80	80
4	87	87	86	86	86	85	85	85	84	84	83	83	83
5	90	89	89	89	88	88	87	87	87	86	86	85	85
6	92	92	91	91	90	90	89	89	89	88	88	87	87
7	94	94	93	93	92	92	91	91	90	90	90	89	89
8	96	95	95	94	94	94	93	93	92	92	91	91	91
9	97	97	97	96	96	95	95	94	94	94	93	93	92
10	99	98	98	98	97	97	96	96	95	95	95	94	94
11	100	100	99	99	98	98	98	97	97	96	96	96	95
12	102	101	101	100	100	99	99	98	98	98	97	97	97
13	103	102	102	102	101	101	100	100	99	99	98	98	98
14	104	104	103	103	102	102	102	101	101	100	100	99	99
15	105	105	104	104	103	103	103	102	102	101	101	101	100
16	106	106	105	105	105	104	104	103	103	103	102	102	101
17	108	107	107	106	106	105	105	104	104	104	103	103	102
18	109	108	108	108	107	107	106	106	105	105	104	104	104
19	110	110	109	109	108	108	107	107	106	106	105	105	105
20	111	111	110	110	109	109	109	108	108	107	107	106	106
21	112	112	111	111	111	110	110	109	109	109	108	108	107
22	113	113	113	112	112	111	111	110	110	110	109	109	108
23	115	114	114	113	113	112	112	112	111	111	110	110	110





## Progress measures

The progress measure scales are calculated separately for each national curriculum year group and each test.

Progress measures are not adjusted for age.

### Working out a progress measure

To work out the progress measure for an individual learner you will need their raw score (total number of marks awarded when the test was marked).

Use Tables 4–6 to look up the corresponding progress measure.

Using the appropriate table for the test taken, locate the learner's raw score on the left-hand side of the table. Then read across the row to the progress measure.

For example, a learner who has taken test 7EP18/7CG18 and has a raw score of 20 would have a progress measure of 1010.

### Interpreting a progress measure

The progress measure shows how well an individual learner has done in a given test compared with **all other learners in the same national curriculum year group taking the same test**. The progress measure should be presented as a time series allowing for a learner's achievement in the tests to be tracked over time.

The mean of the progress measure for each year group is set at 1000, and the scores range from 950 to 1050. Learners achieving between 980 and 1020 (i.e. scores within one standard deviation of the mean) have a progress measure that is in line with learners in the same year group (taking the same test). Approximately 68 per cent of learners will have a score in this range. Learners scoring outside of this range (i.e. below 980 or above 1020) have a progress measure that is either below or above that of most learners in their year group.

The progress measure for 2018 should be considered alongside any previous progress measure for this learner. Progress measures that are broadly similar from year to year would suggest that a learner is making steady progress within their year group. Small variations in the score from year to year are to be expected but if there are large changes in the progress measure between one year and the next, then this suggests that a learner has made either more or less progress than the rest of the learners taking the test. Please refer to the practitioner guidance at <http://learning.gov.wales/resources/browse-all/reporting-and-interpreting-national-test-results-2018/?lang=en> for further information on interpreting progress measures.

### Out-of-year testing

Where a learner has taken a test that is different from their national curriculum year group test, look up their progress measure using the table appropriate for the test taken. Their progress measure compares the learner to all other learners who have taken the same test.

For example, for a learner in national curriculum Year 8 who has taken test 7EP18/7CG18 and has a raw score of 14 it is possible to look up a Year 7 progress measure. A raw score of 14 gives a Year 7 progress measure of 1000 which indicates that the learner has performed at around the same level as the average learner in Year 7.

When comparing progress measures over time it is important to consider the reference group (the national curriculum year group the learner is compared with), as this may be different from one year to the next.

**Table 4: Year 7 Test 7EP18/7CG18 raw score to progress measure conversion table**

<b>Total score</b>	<b>Progress measure</b>
0	960
1	967
2	972
3	976
4	979
5	982
6	984
7	987
8	989
9	991
10	993
11	995
12	997
13	998
14	1000
15	1002
16	1003
17	1005
18	1007
19	1008
20	1010
21	1011
22	1013
23	1015
24	1017
25	1018
26	1020
27	1022
28	1025
29	1027
30	1030
31	1033
32	1037
33	1043
34	1050
35	1050

**Table 5: Year 8 Test 8EP18/8CG18 raw score to progress measure conversion table**

<b>Total score</b>	<b>Progress measure</b>
0	960
1	968
2	973
3	977
4	980
5	983
6	985
7	987
8	990
9	991
10	993
11	995
12	997
13	998
14	1000
15	1001
16	1003
17	1005
18	1006
19	1008
20	1010
21	1012
22	1013
23	1015
24	1017
25	1019
26	1022
27	1024
28	1027
29	1029
30	1033
31	1036
32	1040
33	1045
34	1050
35	1050
36	1050

**Table 6: Year 9 Test 9EP18/9CG18 raw score to progress measure conversion table**

<b>Total score</b>	<b>Progress measure</b>
0	958
1	967
2	973
3	977
4	980
5	984
6	986
7	989
8	991
9	993
10	995
11	997
12	998
13	1000
14	1002
15	1003
16	1005
17	1006
18	1008
19	1009
20	1011
21	1013
22	1014
23	1016
24	1018
25	1019
26	1021
27	1023
28	1026
29	1028
30	1030
31	1033
32	1037
33	1040
34	1046
35	1050
36	1050

