



NFER

Classroom

maths

year

4

supplement to
teacher guide
autumn

4

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To access the score converter and the question grid spreadsheets you will need to go to our secure School Portal on the NFER's website:

www.nfer.ac.uk/portal

and then enter your

NFER Number:

Project Number:

Unique Password:

(please write them in above for quick reference).

The letter and despatch notes that accompanied the test materials are pre-populated with the details of the numbers and password.

If you have lost the letter and despatch notes, the portal website has links where you can request your details again.

Using the outcomes of the test

This section provides teachers with information to convert pupils' test scores into more useful measures of their attainment.

If the Year 4 mathematics test is undertaken and marked in line with the guidance in the teacher guide, then both a standardised score and an age standardised score can be derived from a pupil's test score.

The starting point for both of these outcomes is to total a pupil's marks from the three mathematics booklets. This gives each pupil's total score or 'raw' score. A box is provided on the front cover of each test booklet to assist in this.

In order to obtain reliable outcomes, you should administer the test according to the guidance given in this booklet. It is particularly important that you observe the time limits given in the test instructions, and mark questions strictly according to the mark scheme. If not, the information derived from this section cannot be used reliably.

If you wish to record and explore patterns of performance on the test across your whole class, you may find it helpful to complete a question grid. For each question, the question grid shows the average mark of pupils in the standardisation sample. It also shows which questions address each of the elements of the Programme of Study. Completing pupils' scores in the question grid will enable you to compare performance on different areas of the Programme of Study with a nationally representative sample. This is available from the following website, which will require online registration for access:

www.nfer.ac.uk/portal

Standardised scores

Standardised scores enable a comparison to be made between the performance of a pupil and that of other pupils who have taken the same test. Such comparisons can be useful for grouping your class by ability and for identifying those pupils in need of targeted interventions. The average standardised score is set at 100, based on the performance of a nationally representative sample. About two-thirds of pupils will have standardised scores between 85 and 115 and scores within this range can be broadly described as 'average'.

For example, a teacher administered the test to her class. One pupil, Lucy, achieved a raw score of 37 on the test, giving her a standardised score of 103. The teacher could then say that Lucy achieved an average score on the test.

Almost all pupils fall within the range 70 to 140, so scores outside this range can be regarded as exceptional. These exceptional scores are marked with *** on the charts on page 5 as standardised scores cannot be calculated with the necessary statistical reliability. If an exact score is needed, for example to calculate an average score for the class, 69 or 141 should be used as appropriate for these pupils.

It is worth noting here that the scaled score of 100 defined by the Department for Education as the national expectation at the end of Key Stage 2 is **not the same as, nor equivalent to, a standardised score of 100 on these tests**. On these tests, a standardised score of 100 represents the average performance, based on a normal distribution, of the sample of pupils on which the tests were standardised. At the end of Key Stage 2, the DfE's scaled score of 100 represents the 'expected standard' and is not the average.

In order to save time and ensure accuracy, you can download a spreadsheet which will calculate each pupil's standardised score and age standardised score if you enter their date of birth and date of test. This spreadsheet is available from the following website:

www.nfer.ac.uk/portal

Raw score	Standardised score
0	***
1	***
2	***
3	***
4	70
5	72
6	74
7	76
8	77
9	79
10	80
11	81
12	83
13	84
14	85
15	86
16	88
17	89
18	89
19	90
20	91
21	92
22	93
23	94
24	95
25	95
26	96
27	97
28	97
29	98
30	99
31	99
32	100
33	101

Raw score	Standardised score
34	101
35	102
36	103
37	103
38	104
39	104
40	105
41	106
42	106
43	107
44	107
45	108
46	109
47	109
48	110
49	111
50	111
51	112
52	112
53	113
54	113
55	114
56	114
57	115
58	116
59	116
60	117
61	117
62	118
63	118
64	119
65	119
66	120
67	120

Raw score	Standardised score
68	121
69	121
70	122
71	123
72	123
73	124
74	125
75	125
76	126
77	127
78	128
79	129
80	129
81	130
82	131
83	132
84	134
85	135
86	136
87	138
88	139
89	***
90	***
91	***
92	***
93	***
94	***
95	***

Confidence bands

Confidence bands are used to show the extent of the margin of error in the standardised scores. In other words, they show how accurately the test measures pupils' ability in mathematics.

The margin of error is simply a statistical estimate, based on the fact that tests can only sample the particular area of learning which they assess and that therefore the score a pupil achieves may vary within a few points of their 'true score'. To indicate how wide this margin of error is likely to be, a '90 per cent confidence band' has been calculated. This means that you can have 90 per cent certainty that the true score lies within the confidence band.

The table below gives the numbers that should be subtracted from and added to pupils' standardised scores at different score points to form the 90 per cent confidence bands.

Standardised score range	To form 90% confidence band:	
	subtract	add
70, 72	4	6
74, 76, 77, 79, 80	5	6
81, 83-86, 88-119	5	5
120-127	6	5
128-132, 134-136, 138, 139	6	4

Take three pupils, Rachel, Nathan and David, with standardised scores of 101, 99 and 124 respectively. For Rachel, with a standardised score of 101 on this test, the 90 per cent confidence band is plus or minus 5. Therefore, you can be 90 per cent certain (there is a nine-out-of-ten chance) that Rachel's true score is between 96 and 106.

Both Nathan, who has a standardised score of 99, and Rachel are working at about the average for their age. Nathan's true score is between 94 and 104.

However, David, with a standardised score of 124, achieved an above average score on the test and has a 90 per cent likelihood of having a true score between 118 and 129.

For high and low scores, the confidence bands are asymmetrical (they tend to be pulled towards the average test score).

Age standardised scores

Age standardised scores take into account a pupil's age in years and months at the time of sitting the test, in order that his or her performance can be compared with the performance of other pupils of the same age in a nationally representative sample. The age standardisation that has been undertaken means that these tests can be administered at different points in the school year and comparative information still be obtained. The age standardised scores in this booklet cover the age range 8 years 0 months to 9 years 7 months. If you have decided to give the test to pupils outside this range, you will not be able to use the table. You will still, however, be able to calculate standardised scores.

In order to save time and ensure accuracy, you can download a spreadsheet, which will calculate each pupil's standardised and age standardised score if you enter their date of birth and date of test, from:

www.nfer.ac.uk/portal

If you have not downloaded the spreadsheet, you should convert the total score into an age standardised score as follows:

- list the ages of all pupils in your class in years and completed months at the time of testing
- for each pupil, locate his or her age in years and months along the top of the table on pages 10–15
- locate the pupil's total score down the left side of the table
- read off the age standardised score from where the row and column meet.

The average age standardised score is set at 100, based on the performance of a nationally representative sample. About two-thirds of pupils will have age standardised scores between 85 and 115 and scores within this range can broadly be described as 'average'. Almost all pupils fall within the range 70 to 140, so scores outside this range can be regarded as exceptional. These exceptional scores are marked with *** on the table on pages 10–15 as age standardised scores cannot be calculated with the necessary statistical reliability. If an exact score is needed, for example to calculate an average for the class, 69 or 141 should be used as appropriate for these pupils.

As mentioned for standardised scores, the scaled score of 100 defined by the Department for Education as the national expectation at the end of Key Stage 2 is **not the same as, nor equivalent to, an age standardised score of 100 on these tests**. On these tests, an age standardised score of 100 represents the average performance, based on a normal distribution, of the sample of pupils of a specific age on which the tests were standardised. At the end of Key Stage 2, the DfE's scaled score of 100 represents the 'expected standard' and is not the average.

Confidence bands

Confidence bands are used to show the extent of the margin of error in the age standardised scores. In other words, how accurately the test measures the pupils' ability in mathematics.

The margin of error is simply a statistical estimate, based on the fact that tests can only sample the particular area of learning which they assess and therefore the score a pupil achieves may vary within a few points of their 'true score'. To indicate how wide this margin of error is likely to be, a '90 per cent confidence band' has been calculated. This means that you can have 90 per cent certainty that the true score lies within the confidence band.

The table below gives the numbers that should be added to and subtracted from pupils' age standardised scores in different score ranges to form the 90 per cent confidence bands.

Age standardised score range	To form 90% confidence band:	
	subtract	add
70–72	4	6
73–80	5	6
81–119	5	5
120–127	6	5
128–140	6	4

Take three pupils, Hannah, Ali and Stephen, with age standardised scores of 100, 103 and 122 respectively. For Hannah, with an age standardised score of 100 on this test, the 90 per cent confidence band is plus or minus 5. Therefore, you can be 90 per cent certain (there is a nine-out-of-ten chance) that Hannah's true score is between 95 and 105.

Both Ali, who has an age standardised score of 103, and Hannah are working at about the average for their age. Ali's true score is between 98 and 108.

However, Stephen, with an age standardised score of 122, achieved an above average score on the test and has a 90 per cent likelihood of having a true score between 116 and 127.

For high and low scores, the confidence bands are asymmetrical (they tend to be pulled towards the average test score).

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Age standardised scores

Age in years and completed months											
Total score	8.00	8.01	8.02	8.03	8.04	8.05	8.06	8.07	8.08	8.09	Total score
0	***	***	***	***	***	***	***	***	***	***	0
1	***	***	***	***	***	***	***	***	***	***	1
2	***	***	***	***	***	***	***	***	***	***	2
3	71	70	70	***	***	***	***	***	***	***	3
4	74	73	73	72	72	71	71	70	70	***	4
5	76	75	75	74	74	73	73	72	72	71	5
6	78	77	77	76	76	75	75	74	74	73	6
7	79	79	78	78	77	77	76	76	75	75	7
8	81	81	80	79	79	78	78	77	77	76	8
9	83	82	82	81	80	80	79	79	78	78	9
10	85	84	83	83	82	81	81	80	79	79	10
11	86	85	85	84	83	83	82	81	81	80	11
12	88	87	86	85	85	84	83	83	82	81	12
13	89	88	88	87	86	85	85	84	83	83	13
14	90	90	89	88	87	87	86	85	84	84	14
15	91	91	90	89	89	88	87	86	86	85	15
16	92	92	91	90	90	89	88	88	87	86	16
17	93	93	92	91	91	90	89	89	88	87	17
18	95	94	93	92	92	91	90	90	89	88	18
19	95	95	94	93	93	92	91	90	90	89	19
20	96	96	95	94	93	93	92	91	91	90	20
21	97	96	96	95	94	94	93	92	91	91	21
22	98	97	97	96	95	95	94	93	92	92	22
23	99	98	97	97	96	95	95	94	93	92	23
24	100	99	98	97	97	96	95	95	94	93	24
25	100	100	99	98	98	97	96	95	95	94	25
26	101	100	100	99	98	98	97	96	95	95	26
27	102	101	100	100	99	98	98	97	96	95	27
28	103	102	101	101	100	99	98	98	97	96	28
29	103	103	102	101	101	100	99	98	98	97	29
30	104	103	103	102	101	100	100	99	98	98	30
31	105	104	103	103	102	101	100	100	99	98	31
32	105	104	104	103	102	102	101	100	100	99	32
33	106	105	104	104	103	102	102	101	100	100	33
34	107	106	105	104	104	103	102	102	101	100	34
35	107	107	106	105	104	104	103	102	102	101	35
36	108	107	107	106	105	104	103	103	102	102	36
37	109	108	107	106	106	105	104	103	103	102	37
38	110	109	108	107	106	106	105	104	103	103	38
39	110	110	109	108	107	106	105	105	104	103	39
40	111	110	109	109	108	107	106	105	105	104	40

Age in years and completed months											
Total score	8.10	8.11	9.00	9.01	9.02	9.03	9.04	9.05	9.06	9.07	Total score
0	***	***	***	***	***	***	***	***	***	***	0
1	***	***	***	***	***	***	***	***	***	***	1
2	***	***	***	***	***	***	***	***	***	***	2
3	***	***	***	***	***	***	***	***	***	***	3
4	***	***	***	***	***	***	***	***	***	***	4
5	71	70	70	***	***	***	***	***	***	***	5
6	73	72	72	71	71	70	70	***	***	***	6
7	74	74	73	73	72	72	71	71	70	70	7
8	76	75	75	74	74	73	73	72	72	71	8
9	77	77	76	76	75	75	74	74	73	73	9
10	78	78	77	77	76	76	75	75	74	74	10
11	79	79	78	78	77	77	76	76	75	75	11
12	81	80	79	79	78	78	77	77	76	76	12
13	82	81	81	80	79	79	78	78	77	77	13
14	83	82	82	81	80	80	79	79	78	78	14
15	84	83	83	82	81	81	80	79	79	78	15
16	85	84	84	83	82	82	81	80	80	79	16
17	86	86	85	84	83	83	82	81	81	80	17
18	87	87	86	85	84	84	83	82	82	81	18
19	88	88	87	86	85	85	84	83	83	82	19
20	89	89	88	87	86	86	85	84	83	83	20
21	90	89	89	88	87	87	86	85	84	84	21
22	91	90	90	89	88	87	87	86	85	84	22
23	92	91	90	90	89	88	88	87	86	85	23
24	93	92	91	90	90	89	88	88	87	86	24
25	93	93	92	91	91	90	89	88	88	87	25
26	94	93	93	92	91	91	90	89	88	88	26
27	95	94	93	93	92	91	91	90	89	89	27
28	95	95	94	93	93	92	91	91	90	89	28
29	96	95	95	94	93	93	92	91	91	90	29
30	97	96	95	95	94	93	93	92	91	91	30
31	98	97	96	95	95	94	93	93	92	91	31
32	98	98	97	96	95	95	94	93	93	92	32
33	99	98	97	97	96	95	95	94	93	93	33
34	100	99	98	97	97	96	95	95	94	93	34
35	100	100	99	98	97	97	96	95	95	94	35
36	101	100	99	99	98	97	97	96	95	95	36
37	102	101	100	99	99	98	97	96	96	95	37
38	102	101	101	100	99	99	98	97	96	96	38
39	103	102	101	101	100	99	98	98	97	96	39
40	103	103	102	101	100	100	99	98	98	97	40

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Age standardised scores (continued)

Total score	Age in years and completed months									Total score	
	8.00	8.01	8.02	8.03	8.04	8.05	8.06	8.07	8.08		8.09
41	112	111	110	109	108	108	107	106	105	104	41
42	112	111	111	110	109	108	107	107	106	105	42
43	113	112	111	111	110	109	108	107	107	106	43
44	113	113	112	111	111	110	109	108	107	106	44
45	114	113	113	112	111	110	110	109	108	107	45
46	114	114	113	112	112	111	110	109	109	108	46
47	114	114	113	113	112	112	111	110	109	108	47
48	115	114	114	113	113	112	111	111	110	109	48
49	115	115	114	114	113	113	112	111	111	110	49
50	116	115	115	114	114	113	113	112	111	111	50
51	116	116	115	115	114	114	113	113	112	111	51
52	117	116	116	115	115	114	114	113	112	112	52
53	117	117	116	116	115	115	114	113	113	112	53
54	118	117	117	116	115	115	114	114	113	113	54
55	118	118	117	117	116	115	115	114	114	113	55
56	119	118	118	117	117	116	115	115	114	114	56
57	120	119	118	118	117	116	116	115	115	114	57
58	120	119	119	118	118	117	116	116	115	115	58
59	121	120	119	119	118	118	117	116	116	115	59
60	121	121	120	119	119	118	117	117	116	116	60
61	122	121	121	120	119	119	118	117	117	116	61
62	122	122	121	120	120	119	119	118	117	117	62
63	123	122	122	121	120	120	119	119	118	117	63
64	123	123	122	121	121	120	120	119	119	118	64
65	124	123	123	122	121	121	120	120	119	118	65
66	124	124	123	123	122	121	121	120	120	119	66
67	125	124	124	123	123	122	121	121	120	120	67
68	125	125	124	124	123	123	122	121	121	120	68
69	126	125	125	124	124	123	123	122	121	121	69
70	126	126	125	125	124	124	123	123	122	122	70
71	127	126	126	125	125	124	124	123	123	122	71
72	128	127	127	126	125	125	124	124	123	123	72
73	128	128	127	127	126	126	125	124	124	123	73
74	129	128	128	127	127	126	126	125	125	124	74
75	130	129	128	128	127	127	126	126	125	125	75
76	130	130	129	129	128	128	127	126	126	125	76
77	131	130	130	129	129	128	128	127	127	126	77
78	132	131	131	130	130	129	128	128	127	127	78
79	132	132	131	131	130	130	129	129	128	128	79
80	133	133	132	132	131	131	130	130	129	128	80

Age in years and completed months											
Total score	8.10	8.11	9.00	9.01	9.02	9.03	9.04	9.05	9.06	9.07	Total score
41	104	103	102	102	101	100	100	99	98	97	41
42	104	104	103	102	102	101	100	100	99	98	42
43	105	104	104	103	102	102	101	100	99	99	43
44	106	105	104	103	103	102	101	101	100	99	44
45	106	106	105	104	103	103	102	101	101	100	45
46	107	106	105	105	104	103	103	102	101	101	46
47	108	107	106	105	104	104	103	102	102	101	47
48	108	107	107	106	105	104	104	103	102	102	48
49	109	108	107	107	106	105	104	104	103	102	49
50	110	109	108	107	106	106	105	104	103	103	50
51	110	110	109	108	107	106	106	105	104	103	51
52	111	110	109	109	108	107	106	105	105	104	52
53	112	111	110	109	108	108	107	106	105	105	53
54	112	112	111	110	109	108	107	107	106	105	54
55	113	112	111	111	110	109	108	107	107	106	55
56	113	113	112	111	111	110	109	108	107	106	56
57	114	113	113	112	111	111	110	109	108	107	57
58	114	114	113	113	112	111	110	110	109	108	58
59	115	114	114	113	112	112	111	110	110	109	59
60	115	115	114	113	113	112	112	111	110	109	60
61	116	115	114	114	113	113	112	112	111	110	61
62	116	116	115	114	114	113	113	112	112	111	62
63	117	116	115	115	114	114	113	113	112	111	63
64	117	117	116	115	115	114	114	113	113	112	64
65	118	117	117	116	115	115	114	114	113	113	65
66	118	118	117	117	116	115	115	114	114	113	66
67	119	118	118	117	117	116	115	115	114	114	67
68	120	119	118	118	117	117	116	115	115	114	68
69	120	120	119	118	118	117	117	116	115	115	69
70	121	120	120	119	119	118	117	117	116	115	70
71	122	121	120	120	119	119	118	117	117	116	71
72	122	122	121	121	120	119	119	118	117	117	72
73	123	122	122	121	121	120	119	119	118	118	73
74	123	123	122	122	121	121	120	119	119	118	74
75	124	124	123	122	122	121	121	120	120	119	75
76	125	124	124	123	123	122	122	121	120	120	76
77	126	125	124	124	123	123	122	122	121	121	77
78	126	126	125	125	124	124	123	122	122	121	78
79	127	127	126	125	125	124	124	123	123	122	79
80	128	127	127	126	126	125	125	124	124	123	80

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Age standardised scores (continued)

Age in years and completed months											
Total score	8.00	8.01	8.02	8.03	8.04	8.05	8.06	8.07	8.08	8.09	Total score
81	134	134	133	133	132	131	131	130	130	129	81
82	135	135	134	133	133	132	132	131	131	130	82
83	136	136	135	134	134	133	133	132	132	131	83
84	137	137	136	136	135	134	134	133	133	132	84
85	138	138	137	137	136	136	135	135	134	133	85
86	140	139	139	138	137	137	136	136	135	135	86
87	***	140	140	139	139	138	138	137	137	136	87
88	***	***	***	***	140	140	139	139	138	138	88
89	***	***	***	***	***	***	***	***	140	139	89
90	***	***	***	***	***	***	***	***	***	***	90
91	***	***	***	***	***	***	***	***	***	***	91
92	***	***	***	***	***	***	***	***	***	***	92
93	***	***	***	***	***	***	***	***	***	***	93
94	***	***	***	***	***	***	***	***	***	***	94
95	***	***	***	***	***	***	***	***	***	***	95

Age in years and completed months											
Total score	8.10	8.11	9.00	9.01	9.02	9.03	9.04	9.05	9.06	9.07	Total score
81	129	128	128	127	127	126	126	125	124	124	81
82	130	129	129	128	128	127	126	126	125	125	82
83	131	130	130	129	129	128	127	127	126	126	83
84	132	131	131	130	130	129	128	128	127	127	84
85	133	132	132	131	131	130	130	129	129	128	85
86	134	134	133	133	132	131	131	130	130	129	86
87	136	135	134	134	133	133	132	132	131	131	87
88	137	137	136	135	135	134	134	133	133	132	88
89	139	138	138	137	137	136	136	135	135	134	89
90	***	140	140	139	139	138	138	137	137	136	90
91	***	***	***	***	***	***	140	140	139	139	91
92	***	***	***	***	***	***	***	***	***	***	92
93	***	***	***	***	***	***	***	***	***	***	93
94	***	***	***	***	***	***	***	***	***	***	94
95	***	***	***	***	***	***	***	***	***	***	95



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