



NFER

Classroom

maths

year

4

4

supplement to
teacher guide
summer

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To access the score converter and 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 this booklet, then both a standardised score and an age standardised score can be derived from a pupil's test score.

Standardised scores enable a comparison to be made between the performance of a pupil and that of other pupils who have taken the test. In the case of the NFER tests, age standardised scores mean that the comparison is with pupils who have the same month of birth.

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

In order to obtain reliable outcomes, you should administer the test according to the guidance given in the teacher guide. 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. 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'.

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 opposite 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.

For example, a teacher administered the test to her class. One pupil, Lucy, achieved a raw score of 52 on the test, giving her a standardised score of 103. The teacher could then say that Lucy achieved an average score on the test.

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 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 if you enter their raw score. This spreadsheet is available from the following website: www.nfer.ac.uk/portal

Raw score	Standardised score
0	***
1	***
2	***
3	***
4	***
5	***
6	***
7	71
8	72
9	73
10	75
11	76
12	77
13	78
14	79
15	79
16	80
17	81
18	82
19	83
20	84
21	84
22	85
23	86
24	87
25	87
26	88
27	89
28	89
29	90
30	91
31	91

Raw score	Standardised score
32	92
33	92
34	93
35	94
36	94
37	95
38	96
39	96
40	97
41	97
42	98
43	98
44	99
45	100
46	100
47	101
48	101
49	102
50	102
51	102
52	103
53	103
54	104
55	104
56	105
57	105
58	106
59	107
60	107
61	108
62	108
63	109

Raw score	Standardised score
64	109
65	110
66	110
67	111
68	111
69	112
70	113
71	113
72	114
73	115
74	115
75	116
76	117
77	117
78	118
79	119
80	120
81	121
82	122
83	123
84	124
85	125
86	127
87	128
88	130
89	132
90	134
91	137
92	140
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	To form 90% confidence band:	
	subtract	add
71 - 73	4	6
75 - 98	4	5
99 - 101	5	5
102 - 125	5	4
127 - 128	6	4
130, 132, 134, 137, 140	6	3

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 119 and 128.

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 11 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, though, be able to calculate an indication of attainment of age-related expectations on the new National Curriculum and also standardised scores.

In order to save time and ensure accuracy, you can download a spreadsheet, which will calculate each pupil's 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
- 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 chart 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.

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% confidence bands.

Age standardised score range	To form 90% confidence band:	
	subtract	add
70	3	6
71 - 73	4	6
74 - 98	4	5
99 - 101	5	5
102 - 126	5	4
127 - 129	6	4
130 - 140	6	3

Take four pupils, Hannah, Rachel, Ali and Stephen, with age standardised scores of 100, 99, 103 and 122 respectively. For Hannah, with an age standardised score of 100 in 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 Rachel, who has an age standardised score of 99, and Ali, who has an age standardised score of 103, are working at about the average for their age. Rachel's true score is between 94 and 104, and Ali's is between 98 and 107. Hannah's score of 100 also indicates that she is working at about the average for her age.

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 117 and 126.

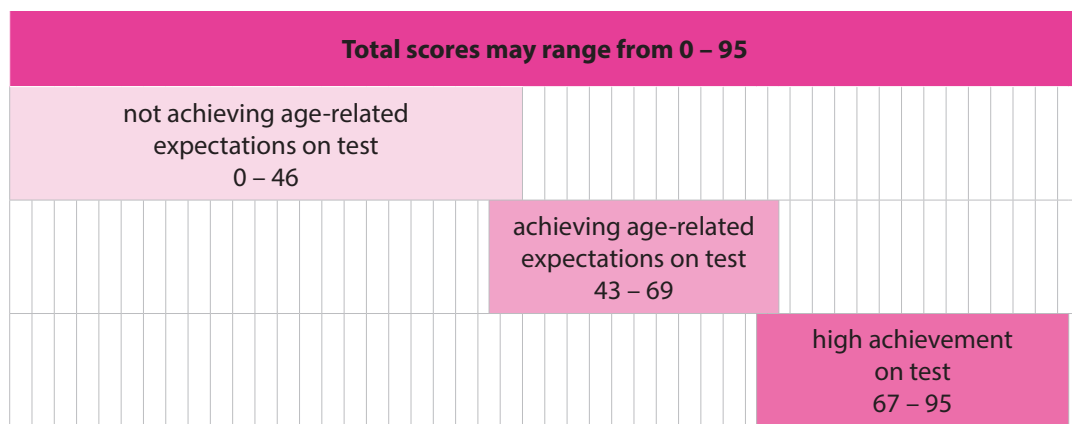
For high and low scores, the confidence bands are asymmetrical (they tend to be pulled towards the average test score).

Age-related expectations in the National Curriculum

The result of the test contributes to the judgement of whether a pupil is meeting the age-related expectations in the National Curriculum. A series of standard setting meetings involving over 100 teachers has provided another source of evidence about the level of challenge in the new tests in relation to the National Curriculum expectations.

Clearly the tests can only cover certain areas from the National Curriculum. Areas such as mental arithmetic skills cannot be assessed due to the nature of a written test.

Test outcomes should inform rather than determine teachers’ own assessment decisions, and therefore a range of marks is suggested in the table below. Some pupils perform better in formal assessments than their day to day work suggests, whilst others underperform. In this case, it is suggested that teachers consider the overall performance of pupils who score between 43 and 46 marks on this test before deciding if they have met age-related expectations.



	total score
Not yet achieving age-related expectations	0 – 46
Achieving age-related expectations	43 – 69
High achievement	67 – 95

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	8.10	8.11	Total score
0	***	***	***	***	***	***	***	***	***	***	***	***	0
1	***	***	***	***	***	***	***	***	***	***	***	***	1
2	***	***	***	***	***	***	***	***	***	***	***	***	2
3	***	***	***	***	***	***	***	***	***	***	***	***	3
4	71	70	70	***	***	***	***	***	***	***	***	***	4
5	73	73	73	72	72	71	71	70	70	***	***	***	5
6	76	75	75	74	74	73	73	72	72	71	71	70	6
7	77	77	76	76	75	75	75	74	74	73	73	72	7
8	79	79	78	78	77	77	76	76	75	75	74	74	8
9	80	80	79	79	78	78	78	77	77	76	76	75	9
10	82	81	81	80	80	79	79	78	78	77	77	76	10
11	83	82	82	81	81	80	80	79	79	79	78	78	11
12	84	83	83	82	82	81	81	81	80	80	79	79	12
13	85	84	84	83	83	82	82	81	81	81	80	80	13
14	86	85	85	84	84	83	83	82	82	81	81	81	14
15	87	86	86	85	85	84	84	83	83	82	82	81	15
16	88	88	87	86	86	85	84	84	84	83	83	82	16
17	89	89	88	87	87	86	85	85	84	84	83	83	17
18	90	90	89	88	88	87	87	86	85	85	84	84	18
19	91	91	90	89	89	88	87	87	86	86	85	84	19
20	92	92	91	90	90	89	88	88	87	86	86	85	20
21	93	92	92	91	91	90	89	89	88	87	87	86	21
22	94	93	93	92	91	91	90	89	89	88	88	87	22
23	95	94	93	93	92	92	91	90	90	89	88	88	23
24	95	95	94	94	93	92	92	91	90	90	89	89	24
25	96	95	95	94	94	93	93	92	91	91	90	89	25
26	97	96	96	95	94	94	93	93	92	91	91	90	26
27	97	97	96	96	95	94	94	93	93	92	92	91	27
28	98	97	97	96	96	95	95	94	93	93	92	92	28
29	98	98	97	97	96	96	95	95	94	94	93	92	29
30	99	99	98	97	97	96	96	95	95	94	94	93	30
31	100	99	99	98	98	97	96	96	95	95	94	94	31
32	100	100	99	99	98	98	97	97	96	95	95	94	32
33	101	100	100	99	99	98	98	97	97	96	95	95	33
34	101	101	100	100	99	99	98	98	97	97	96	95	34
35	102	101	101	100	100	99	99	98	98	97	97	96	35
36	103	102	102	101	100	100	99	99	98	98	97	97	36
37	103	103	102	102	101	100	100	99	99	98	98	97	37
38	103	103	103	102	102	101	100	100	99	99	98	98	38
39	104	103	103	103	102	102	101	100	100	99	99	98	39
40	104	104	103	103	103	102	101	101	100	100	99	99	40

Age in years and completed months													
Total score	9.00	9.01	9.02	9.03	9.04	9.05	9.06	9.07	9.08	9.09	9.10	9.11	Total score
0	***	***	***	***	***	***	***	***	***	***	***	***	0
1	***	***	***	***	***	***	***	***	***	***	***	***	1
2	***	***	***	***	***	***	***	***	***	***	***	***	2
3	***	***	***	***	***	***	***	***	***	***	***	***	3
4	***	***	***	***	***	***	***	***	***	***	***	***	4
5	***	***	***	***	***	***	***	***	***	***	***	***	5
6	70	***	***	***	***	***	***	***	***	***	***	***	6
7	72	71	71	70	70	***	***	***	***	***	***	***	7
8	73	73	72	72	71	71	70	70	***	***	***	***	8
9	75	74	74	73	73	72	72	71	71	70	70	***	9
10	76	75	75	74	74	74	73	73	72	72	71	71	10
11	77	77	76	76	75	75	74	74	73	73	72	72	11
12	78	78	77	77	76	76	75	75	74	74	73	73	12
13	79	79	78	78	77	77	76	76	75	75	74	74	13
14	80	80	79	79	78	78	77	77	76	76	75	75	14
15	81	80	80	80	79	79	78	78	77	77	76	76	15
16	82	81	81	80	80	79	79	78	78	78	77	77	16
17	82	82	82	81	81	80	80	79	79	78	78	77	17
18	83	83	82	82	81	81	80	80	80	79	79	78	18
19	84	83	83	83	82	82	81	81	80	80	79	79	19
20	85	84	84	83	83	82	82	81	81	80	80	80	20
21	85	85	84	84	83	83	82	82	82	81	81	80	21
22	86	86	85	84	84	84	83	83	82	82	81	81	22
23	87	87	86	85	85	84	84	83	83	82	82	81	23
24	88	87	87	86	85	85	84	84	83	83	82	82	24
25	89	88	88	87	86	86	85	84	84	83	83	83	25
26	90	89	88	88	87	86	86	85	85	84	84	83	26
27	90	90	89	88	88	87	87	86	85	85	84	84	27
28	91	90	90	89	89	88	87	87	86	85	85	84	28
29	92	91	90	90	89	89	88	87	87	86	85	85	29
30	92	92	91	91	90	89	89	88	87	87	86	86	30
31	93	92	92	91	91	90	89	89	88	87	87	86	31
32	94	93	93	92	91	91	90	89	89	88	88	87	32
33	94	94	93	93	92	91	91	90	89	89	88	88	33
34	95	94	94	93	93	92	91	91	90	89	89	88	34
35	95	95	94	94	93	93	92	91	91	90	89	89	35
36	96	95	95	94	94	93	93	92	91	91	90	90	36
37	97	96	95	95	94	94	93	93	92	91	91	90	37
38	97	97	96	95	95	94	94	93	93	92	91	91	38
39	98	97	97	96	95	95	94	94	93	93	92	91	39
40	98	98	97	97	96	95	95	94	94	93	93	92	40

continued overleaf ...

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

Age in years and completed months													
Total score	9.00	9.01	9.02	9.03	9.04	9.05	9.06	9.07	9.08	9.09	9.10	9.11	Total score
41	99	98	98	97	97	96	95	95	94	94	93	93	41
42	99	99	98	98	97	97	96	95	95	94	94	93	42
43	100	99	99	98	98	97	97	96	95	95	94	94	43
44	100	100	99	99	98	98	97	97	96	95	95	94	44
45	101	100	100	99	99	98	98	97	97	96	95	95	45
46	101	101	100	100	99	99	98	98	97	96	96	95	46
47	102	101	101	100	100	99	99	98	98	97	96	96	47
48	102	102	101	101	100	100	99	99	98	98	97	96	48
49	103	102	102	101	101	100	100	99	99	98	97	97	49
50	103	103	102	102	101	101	100	100	99	99	98	97	50
51	104	103	103	102	102	101	101	100	100	99	99	98	51
52	104	104	103	103	102	102	101	101	100	100	99	98	52
53	105	104	104	103	103	102	102	101	101	100	100	99	53
54	105	105	104	104	103	103	102	102	101	101	100	99	54
55	106	105	105	104	104	103	103	102	102	101	101	100	55
56	106	106	105	105	104	104	103	103	102	102	101	101	56
57	107	106	106	105	105	104	104	103	103	102	102	101	57
58	107	107	106	106	105	105	104	104	103	103	102	102	58
59	108	107	107	106	106	105	105	104	104	103	103	102	59
60	109	108	107	107	106	106	105	105	104	104	103	103	60
61	109	109	108	107	107	106	106	105	105	104	104	103	61
62	110	109	109	108	107	107	106	106	105	105	104	104	62
63	110	110	109	109	108	107	107	106	106	105	105	104	63
64	111	110	110	109	109	108	108	107	107	106	105	105	64
65	111	111	110	110	109	109	108	108	107	107	106	106	65
66	112	112	111	111	110	109	109	108	108	107	107	106	66
67	113	112	112	111	111	110	109	109	108	108	107	107	67
68	113	113	112	112	111	111	110	110	109	108	108	107	68
69	114	113	113	112	112	111	111	110	110	109	108	108	69
70	114	114	113	113	112	112	111	111	110	110	109	109	70
71	115	114	114	113	113	113	112	111	111	110	110	109	71
72	116	115	115	114	114	113	113	112	112	111	111	110	72
73	116	116	115	115	114	114	113	113	112	112	111	111	73
74	117	116	116	115	115	114	114	113	113	112	112	111	74
75	118	117	117	116	116	115	115	114	114	113	113	112	75
76	119	118	117	117	116	116	115	115	114	114	113	113	76
77	119	119	118	118	117	117	116	116	115	115	114	114	77
78	120	120	119	119	118	118	117	116	116	115	115	114	78
79	121	121	120	119	119	118	118	117	117	116	116	115	79
80	122	121	121	120	120	119	119	118	118	117	117	116	80

continued overleaf ...

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	8.10	8.11	Total score
81	129	129	128	128	127	127	126	126	125	125	124	123	81
82	130	130	129	129	128	128	127	127	126	126	125	125	82
83	131	131	130	130	129	129	128	128	127	127	126	126	83
84	133	132	131	131	130	130	129	129	128	128	127	127	84
85	134	133	133	132	132	131	131	130	130	129	129	128	85
86	135	135	134	134	133	133	132	132	131	130	130	129	86
87	137	136	136	135	135	134	134	133	133	132	132	131	87
88	138	138	137	137	136	136	135	135	134	134	133	133	88
89	140	140	139	139	138	138	137	137	136	136	135	135	89
90	***	***	***	***	***	140	140	139	139	138	137	137	90
91	***	***	***	***	***	***	***	***	***	***	140	140	91
92	***	***	***	***	***	***	***	***	***	***	***	***	92
93	***	***	***	***	***	***	***	***	***	***	***	***	93
94	***	***	***	***	***	***	***	***	***	***	***	***	94
95	***	***	***	***	***	***	***	***	***	***	***	***	95

Age in years and completed months													
Total score	9.00	9.01	9.02	9.03	9.04	9.05	9.06	9.07	9.08	9.09	9.10	9.11	Total score
81	123	122	122	121	121	120	120	119	119	118	118	117	81
82	124	123	123	122	122	121	121	120	120	119	119	118	82
83	125	125	124	124	123	122	122	121	121	120	120	119	83
84	126	126	125	125	124	124	123	123	122	122	121	121	84
85	128	127	126	126	125	125	124	124	123	123	122	122	85
86	129	128	128	127	127	126	126	125	125	124	124	123	86
87	130	130	129	129	128	128	127	127	126	126	125	125	87
88	132	132	131	131	130	130	129	129	128	127	127	126	88
89	134	134	133	133	132	132	131	130	130	129	129	128	89
90	136	136	135	135	134	134	133	133	132	132	131	131	90
91	139	139	138	138	137	137	136	136	135	135	134	133	91
92	***	***	***	***	***	140	140	139	139	138	138	137	92
93	***	***	***	***	***	***	***	***	***	***	***	***	93
94	***	***	***	***	***	***	***	***	***	***	***	***	94
95	***	***	***	***	***	***	***	***	***	***	***	***	95



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