

## Reasoning 7 and end of Key Stage 1 levels

This report enables users of Verbal Reasoning 7 and Non-Verbal Reasoning 7 tests to estimate a pupil's possible end of Key Stage 1 test level in Reading, Writing and Maths. The KS1 indicators given in this document are appropriate for Reasoning 7 users who test their pupils in the autumn term of Year 2 in England and Wales or Primary 3 in Northern Ireland.

### 1. Background

Schools taking part in the Reasoning 7 national standardisation in the autumn term were asked to provide the KS1 results at the end of the academic year. Complete results from Reasoning 7 and end of KS1 tests were obtained from around 500 pupils.

### 2. How strong is the relationship between Reasoning scores and KS1 test results?

The strength of a relationship between two measures can be expressed with a statistic termed a correlation coefficient. This coefficient goes from 0, indicating no relationship to 1 indicating a perfect relationship.

The results showed a very strong and statistically significant correlation between the Reasoning 7 scores and the KS1 test results. The correlations are similar to those obtained between the Cognitive Abilities Test (CAT) and KS2 test results. The correlations are shown in the table below.

**Correlations**

Reasoning 7 Test	Key Stage 1 Tests			
	Reading	Writing	Maths	KS1 Average Point Score
Verbal raw score	<b>0.79</b>	<b>0.73</b>	0.68	0.80
Non-verbal raw score	0.54	0.52	0.62	0.60
Total raw score	0.76	0.72	<b>0.74</b>	0.80
Verbal SAS*	0.74	0.71	0.64	0.76
Non-verbal SAS	0.51	0.49	0.59	0.58
Average SAS	0.72	0.69	0.70	0.76

\*SAS= Standard Age Score  
*Note: Figures in bold are the highest correlations for each KS1 outcome.*

The verbal reasoning scores gave the highest correlations with the KS1 reading and writing levels and the combination of verbal and non-verbal scores gave the highest correlations with the KS1 maths level. The Average Point Score is the average of the KS1 Reading, Writing and Maths test scores based on the QCA scoring system: Level 1= 9 points, Level 2C=13, Level 2B=15, Level 2A=17, Level 3=21 points.

The correlations based on standardised scores are slightly lower than those based on raw scores. This is expected because the KS1 test and Reasoning raw scores are not adjusted for the age of the pupil whereas the Reasoning standardised scores are adjusted for age.

### 3. Estimating possible end of Key Stage 1 Reading levels

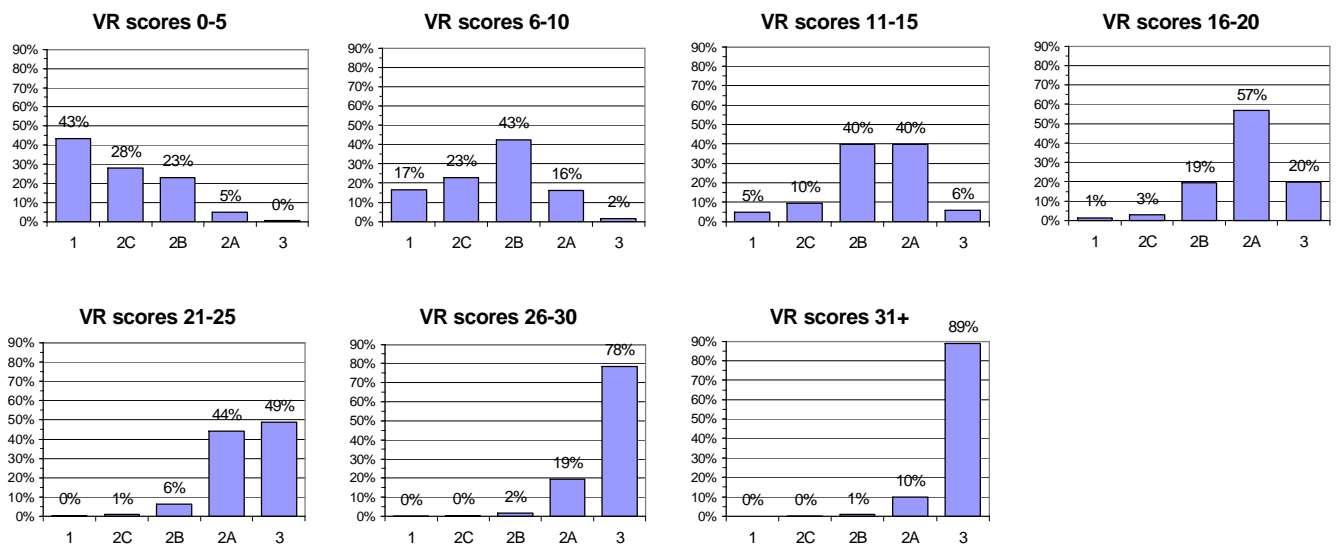
Figure 1 shows the progress charts which give indicated KS1 Reading test levels for various Verbal Reasoning raw score bands.

To use the charts to get indicated levels for each pupil, choose the chart labelled with the Verbal Reasoning (VR) score band within which the pupil's score lies. For example, for a pupil with a VR raw score of 18 look at the progress chart labelled 'VR scores 16-20'. For this score band a range of KS1 reading results are possible. The most likely outcome is level 2A since 57 per cent of pupils achieved this grade. However, levels 1, 2C, 2B and 3 are also possible, since these are achieved by 1, 3, 19 and 20 per cent of pupils respectively. These charts demonstrate that a range of scores is possible, whilst most pupils will achieve a level 2A some will achieve lower and some higher levels. This is important to emphasise to pupils to show what might be achieved with sufficient motivation and effort, and to guard against complacency.

A more detailed table showing the indicators for individual raw score points is given in sections 6 and 7 at the end of this document.

**Figure 1**

#### Verbal Reasoning 7 raw scores and KS1 English Reading Charts

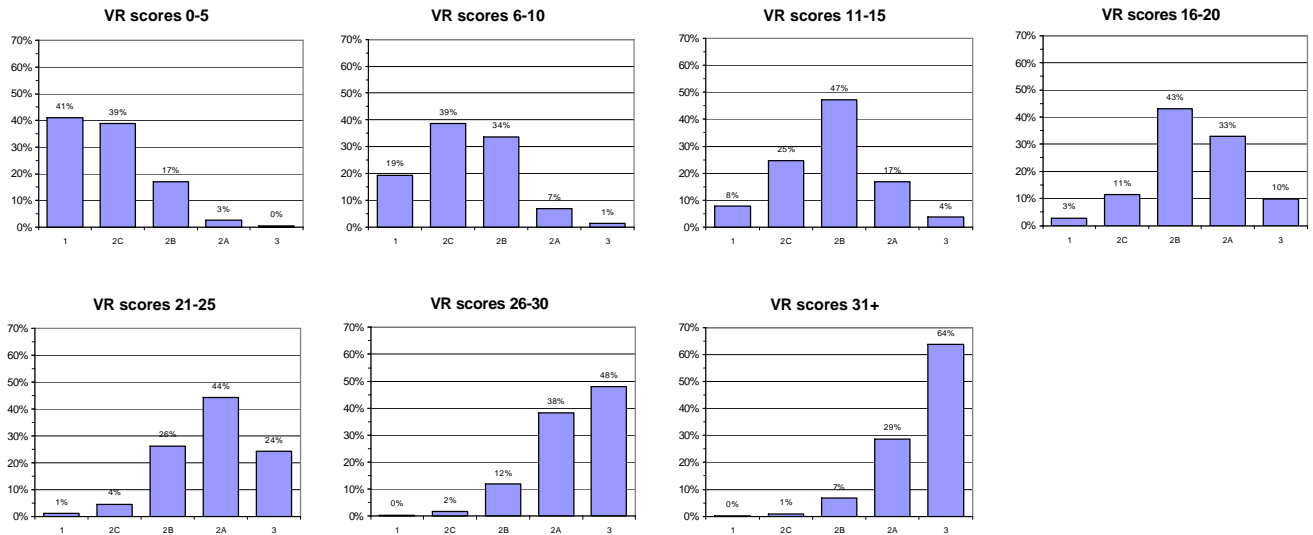


#### 4. Estimating possible end of Key Stage 1 Writing levels

Figure 2 shows the progress charts which give indicated KS1 Writing test levels for various Verbal Reasoning raw score bands.

Figure 2

#### Verbal Reasoning 7 raw scores and KS1 English Writing Charts



#### 5. Estimating possible end of Key Stage 1 Maths levels

Figure 3 shows the progress charts which give indicated KS1 Maths test levels for various raw score bands based on the total Verbal and Non-Verbal raw score.

Figure 3

#### Total Reasoning 7 raw scores and KS1 Maths Charts



6. Detailed table showing KS1 Reading and Writing indicators for each raw score point.

Reasoning 7 to KS1 Reading and Writing indicators													
VR raw score*	Indicated KS1 level		KS1 Reading test probabilities					KS1 Writing test probabilities					VR raw score*
	Reading	Writing	W or 1	2C	2B	2A	3	W or 1	2C	2B	2A	3	
0	1	1	63%	22%	13%	2%	0%	57%	31%	10%	1%	0%	0
1	1	1	57%	24%	16%	3%	0%	52%	34%	12%	2%	0%	1
2	1	1	50%	27%	19%	4%	0%	46%	37%	14%	2%	0%	2
3	1	1	43%	28%	23%	5%	0%	41%	39%	17%	3%	0%	3
4	2C	2C	37%	29%	27%	6%	1%	36%	40%	20%	3%	1%	4
5	2C	2C	31%	29%	32%	8%	1%	31%	41%	23%	4%	1%	5
6	2C	2C	26%	27%	36%	10%	1%	27%	41%	26%	5%	1%	6
7	2C	2C	21%	25%	40%	13%	1%	23%	40%	30%	6%	1%	7
8	2B	2C	17%	23%	43%	16%	2%	19%	39%	34%	7%	1%	8
9	2B	2C	13%	20%	44%	20%	2%	16%	37%	37%	8%	2%	9
10	2B	2B	10%	17%	45%	25%	3%	14%	34%	40%	10%	2%	10
11	2B	2B	8%	14%	45%	29%	4%	11%	31%	43%	12%	2%	11
12	2B	2B	6%	12%	43%	35%	5%	9%	28%	46%	14%	3%	12
13	2B	2B	5%	10%	40%	40%	6%	8%	25%	47%	17%	4%	13
14	2A	2B	4%	8%	36%	45%	8%	6%	22%	48%	20%	4%	14
15	2A	2B	3%	6%	32%	49%	10%	5%	19%	48%	23%	5%	15
16	2A	2B	2%	5%	28%	53%	13%	4%	16%	47%	26%	7%	16
17	2A	2B	2%	4%	23%	55%	16%	3%	14%	45%	29%	8%	17
18	2A	2B	1%	3%	19%	57%	20%	3%	11%	43%	33%	10%	18
19	2A	2A	1%	2%	16%	57%	24%	2%	10%	40%	36%	12%	19
20	2A	2A	1%	2%	13%	55%	30%	2%	8%	37%	39%	14%	20
21	2A	2A	1%	1%	10%	52%	36%	1%	7%	33%	41%	17%	21
22	2A	2A	0%	1%	8%	49%	42%	1%	5%	30%	43%	20%	22
23	2A	2A	0%	1%	6%	44%	49%	1%	4%	26%	44%	24%	23
24	3	2A	0%	1%	5%	39%	55%	1%	4%	23%	45%	28%	24
25	3	2A	0%	0%	4%	34%	62%	1%	3%	20%	44%	33%	25
26	3	2A	0%	0%	3%	29%	68%	1%	2%	17%	43%	38%	26
27	3	2A	0%	0%	2%	24%	74%	0%	2%	14%	41%	43%	27
28	3	2A	0%	0%	2%	19%	78%	0%	2%	12%	38%	48%	28
29	3	3	0%	0%	1%	16%	83%	0%	1%	10%	35%	53%	29
30	3	3	0%	0%	1%	13%	86%	0%	1%	8%	32%	59%	30
31	3	3	0%	0%	1%	10%	89%	0%	1%	7%	29%	64%	31
32	3	3	0%	0%	1%	8%	91%	0%	1%	6%	25%	68%	32

\* Use Verbal Reasoning (VR) raw score for reading or writing. Level 1 includes W (Working towards Level 1)

7. Detailed table showing KS1 Mathematics indicators for each raw score point.

Reasoning 7 to KS1 Mathematics indicators							
VR & NVR Total Raw Score*	Indicated KS1 Maths level	Mathematics test probabilities					VR & NVR Total Raw Score*
		W or 1	2C	2B	2A	3	
0	1	73%	21%	5%	1%	0%	0
1	1	70%	23%	6%	1%	0%	1
2	1	67%	25%	7%	1%	0%	2
3	1	64%	27%	8%	1%	0%	3
4	1	61%	29%	9%	2%	0%	4
5	1	57%	31%	10%	2%	0%	5
6	1	54%	33%	11%	2%	0%	6
7	1	50%	35%	12%	3%	0%	7
8	1	46%	36%	14%	3%	0%	8
9	1	43%	38%	16%	3%	0%	9
10	1	39%	39%	17%	4%	0%	10
11	2C	36%	40%	19%	4%	0%	11
12	2C	33%	40%	21%	5%	1%	12
13	2C	30%	41%	23%	6%	1%	13
14	2C	27%	40%	26%	7%	1%	14
15	2C	24%	40%	28%	7%	1%	15
16	2C	21%	39%	30%	9%	1%	16
17	2C	19%	38%	32%	10%	1%	17
18	2C	17%	36%	34%	11%	1%	18
19	2B	15%	35%	36%	12%	1%	19
20	2B	13%	33%	38%	14%	2%	20
21	2B	12%	31%	40%	16%	2%	21
22	2B	10%	29%	41%	18%	2%	22
23	2B	9%	27%	42%	20%	3%	23
24	2B	8%	25%	43%	22%	3%	24
25	2B	7%	22%	43%	24%	3%	25
26	2B	6%	20%	43%	27%	4%	26
27	2B	5%	18%	42%	29%	4%	27
28	2B	5%	17%	42%	32%	5%	28
29	2B	4%	15%	40%	35%	6%	29
30	2B	3%	13%	39%	37%	7%	30
31	2B	3%	12%	37%	40%	8%	31
32	2A	3%	11%	36%	43%	9%	32
33	2A	2%	9%	34%	45%	10%	33
34	2A	2%	8%	31%	47%	11%	34
35	2A	2%	7%	29%	49%	13%	35
36	2A	2%	6%	27%	51%	15%	36
37	2A	1%	6%	25%	52%	17%	37
38	2A	1%	5%	23%	53%	19%	38
39	2A	1%	4%	20%	53%	21%	39
40	2A	1%	4%	18%	54%	23%	40
41	2A	1%	3%	17%	53%	26%	41
42	2A	1%	3%	15%	53%	29%	42
43	2A	1%	2%	13%	52%	32%	43
44	2A	0%	2%	12%	50%	35%	44
45	2A	0%	2%	10%	49%	39%	45
46	2A	0%	2%	9%	47%	42%	46
47	2A	0%	1%	8%	45%	46%	47
48	2A	0%	1%	7%	42%	49%	48
49	3	0%	1%	6%	40%	53%	49
50	3	0%	1%	5%	37%	56%	50
51	3	0%	1%	5%	34%	60%	51
52	3	0%	1%	4%	32%	63%	52
53	3	0%	1%	4%	29%	67%	53
54	3	0%	1%	3%	26%	70%	54
55	3	0%	0%	3%	24%	73%	55
56	3	0%	0%	2%	22%	75%	56
57	3	0%	0%	2%	19%	78%	57
58	3	0%	0%	2%	17%	80%	58
59	3	0%	0%	2%	16%	83%	59
60	3	0%	0%	1%	14%	85%	60
61	3	0%	0%	1%	12%	86%	61
62	3	0%	0%	1%	11%	88%	62
63	3	0%	0%	1%	10%	89%	63
64	3	0%	0%	1%	8%	91%	64
65	3	0%	0%	1%	7%	92%	65
66	3	0%	0%	1%	6%	93%	66
67	3	0%	0%	1%	6%	94%	67
68	3	0%	0%	0%	5%	95%	68

\* Use total of Verbal Reasoning (VR) and Non-Verbal Reasoning (NVR) raw scores for Mathematics.  
Level 1 includes W (Working towards L1)

## 8. Calculating school or class level estimates of KS1 levels

The school or class level estimate is the mean of the probabilities for all pupils in the year. Table 4 gives an example of how group estimates are calculated for this fictitious class with five pupils who have been assessed. Group estimates should only ever be taken as a rough guide to the future performance of a class.

**TABLE 4: Calculating group estimates for KS1 mathematics for a fictitious class of five pupils**

Pupil	Total VR and NVR raw scores	Indicated KS1 level	Mathematics test probabilities				
			W or 1	2C	2B	2A	3
Pupil 1	7	W or 1	50%	35%	12%	3%	0%
Pupil 2	18	2C	17%	36%	34%	11%	1%
Pupil 3	25	2B	7%	22%	43%	24%	3%
Pupil 4	38	2A	1%	5%	23%	53%	19%
Pupil 5	52	3	0%	1%	4%	32%	63%
<b>Group indicator</b>			15%	20%	23%	24%	17%