



# **Training for School Inspection**

**2005**

**Data module**

**Reference booklet**

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Section 5 is an aide memoir for judging standards and progress. It is placed at the back of the booklet for easy reference.

## Introduction

This reference booklet is designed for use with the data module and for subsequent reference when on inspection.

The booklet contains a brief explanation of the tables in each section, but there is fuller guidance on their use in the data module. If you are unfamiliar with the scoring systems at Key Stages 1-3 or Key Stage 4 you may also find it helpful to refer to *Information sheet 1: interpreting KS1-3 average points scores* and *Information sheet 2: explanation of KS4 scoring system* on the *Interpreting data* CD-ROM.

# 1. Educational importance of differences in points scores

## 1.1 Key stages 1-3

### 1.1a Points score

National curriculum levels can be converted into points scores using the formula:

$$\text{points score} = 6 \times \text{level} + 3$$

So Level 4 has a points score of  $6 \times 4 + 3$ , or 27. Other equivalences are shown below.

Table 1: Equivalence between national curriculum levels and points

Level	W	1	2	3	4	5	6	7	8
Points	3	9	15	21	27	33	39	45	51

At Key Stage 1, Level 2 is split into three parts as shown below, with points for 2b the same as those for Level 2.

Table 2: Points equivalence for Levels 2c, 2b and 2a

Level	1	2c	2b	2a	3
Points	9	13	15	17	21

When the National Curriculum was designed, the expected progress for the **median** pupil (the one who is exactly in the middle of the national ability range) was one level in two years, with higher attainers progressing more rapidly and lower attainers at a slower rate. Each level is equivalent to 6 points. So 6 points represents two years, or 6 terms, of progress for the median pupil. Therefore each point represents one term's progress.

The expected levels this yields by the end of each key stage are:

Key Stage 1	Level 2
Key Stage 2	Level 4
Key Stage 3	Level 5.5

There is more detail on calculating average points scores on the *Interpreting data* CD-ROM in *Information sheet 1: interpreting KS1-3 average points scores*.

### 1.1b Average points scores (APS) and levels

Table 3 shows some examples of the equivalence between levels in each of the three core subjects and the overall APS. For example, a pupil with Levels 4, 5 and 5 would have an overall APS of 31 (calculated by finding 27+33+33 then dividing by 3). The table also shows that a school's overall APS would be 31 if all pupils attained Level 4 in subject 1 and Level 5 in subjects 2 and 3.

Table 3: Equivalence between core subject levels and overall APS

Level	Level in subject 1	Level in subject 2	Level in subject 3	Average points score (APS)	Average level
	W	W	W	3	
	W	W	1	5	
	W	1	1	7	
1	1	1	1	9	1
	1	1	2	11	1.33
	1	2	2	13	1.67
2	2	2	2	15	2
	2	2	3	17	2.33
	2	3	3	19	2.67
3	3	3	3	21	3
	3	3	4	23	3.33
	3	4	4	25	3.67
4	4	4	4	27	4
	4	4	5	29	4.33
	4	5	5	31	4.67
5	5	5	5	33	5
	5	5	6	35	5.33
	5	6	6	37	5.67
6	6	6	6	39	6
	6	6	7	41	6.33
	6	7	7	43	6.67
7	7	7	7	45	7
	7	7	8	47	7.33
	7	8	8	49	7.67
8	8	8	8	51	8

The shading and bold line show the expected levels at Key Stages 1, 2 and 3; these are Levels 2, 4 and 5.5 respectively. Level 5.5 is equivalent to 36 points.

At Key Stage 1, the points for Levels 2c, 2b and 2a will yield overall core APS for some pupils that fall between the values in the table above. Some KS1 examples are shown below.

Table 4: Examples of equivalence including Levels 2c, 2b and 2a

Level	Level in subject 1	Level in subject 2	Level in subject 3	Average points score (APS)	Average level
1	1	1	1	9	1
	1	1	2c	10.33	
	1	1	2b	11	
	1	1	2a	11.67	
	1	2c	2c	11.67	
	1	2c	2b	12.33	
	1	2b	2b	13	
	1	2b	2a	13.67	
	1	2a	2a	14.33	
2	2b	2b	2b	15	2

Table 5: National APS at each key stage

	1999	2000	2001	2002	2003	2004
KS1	14.9	15.1	15.3	15.5	15.5	15.5
KS2	26.6	27.3	27.3	27.3	27.4	27.5
KS3	32.5	33.0	33.5	33.8	34.1	34.1

National APS have risen since 1999 but have become more stable recently. Using Tables 3 and 5 you can see that the 2004 national APS for KS1 is equivalent to just above Level 2, for KS2 is just above Level 4 and for KS3 is about half way between Levels 5 5 5 and 5 5 6, which is below Level 5.5.

Note that the national averages given in the attainment on entry graphs in the PANDA report differ slightly from the value in Table 5 as they contain only the pupils who are still on roll in maintained schools in later years.

Not all pupils attain national curriculum levels; their results are coded as follows:

- A absent
- B not entered for the test but assessed by teacher assessment
- D disappplied
- N took the test but failed to reach the minimum threshold level
- T reaching the minimum threshold level but not able to access the test
- W working within Level 1

Pupils coded A, D and T are not included in calculations of APS. They are, however, included in calculations of the percentage of the cohort that meets level thresholds, such as Level 4+. Pupils coded B or N are assigned slightly different point scores at Key Stages 2 and 3 as shown in the table below. As a consequence, pupils who remain below the minimum threshold in English appear to have improved by one level between Key Stages 2 and 3.

Table 6: Point scores for pupils coded B or N

	KS2 En	KS2 Ma	KS2 Sc	APS	Level
B or N	2	2	2	15	2
	KS3 En	KS3 Ma	KS3 Sc	APS	Level
B or N	3	2	2	17	2.33

### 1.1c Educational importance of differences in points scores for proportions of pupils

The tables below, of equivalence between national curriculum levels and **differences** in APS, allow inspectors to gauge the educational importance of:

- differences between school and national CVA scores or standards
- differences in year-on-year CVA scores or standards
- differences between groups or subjects.

The following are **rough** guides for identifying **standards** that are exceptional in educational terms in relation to national averages:

- at Key Stage 1, a difference from the national average of one level of attainment for at least **one third** of the pupils
- at Key Stage 3, a difference from the national average of one level of attainment for at least **one half** of the pupils
- at Key Stage 2, a difference from the national average of one level of attainment that is midway between these, in other words for at least **five twelfths** of pupils.

At Key Stage 1 this is when at least one third of pupils attain a level above the national average, or one level below the national average. For an individual subject this is one level above or below the national average; for overall core APS it is an average of one level in each of the three subjects above or below the national average.

A **rough** guide for identifying **progress** from Key Stage 1-2 that is exceptional in educational terms is:

- progress of one level above or below the national expected progress by at least **one quarter** of pupils.



This is when at least one quarter of pupils make one level of progress more than expected or less than expected. The expected progress for each pupil is calculated using national averages based on contextual value added data. For an individual subject this is one level above or below the national expected progress; for overall core APS it is an average of one level in each of the three subjects above or below the national expected progress.

The tables below relate these differences for proportions of pupils to points-score differences. The points scores that match the proportions in the rough guide for exceptional performance are emboldened.

Table 7a: Equivalence between **single** subject APS differences and levels

Single subject APS difference	Average equivalence in difference of levels
6 points	one level for all pupils (e.g. two levels for half of the pupils)
5 points	one level for five sixths of the pupils
4 points	one level for two thirds of the pupils
<b>3 points</b>	one level for <b>one half</b> of the pupils
<b>2.5 points</b>	one level for <b>five twelfths</b> of the pupils
<b>2 points</b>	one level for <b>one third</b> of the pupils
<b>1.5 points</b>	one level for <b>one quarter</b> of the pupils
1 point	one level for one sixth of the pupils
0.6 points	one level for one tenth of the pupils
0.5 points	one level for one twelfth of the pupils

For a specific number of points, the impact on one subject will be for three times as many pupils as the impact on all three subjects, as shown below.

Table 7b: Equivalence between **overall** core subject APS differences and levels

Overall key stage APS difference	Average equivalence in difference of levels
6 points	one level in all three subjects for all pupils
4 points	one level in two subjects for all pupils
	one level in each subject for two thirds of the pupils
<b>3 points</b>	one level in two subjects for three quarters of the pupils
	one level in each subject for <b>one half</b> of the pupils
<b>2.5 points</b>	one level in two subjects for 1/4 of the pupils and one subject for 3/4
	one level in each subject for <b>five twelfths</b> of the pupils
<b>2 points</b>	one level in one subject for all pupils
	one level in each subject for <b>one third</b> of the pupils
<b>1.5 points</b>	one level in one subject for three quarters of the pupils
	one level in each subject for <b>one quarter</b> of the pupils

1 point	one level in one subject for half of the pupils
	one level in each subject for one sixth of the pupils
	two levels in one subject and one in another for one sixth of the pupils
	two levels in one subject for a quarter of the pupils
	one level in two subjects for a quarter of the pupils
0.75 points	one level in one subject for three eighths of the pupils
	one level in each subject for one eighth of the pupils
0.6 points	one level in one subject for three tenths of the pupils
	one level in each subject for one tenth of the pupils
0.5 points	one level in one subject for a quarter of the pupils
	one level in each subject for a twelfth of the pupils

The emboldened points scores and proportions from the two tables above are summarised in the table below. They show the points scores that indicate exceptional performance, based on the proportions of pupils given in the rough guides to exceptional standards and progress.

Table 8: Rough guide to exceptional performance at KS 1, 2 and 3

	Proportion of pupils gaining one level different	Points score difference for an individual subject	Overall core APS difference
KS1 attainment	<b>1/3</b>	<b>2</b>	<b>2</b>
KS2 attainment	<b>5/12</b>	<b>2.5</b>	<b>2.5</b>
KS3 attainment	<b>1/2</b>	<b>3</b>	<b>3</b>
KS1-2 progress	<b>1/4</b>	<b>1.5</b>	<b>1.5</b>

Note: Where a proportion of pupils has been getting targeted support or where there have been significant changes in staffing or other provision in one of the subjects, smaller differences may represent exceptional standards or progress for a particular school.

A **rough** guide for identifying **an individual pupil's progress** from Key Stage 1-2 that is exceptional in educational terms is:

- progress of at least **one level** above or below the national expected progress in all three subjects.

From Table 7b you can see this is equivalent to six points.

### 1.1d Impact of one pupil on APS

In some schools the addition or removal of one or two pupils from the results may make a substantial impact on them. The tables below are provided to help you if you need to discuss such cases with the school.



The first table shows the impact on a school's subject APS if one pupil improves by one level. If there were 24 pupils in the cohort and one pupil improved by one level, the total APS for the cohort would increase by 6 points. The average for the cohort would therefore increase by 6/24 points or ¼ points which is 0.25 points. So if three pupils improved by one level (or one pupil improved by three levels) the school's APS would increase by 0.25 x 3 or 0.75. For any size of cohort, you can work out the effect on the school's APS of one pupil improving by one level by dividing 6 by the number of pupils in the cohort. Table 9a shows this for some sizes of cohort to help you make quick estimates.

Table 9a: Increase in **subject** APS if one pupil improves by one level

cohort size	6	10	12	20	24	30	40	50	60	75	100	120	150	200
increase in subject APS	1	0.6	0.5	0.3	0.25	0.2	0.15	0.12	0.1	0.08	0.06	0.05	0.04	0.03

Note: This table also shows the increase in overall APS if one pupil improves by one level in all 3 core subjects.

If one pupil improves by one level in one subject, that pupil's overall APS increases only by two points. For example, improvement from levels 2, 2 and 2 in the core subjects to levels 3, 2 and 2 increases overall APS from 15 to 17. For the whole cohort, you can think of this as adding two points to the total, so for a cohort of 100 this would add 2/100 or 0.02 to the overall core subject APS. In other words, as there are 3 core subjects, an improvement by one pupil of one level in one subject has an effect on the overall APS that is one third of the size of its effect on the subject APS. The effect is shown below.

Table 9b: Increase in **overall** core subject APS if one pupil improves by one level in one subject

cohort size	6	10	12	20	24	30	40	50	60	75	100	120	150	200
increase in overall APS	0.33	0.2	0.17	0.1	0.083	0.067	0.05	0.04	0.033	0.027	0.02	0.017	0.013	0.01

### 1.1e Evaluating attainment on entry

The rough guide in Table 10 shows that the points scores for exceptional performance in Table 8 indicate attainment on entry that may be described as well below or well above average, and that points scores over half of this distance from average may be described as above or below average.

Table 10: Rough guide to link between points difference from the national average and evaluation of attainment on entry

	well below average	below average	broadly average	above average	well above average
KS1	2+	1 to 2	less than 1	1 to 2	2+
KS2	2.5+	1.25 to 2.5	less than 1.25	1.25 to 2.5	2.5+
KS3	3+	1.5 to 3	less than 1.5	1.5 to 3	3+

## 1.2 Key Stage 4

### 1.2a Points score

In the new-style 2004 PANDA report, Key Stage 4 attainment graphs use the old point scoring system, in order to provide data for the last five years. The 2005 PANDA report will use the current scoring system for attainment. For both 2004 and 2005 results, CVA is calculated using the current scoring system. There are full details of this new scoring system, and capped and uncapped total points scores, on the *Interpreting data* CD-ROM in *Information sheet 2: explanation of KS4 scoring system*.

The new points score system is linked to the old points score for GCSE by the formula:

$$\text{new points} = \text{old points} \times 6 + 10$$

Table 11a: Key Stage 4 points scores

Course level	2	2	2	2	1	1	1	1
Grade	A*	A	B	C	D	E	F	G
Old points	8	7	6	5	4	3	2	1
New points	58	52	46	40	34	28	22	16
8 x old points	64	56	48	40	32	24	16	8
8 x new points	464	416	368	320	272	224	179	128

An increase of 6 points represents an improvement of one grade. If, instead of improving their grade in a particular GCSE course, a pupil took an extra full GCSE course and obtained a grade G, they would add 16 points to their total points score. The pupil can add more points by taking an additional subject than by improving an existing subject by one grade. They would need to improve their existing subject by three grades (18 points) to increase their points score by the same amount as they could by obtaining grade G in one extra subject. This is an illustration of how the new points scoring system gives more weight to the quantity of courses than did the old system.

Table 11b shows the national results for the capped (best 8 subjects) using the old point-scoring system. Comparison with Table 11a shows that results have risen slightly since this measure was introduced to almost on average 3 grade C and 5 grade D [34.9 is almost 35 and  $35 = (3 \times 5) + (5 \times 4)$ ].

Table 11b: National average capped total points score using old scoring system

	2002	2003	2004
Capped total points	34.6	34.7	34.9
Average points per subject	4.325	4.3375	4.3625

## 1.2b Educational importance of differences in points scores for proportions of pupils

The following is a **rough** guide for identifying **standards** that are exceptional in educational terms in relation to the national average:

- a difference from the national average of at least one grade in attainment for **all** pupils.

This is when all pupils attain at least one grade above the national average, or one grade below the national average. For an individual subject this is one grade above or below the national average; for average capped total points score it is an average of one grade in each of the eight subjects above or below the national average.

A **rough** guide for identifying **progress** from Key Stage 2-4 that is exceptional in educational terms is:

- progress of one grade above or below the national expected progress by at least **one half** of pupils.

This is when at least one half of pupils make one grade of progress more than expected or less than expected. The expected progress for each pupil is calculated using national averages based on contextual value added data. For an individual subject this is one grade above or below the national expected progress; for average capped total points score it is an average of one grade in each of the eight subjects above or below the national expected progress.

The tables below relate these differences for proportions of pupils to points-score differences. The points scores that match the proportions in the rough guide for exceptional performance are emboldened.

Table 12a: Equivalence between **single** subject APS differences and GCSE grades

Single subject APS difference	Average equivalence in difference of GCSE grades (current scoring system)
12 points	two grades for all pupils (e.g. four grades for half of the pupils)
9 points	two grades for half of the pupils and one grade for the other half
<b>6</b> points	one grade for <b>all</b> pupils (e.g. two grades for half of the pupils)
5 points	one grade for five sixths of the pupils
4 points	one grade for two thirds of the pupils
<b>3</b> points	one grade for <b>one half</b> of the pupils
2 points	one grade for one third of the pupils
1.5 points	one grade for one quarter of the pupils
1 point	one grade for one sixth of the pupils
0.6 points	one grade for one tenth of the pupils
0.5 points	one grade for one twelfth of the pupils

The average capped total points score is based on the grades for the equivalent of the best eight full GCSE results.

Table 12b: Equivalence between differences in **average capped total points** score and GCSE grades

Difference in capped total points score	Average equivalence in difference of GCSE grades (current scoring system)
96 points	two grades in all eight subjects for all pupils a total of sixteen grades across subjects for each pupil
90 points	a total of fifteen grades across subjects for each pupil
84 points	a total of fourteen grades across subjects for each pupil
78 points	a total of thirteen grades across subjects for each pupil
72 points	a total of twelve grades across subjects for each pupil
66 points	a total of eleven grades across subjects for each pupil
60 points	a total of ten grades across subjects for each pupil
54 points	a total of nine grades across subjects for each pupil
<b>48</b> points	one grade in all eight subjects for <b>all</b> pupils a total of eight grades across subjects for each pupil
	two grades in all eight subjects for half of the pupils
42 points	one grade in seven subjects for all pupils one grade in all subjects for seven eighths of the pupils a total of seven grades across subjects for each pupil
36 points	one grade in six subjects for all pupils one grade in all subjects for three quarters of the pupils a total of six grades across subjects for each pupil
30 points	one grade in five subjects for all pupils one grade in all subjects for five eighths of the pupils a total of five grades across subjects for each pupil
<b>24</b> points	one grade in four subjects for all pupils one grade in all subjects for <b>half</b> of the pupils a total of four grades across subjects for each pupil
18 points	one grade in three subjects for all pupils one grade in all subjects for three eighths of the pupils a total of three grades across subjects for each pupil
16 points	one grade in 3 subjects for 2/3 of pupils, & 2 subjects for 1/3 one grade in all subjects for a third of the pupils
12 points	one grade in two subjects for all pupils one grade in all subjects for a quarter of the pupils a total of two grades across subjects for each pupil



6 points	one grade in one subject for all pupils
	one grade in all subjects for one eighth of the pupils
3 points	one grade in one subject for half of the pupils
	one grade in all subjects for one sixteenth of the pupils
2 points	one grade in one subject for one third of the pupils
	one grade in all subjects for one twenty-fourth of the pupils
1.5 points	one grade in one subject for one quarter of the pupils
	one grade in all subjects for one thirty-second of the pupils
1 point	one grade in one subject for one sixth of the pupils
	one grade in all subjects for one forty-eighth of the pupils

The emboldened points scores and proportions from the two tables above are summarised in the table below. They show the points scores that indicate exceptional performance, based on the proportions of pupils given in the rough guides to exceptional standards and progress.

Table 13: Rough guide to exceptional performance at KS4 using the current scoring system

	Proportion of pupils gaining one grade different	Points score difference for an individual subject	Overall capped total points score difference
KS4 attainment	all	6	48
KS2-4 progress	1/2	3	24

Note: Where a proportion of pupils has been getting targeted support or where there have been significant changes in staffing or other provision in one of the subjects, smaller differences may represent exceptional standards or progress for a particular school.

A **rough** guide for identifying an **individual pupil's progress** from Key Stage 2-4 that is exceptional in educational terms is:

- progress of at least **two grades** above or below the national expected progress in each of the eight subjects.

From Table 12b, you can see this is equivalent to 96 points.

### 1.2c Impact of one pupil on average capped total points score

In some schools the addition or removal of one or two pupils from the results may make a substantial impact on them. The tables below are provided to help you if you need to discuss such cases with the school.

If a pupil improves by one grade in one subject this increases his or her capped total points score by 6 points. In a cohort of 100 pupils the average capped total points score would then increase by  $6/100$  or 0.06 points. If a pupil improves by a total of four grades spread across different subjects, for example two grades in one subject and one grade in each of two other subjects, his or her total capped points score increases by  $6 \times 4$  or 24 points. In a cohort of 100 pupils the average capped total points score would then increase by  $24/100$  or 0.24 points.

The table below shows the impact on the average capped total points score for different sized cohorts of one pupil gaining one grade higher in one full GCSE course. You can multiply the points in the table by the total number of grades by which pupils have improved to see the overall effect on the school's total points score.

Table 14: Increase in average capped total points score if one pupil improves by one grade in one GCSE course

cohort size	10	20	30	40	50	60	75	100	120	150	200
increase in capped total points score	0.6	0.3	0.2	0.15	0.12	0.1	0.08	0.06	0.05	0.04	0.03

### 1.2d Old Key Stage 4 scoring system

The following tables are provided to help interpret attainment results that use the old scoring system. The points scores that match the proportions in the rough guide for exceptional performance are emboldened.

The emboldened points scores and proportions from the first two tables are summarised in the third table. They show the points scores that indicate exceptional performance, based on the proportions of pupils given in the rough guide to exceptional standards.

Table 15a: Equivalence between **single** subject APS differences and GCSE grades using the **old** scoring system

Single subject APS difference	Average equivalence in difference of GCSE grades (using <b>old</b> scoring system)
2 points	two grades for all pupils (e.g. four grades for half of the pupils)
1.5 points	two grades for half of the pupils and one grade for the other half
<b>1 point</b>	one grade for <b>all</b> pupils (e.g. two grades for half of the pupils)
0.83 points	one grade for five sixths of the pupils
0.67 points	one grade for two thirds of the pupils
<b>0.5 points</b>	one grade for <b>one half</b> of the pupils



0.33 points	one grade for one third of the pupils
0.25 points	one grade for one quarter of the pupils
0.17 point	one grade for one sixth of the pupils
0.1 points	one grade for one tenth of the pupils

Table 15b: Equivalence between differences in **average capped total points** score and GCSE grades using the **old** scoring system

Difference in capped total points score	Average equivalence in difference of GCSE grades (using <b>old</b> scoring system)
12 points	two grades in four subjects and one grade in four subjects for all pupils a total of twelve grades across subjects for all pupils
<b>8</b> points	one grade in all eight subjects for <b>all</b> pupils a total of eight grades across subjects for all pupils
<b>4</b> points	one grade in four subjects for all pupils one grade in all subjects for <b>half</b> of the pupils
3 points	one grade in three subjects for all pupils one grade in all subjects for three eighths of the pupils
2 points	one grade in two subjects for all pupils one grade in all subjects for a quarter of the pupils
1 point	one grade in one subject for all pupils one grade in all subjects for one eighth of the pupils
0.5 points	one grade in one subject for half of the pupils one grade in all subjects for one sixteenth of the pupils

Table 16: Rough guide to exceptional performance at KS4 using the **old** scoring system

	Proportion of pupils gaining one grade different	Points score difference for an individual subject	Overall capped total points score difference
KS4 attainment	all	1	8

## 2. Proportions of schools with significantly different results from the national average in 2004

When evaluating a school's **progress**, you should be mindful of the national proportions with significantly above average (sig+) and significantly below average (sig-) contextual value added (CVA) scores. It is relatively easy to

remember these as they are roughly the same across key stages, and for both overall and subject analyses.

In contrast, when evaluating a school's **standards of attainment**, the sig+ and sig- proportions vary between key stages and between analyses of overall average points score (APS), subject APS and thresholds. It is therefore useful to refer to the tables below. The main reason for variation is the number of pupils included in each calculation; for high numbers it is more likely that the results will be significant. The KS1-3 overall APS calculation essentially triples the whole cohort by counting each pupil's three subject results separately and, at the other extreme, the threshold results for one subject sometimes include only a small group of pupils who reached the particular level.

## 2.1 CVA scores

Table 17: national percentage of schools in which the CVA scores show progress that is significantly above or below the national average

	Overall	KS 1-2			Overall	KS 2-4	
		Eng	Mat	Sci		Eng	Mat
% sig +	23.0	22.0	20.1	22.0	27.1	29.3	31.1
% not sig (NS)	53.5	55.1	58.5	56.5	45.4	41.7	40.1
% sig -	23.5	22.9	21.5	21.5	27.6	29.0	28.8

Roughly one quarter of schools have CVA scores significantly above or significantly below average, with slightly more in secondary than in primary schools, cohort sizes being larger in secondary schools. Figures for separate subjects are similar to those for overall CVA score.

## 2.2 Attainment shown by APS

Table 18: national percentage of schools in which attainment shown by APS is significantly above or below the national average

	Overall	KS1			Overall	KS2		
		Reading	Writing	Mat		Eng	Mat	Sci
% sig +	35.7	21.6	23.3	20.7	36.7	25.1	23.5	26.9
% NS	34.6	61.9	59.2	61.1	36.7	56.9	58.9	54.7
% sig -	29.7	16.5	17.5	18.2	26.6	17.9	17.5	18.3

	Overall	KS3			KS4	
		Eng	Mat	Sci	Capped	Uncapped
% sig +	42.9	37.2	36.6	38.8	38.7	36.8
% NS	13.5	24.1	24.1	21.2	23.3	23.5
% sig -	43.5	38.7	39.3	40.0	37.9	39.7

At Key Stages 1 and 2, approximately 65% of schools have overall APS significantly different from the national average. For individual subjects the proportions are much lower, at roughly 40%, due to the method of calculation. There are always more schools with significantly above average (sig+) attainment than with attainment significantly below average (sig-).

At Key Stages 3 and 4, where cohort sizes are larger than in primary schools, the vast majority of schools (between roughly 75% and 85%) have overall and subject results significantly different from average. Consequently, there are few secondary schools with attainment that is not significantly different from average. In contrast with Key Stages 1 and 2, at Key Stage 3 there are slightly higher proportions of schools with sig- attainment than with sig+ attainment. Note that the Key Stage 4 data are based on the current scoring system.

### **2.3 Attainment thresholds**

The proportion of schools with significantly different from average performance at thresholds is not as easy to remember as the proportions for APS, because it is different for each threshold. Where numbers of pupils in a group are small, such as those attaining very low levels, it is not possible for significance tests to be carried out. So for thresholds at low levels, only a few schools have results which are significantly different from average. A good example of this is seen in writing at Key Stage 1; 10% of schools are significantly different from average at Level 1+ in contrast to 36% of schools at Level 2a+. You need to bear this in mind when evaluating a school's results at thresholds; it may have too few pupils at that level to show any significant difference.

At Key Stage 3, where cohorts are larger, a much higher percentage of schools (generally about 70%) has significantly different from average results than at Key Stages 1 and 2. At Key Stage 3, roughly 40% of schools have sig- subject results for Levels 6+ and 7+, this percentage being lowest in mathematics. The data indicators for a grade 2 judgement on standards, shown in Table 25 at the back of this booklet, are that there should be no *important* examples of sig-. You need to evaluate the importance of sig- at Levels 6+ and 7+ when making this judgement; in some schools it may be the only example of sig-, and you may judge that standards should nevertheless be graded 2.

Table 19: national percentage of schools in which attainment at national curriculum level thresholds is significantly above or below the national average

Note: A/D represents pupils who were absent or disapplied

Key Stage 1

	A/D	<L1	L1+	L2C+	L2B+	L2A+	L3+	Reading
% sig+	0.00	0.10	0.00	16.04	18.19	45.06	19.70	
	99.94	68.76	100.00	77.63	70.93	54.31	81.02	
% sig-	0.06	31.15	0.00	6.63	10.86	1.82	0.30	

	A/D	<L1	L1+	L2C+	L2B+	L2A+	L3+	Writing
% sig+	0.00	0.23	8.69	10.18	8.64	3.44	5.59	
	99.99	98.74	90.37	78.64	64.60	63.93	75.47	
% sig-	0.01	1.02	0.94	11.18	26.76	32.63	18.94	

	A/D	<L1	L1+	L2C+	L2B+	L2A+	L3+	Maths
% sig+	0.00	0.01	21.38	25.19	39.62	50.69	19.60	
	99.94	95.72	78.56	72.55	56.73	47.74	80.07	
% sig-	0.06	4.27	0.06	2.26	3.65	1.57	0.32	

Key Stage 2

	A/D	<L3	L3+	L4+	L5+	English
% sig+	0.00	0.93	1.40	14.34	14.67	
	100.00	97.87	96.97	71.04	67.46	
% sig-	0.00	1.20	1.64	14.62	17.87	

	A/D	<L3	L3+	L4+	L5+	Mathematics
% sig+	0.00	0.74	1.42	15.63	14.03	
	100.00	98.10	97.20	69.67	69.91	
% sig-	0.00	1.16	1.38	14.70	16.06	

	A/D	<L3	L3+	L4+	L5+	Science
% sig+	0.00	0.00	0.28	9.72	18.18	
	100.00	99.93	99.68	81.47	60.87	
% sig-	0.00	0.07	0.05	8.81	20.95	

Table 19 continued

Key Stage 3

	<b>A/D</b>	<b>&lt;L4</b>	<b>L3+</b>	<b>L4+</b>	<b>L5+</b>	<b>L6+</b>	<b>L7+</b>	<b>English</b>
<b>% sig+</b>	14.27	10.23	-	56.04	47.50	32.30	19.46	
	73.14	29.69	-	30.14	26.63	26.76	33.86	
<b>% sig-</b>	12.58	60.08	-	13.83	25.87	40.94	46.67	

	<b>A/D</b>	<b>&lt;L3</b>	<b>L3+</b>	<b>L4+</b>	<b>L5+</b>	<b>L6+</b>	<b>L7+</b>	<b>Mathematics</b>
<b>% sig+</b>	9.72	1.05	56.32	53.55	45.84	40.27	33.67	
	83.85	23.70	39.47	33.74	30.87	27.94	31.92	
<b>% sig-</b>	6.44	75.25	4.21	12.71	23.29	31.79	34.41	

	<b>A/D</b>	<b>&lt;L3</b>	<b>L3+</b>	<b>L4+</b>	<b>L5+</b>	<b>L6+</b>	<b>L7+</b>	<b>Science</b>
<b>% sig+</b>	9.11	3.22	64.54	60.69	45.97	34.21	23.32	
	73.24	20.74	29.98	26.73	26.66	26.98	35.71	
<b>% sig-</b>	17.65	76.04	5.48	12.58	27.37	38.80	40.97	



## 2.4 CVA scores for ethnic groups

The two tables below show the percentage of schools with pupils in each of the ethnicity categories in which progress for the group in the school significantly exceeded the progress observed for this group nationally. They are sorted with the largest percentage of sig+ at the top. You can see that the percentage of schools with statistically significant CVA scores is very small for most groups. This is due mainly to the small size of these groups in many schools and the fact that statistical tests for small numbers of pupils are unlikely to show significance. Consequently, in only a small proportion of the schools that you inspect will you encounter any minority ethnic group with a sig+ or sig- CVA score. For example, in roughly 40 (4% of 1087 schools) of the 3083 secondary schools nationally the Pakistani group had sig+ CVA and in roughly 30 schools, sig- CVA.

The percentages of sig+ and sig- for White British pupils are similar to those for the overall national CVA scores shown in Table 17. There are slight differences between primary and secondary schools in the remainder of the tables, with the unclassified group higher in secondary schools. You can see that two thirds of secondary schools but only one third of primary schools contain pupils in this group.

Table 20a: percentage of primary schools with statistically significant ethnic group KS1-2 CVA scores

Ethnicity	No of schools with the ethnicity group	% sig+ which have the ethnicity group	% not sig which have the ethnicity group	% sig- which have the ethnicity group
White British	14642	20.4	58.3	21.3
Black African	1911	5.0	91.1	4.0
Pakistani	2381	4.4	88.2	7.4
Black Caribbean	2255	4.3	91.8	3.9
Bangladeshi	1447	4.0	92.9	3.1
Indian	2810	2.6	94.1	3.3
Unclassified	4939	2.1	95.5	2.5
Any other ethnic group	1626	2.0	96.8	1.2
Any other white background	3938	1.8	96.9	1.3
Irish	1179	1.2	98.2	0.6
Traveller of Irish heritage	197	1.0	97.5	1.5
Any other Asian background	1355	1.0	98.1	1.0
White and Black Caribbean	3393	0.6	98.1	1.3
Any other mixed background	3396	0.6	98.7	0.6
Gypsy/Roma	372	0.5	98.4	1.1
Any other black background	1141	0.4	98.2	1.3
Chinese	1288	0.2	99.5	0.3
White and Black African	1049	0.2	99.5	0.3
White and Asian	2334	0.2	99.6	0.2



Table 20b: percentage of secondary schools with statistically significant ethnic group KS2-4 CVA scores

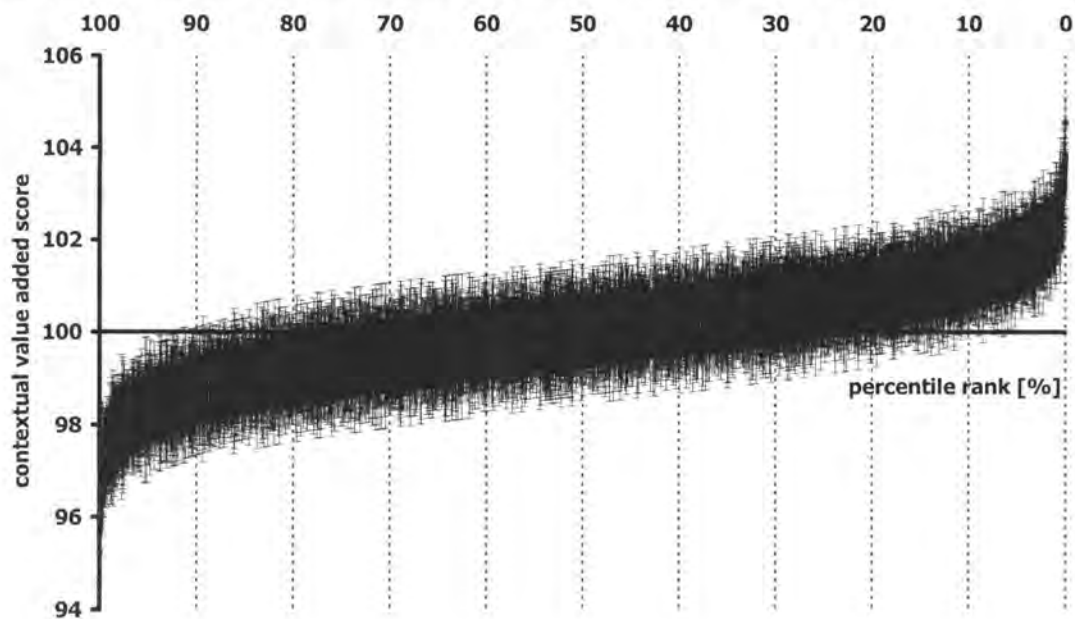
Ethnicity	No of schools with the ethnicity group	% sig+ which have the ethnicity group	% not sig which have the ethnicity group	% sig- which have the ethnicity group
White British	3083	27.1	45.4	27.6
Unclassified	2110	6.6	87.2	6.2
Pakistani	1087	4.0	93.1	2.9
Bangladeshi	758	3.0	96.2	0.8
Black African	759	2.8	96.4	0.8
Black Caribbean	1051	2.7	95.5	1.8
Indian	1426	1.5	97.3	1.2
Any other ethnic group	897	1.1	98.0	0.9
Any other white background	1854	1.1	98.0	0.8
Irish	777	0.6	99.1	0.3
White and Black Caribbean	1324	0.5	99.2	0.3
Any other Asian background	814	0.4	99.3	0.4
Any other black background	746	0.1	99.3	0.5
Any other mixed background	1477	0.1	99.6	0.3
Chinese	955	0.1	99.9	0.0
White and Black African	540	0.0	99.8	0.2
White and Asian	1097	0.0	100.0	0.0
Gypsy/Roma	161	0.0	100.0	0.0
Traveller of Irish heritage	107	0.0	100.0	0.0

### 3. National distribution graphs

#### 3.1 CVA graphs

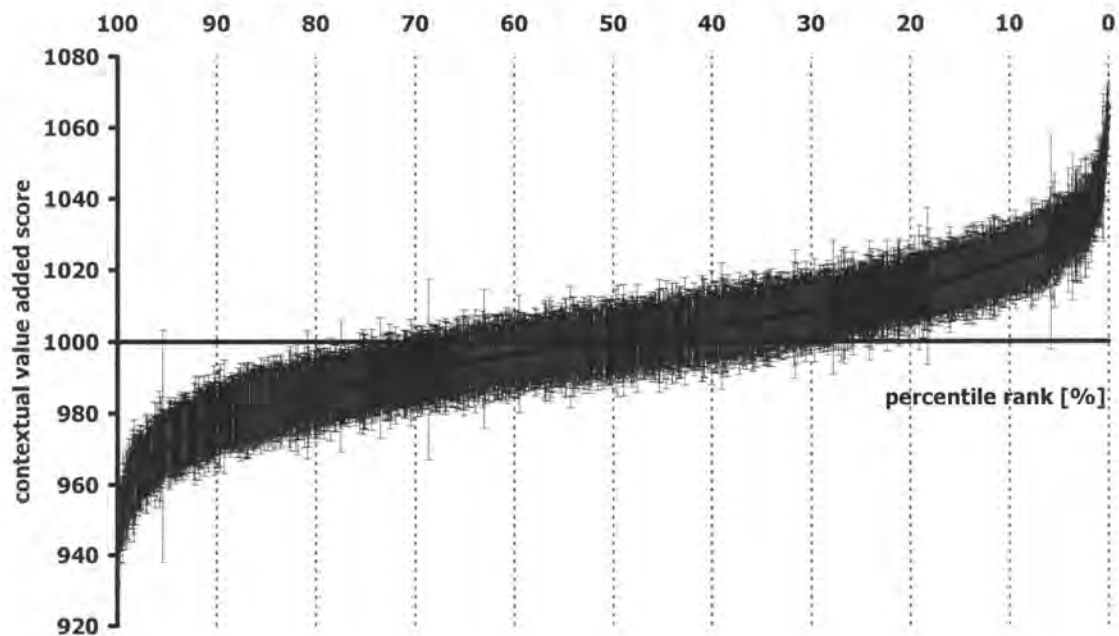
The 'caterpillar' graphs below show the CVA scores of all schools. The dark curve is made up from the plotted CVA scores for all schools placed in rank order. The grey feathery section is the confidence intervals of all of the schools. Owing to constraints in printing so many results very close together, only the widest confidence interval for each CVA score may be seen. Schools with narrow confidence intervals that are not at the extremes of the distribution may not show on the graph because an adjacent school with a larger confidence interval has been printed on top of it. Consequently the grey section does not give a reliable indication of the proportion of schools for which the CVA score is significant.

Graph 1: National distribution of 2004 KS1-2 overall CVA scores

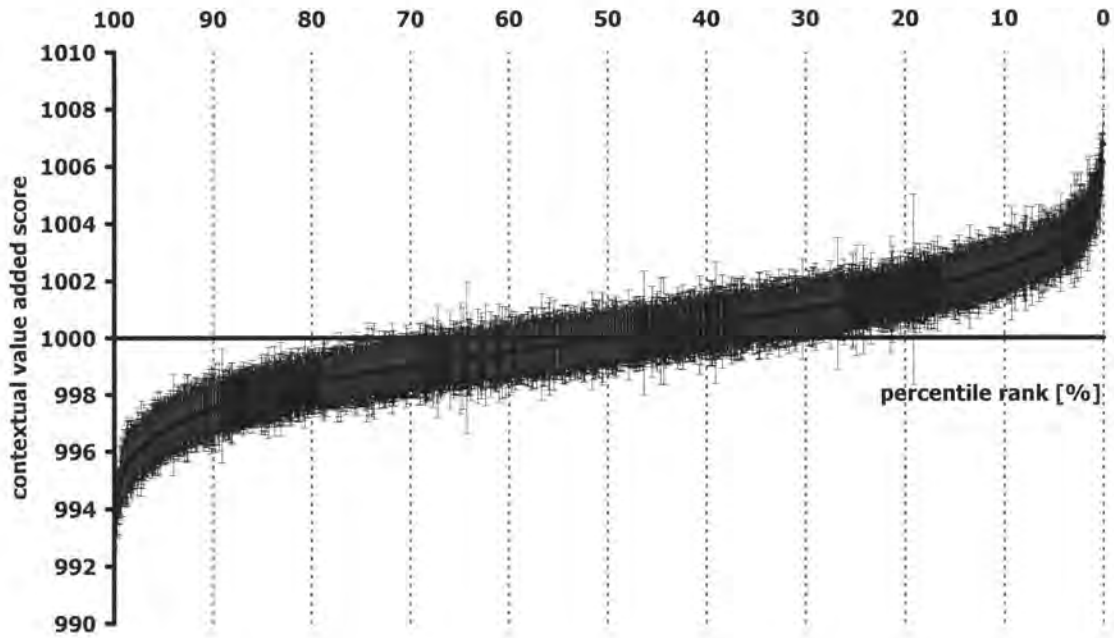


The distribution graphs for English, mathematics and science are very similar to the overall graph so have not been shown here.

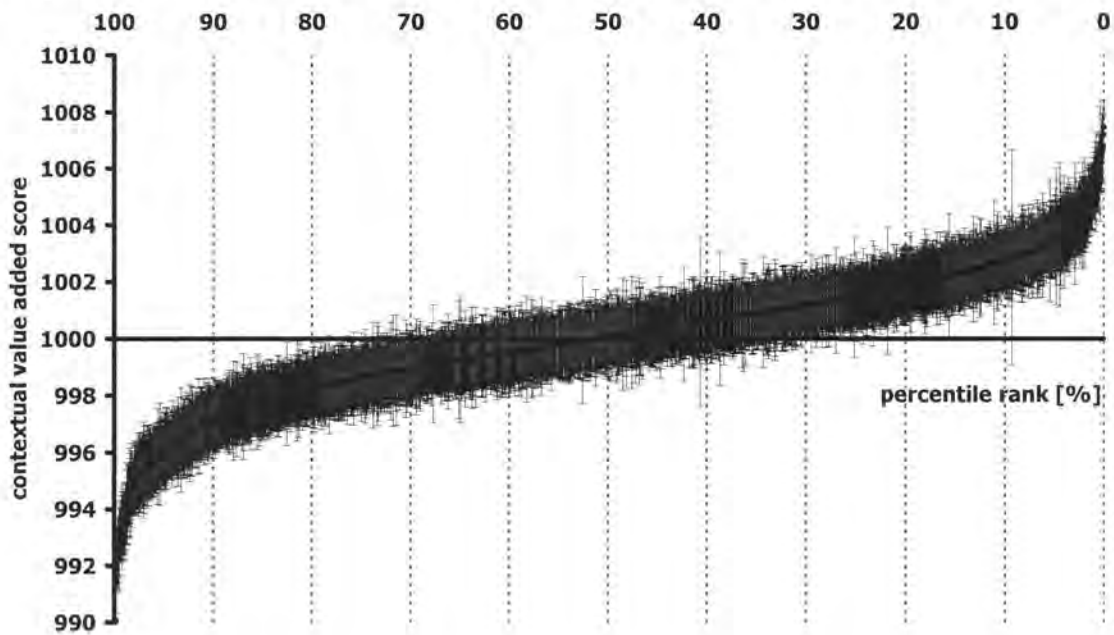
Graph 2: National distribution of 2004 Key Stage 2-4 overall CVA scores



Graph 3: National distribution of 2004 Key Stage 2-4 English CVA scores



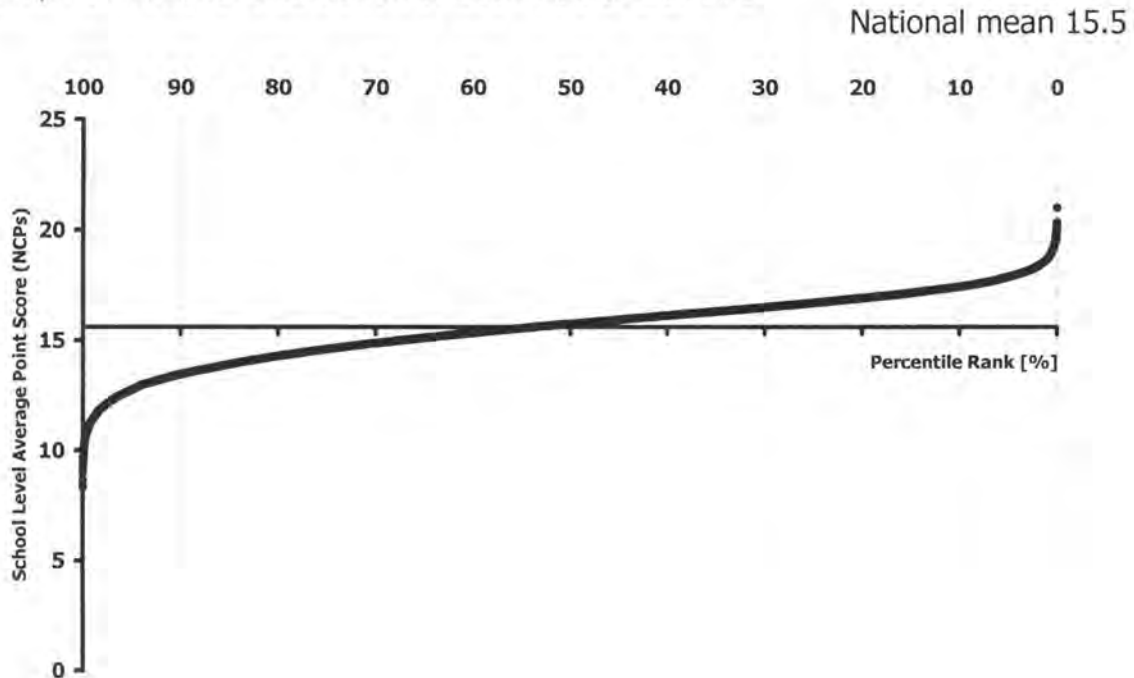
Graph 4: National distribution of 2004 Key Stage 2-4 mathematics CVA scores



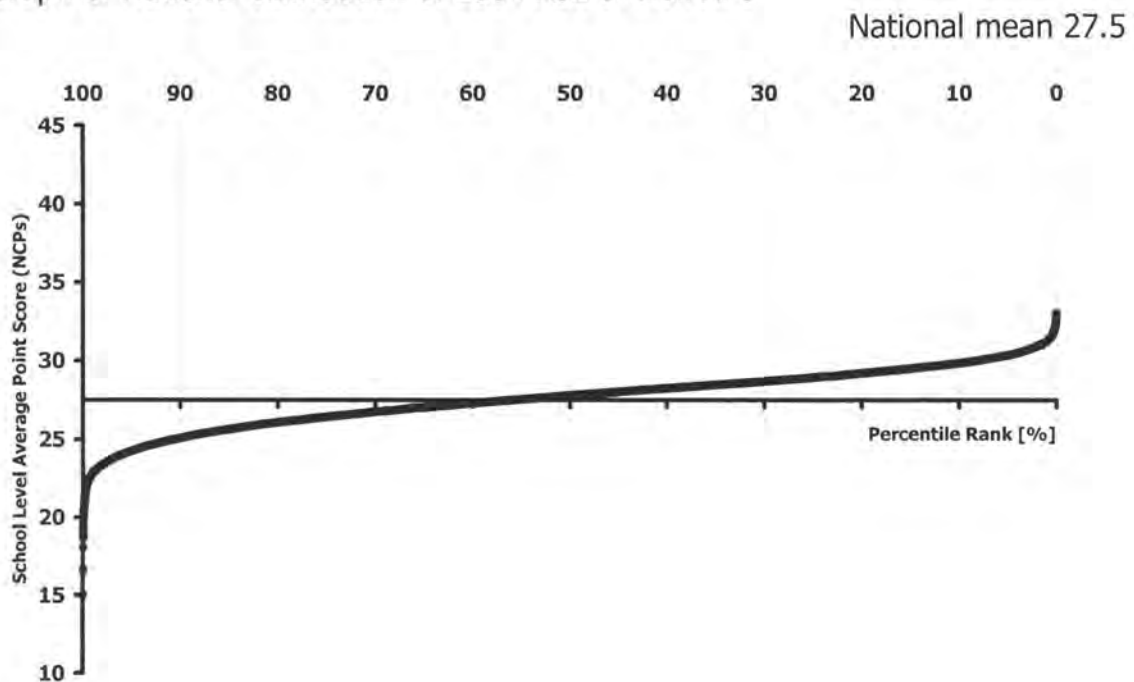
### 3.3 Attainment graphs

The horizontal axis is at the 2004 national mean average, as given in Table 5.

Graph 5: National distribution of 2004 KS1 overall APS

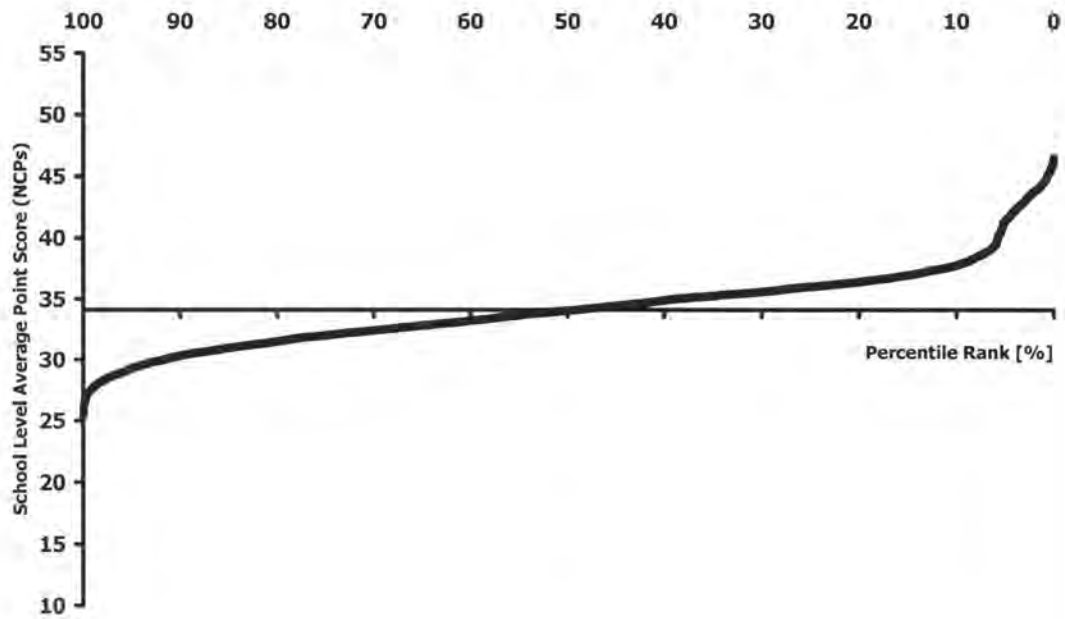


Graph 6: National distribution of 2004 KS2 overall APS



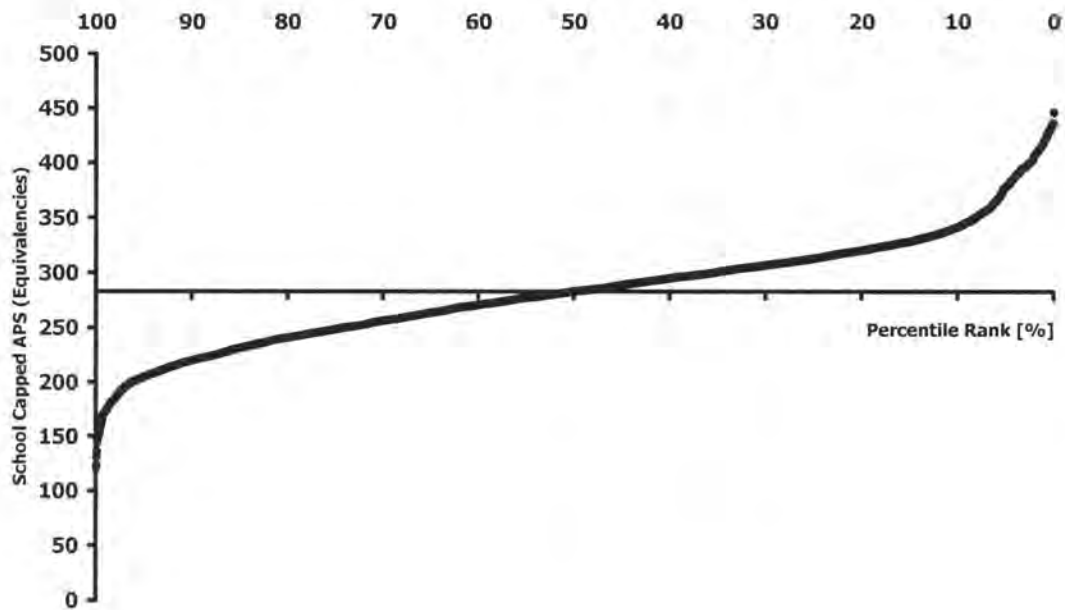
Graph 7: National distribution of 2004 KS3 overall APS

National mean 34.1



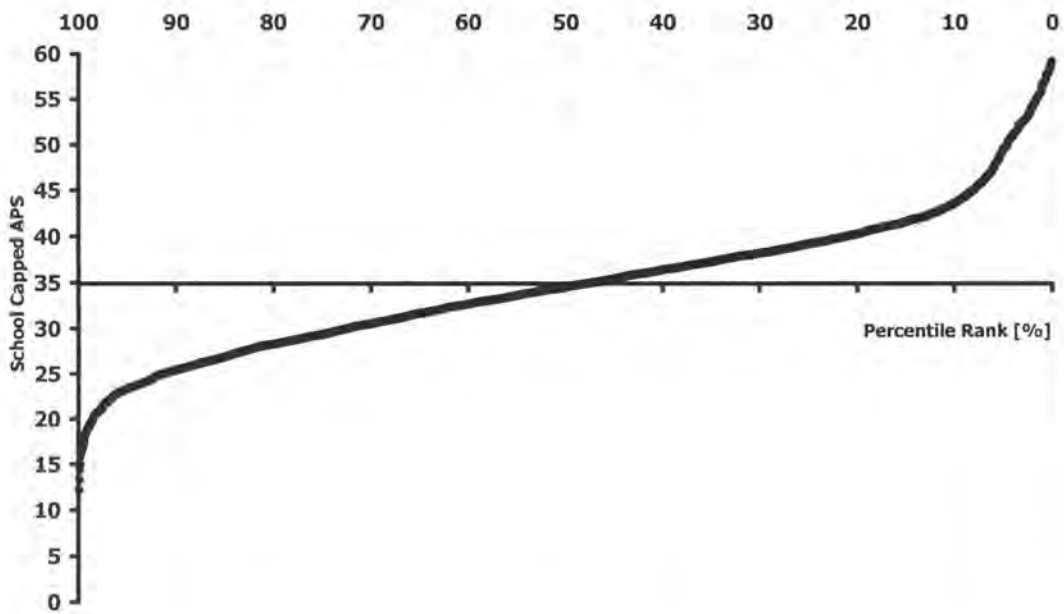
Graph 8: National distribution of 2004 KS4 average capped total points score (GCSE and equivalents) using the current scoring system

The horizontal axis is at the national mean, 281.7.



Graph 9: National distribution of 2004 KS4 average capped total points score (GCSE and GNVQ only) using the old scoring system

The horizontal axis is at the national mean, 34.9.





## 4. Factors in the CVA model

### 4.1 Contextual factors

You may find that a school's CVA score does not initially accord with the progress you observe in the school. This may be due to the particular characteristics of large groups in the school and how the CVA model takes them into account. The data module explains how to interpret examples of such discrepancies and the tables in this section will help you to evaluate them.

CVA scores take into account the important contextual factors that affect progress, so that all pupils' progress may be compared fairly and the school's contribution isolated. We know that there is variation in the progress made nationally by different groups of pupils. The CVA model for any year examines the relative progress made by groups of pupils assessed in that year and derives a coefficient for each characteristic, such as female or eligible for free school meals (FSM). The largest group, White British in the case of ethnicity, is chosen as the control group and given a coefficient of zero. For other ethnic groups, the coefficient can be positive or negative, and can be interpreted as the difference in that year between the progress made nationally by the group and the control group.

The coefficients used in the CVA model provide information on the change in expected progress, expressed in points score, if a pupil's value for a characteristic changes by one unit. For some characteristics, such as female, the pupil's value can be only 1 for female or 0 for not female. For other characteristics, such as prior key stage APS, a range of values is possible. For each pupil the effect of each characteristic is added to give the expected points and the CVA found by subtracting this from the pupil's actual points.

Consequently, the coefficients with values further from zero have a bigger effect on the school's CVA score than those with values near to zero. However, the size of the coefficient does not indicate the relative importance of each variable in the national overall model of CVA since it takes no account of the proportion of pupils who have this characteristic. For both Key Stage 1 to 2 and Key Stage 2 to 4 CVA models, prior attainment is by far the most important factor for most pupils.

In 2004, for Key Stage 1 to 2 the factors that were found to be significant in determining CVA were all at pupil level. For Key Stage 2 to 4, two factors at school level were found to be significant, the average points score at Key Stage 2 for the cohort of pupils and the variability in APS for that cohort. For these factors the value at school level is applied to each individual pupil in the school to determine each pupil's CVA.

The tables below show the values of the coefficients in the 2004 KS1-2 and KS2-4 CVA models.

Table 21: coefficients for characteristics in the 2004 KS1-2 CVA model

Characteristic	P or S	Coefficient
Chinese	P	1.05
Any other Asian background	P	0.57
Any other ethnic group	P	0.57
Any other white background	P	0.51
KS1 (reading, writing, maths) APS	P	0.44
White and Asian	P	0.30
White and Black African	P	0.29
Bangladeshi	P	0.28
EAL	P	0.26
KS1 maths points – KS1 overall APS	P	0.23
Any other mixed background	P	0.22
Irish	P	0.17
Black African	P	0.12
Indian	P	0.11
KS1 reading points – KS1 overall APS	P	0.07
Quadratic of KS1 APS	P	0.012
White British, male, non-FSM, non-EAL, non-SEN, non-in care <sup>1</sup>	P	0
White and Black Caribbean	P	-0.03
In care while at this school	P	-0.08
Any other black background	P	-0.12
Joined school not in July / Aug / Sept Yr 3,4,5	P	-0.18
Unclassified ethnic group	P	-0.19
Pakistani	P	-0.25
Caribbean	P	-0.30
Female	P	-0.34
FSM	P	-0.40
Age within yr Aug = 1, July = 2, ... Sept = 12	P	-0.53
Traveller of Irish heritage	P	-0.68
Joined school after Sept Yr 6	P	-0.71
Gypsy / Roma	P	-0.79
IDACI score of postcode <sup>2</sup>	P	-0.96
SEN other (school action) A	P	-1.53
SEN statemented / "action plus" / Q	P	-2.33

1 each of the separate characteristics is given a coefficient of 0

2 'Income Deprivation Affecting Children Index': the proportion of children under the age of 16 in a postcode area that live in low income households. The values range from 0 to 1 with the average being roughly 0.14. Further information is available from <http://www.odpm.gov.uk/>

P represents a pupil level coefficient and S represents a school level coefficient.

The constant used in the model is 18.58.

Table 22: coefficients for characteristics in the 2004 KS2-4 CVA model

Characteristic	P or S	Coefficient
Black African	P	35.55
Bangladeshi	P	32.09
Chinese	P	29.73
Pakistani	P	27.06
EAL	P	25.54
Any other ethnic group	P	25.32
Indian	P	24.48
Any other Asian background	P	22.95
Female	P	17.37
Caribbean	P	15.04
White and Asian	P	13.30
Any other white background	P	12.53
Any other black background	P	8.19
White and Black African	P	6.32
Any other mixed background	P	5.14
KS2 Average Point Score of Cohort	S	3.32
KS2 English points – KS2 overall APS	P	2.30
Quadratic of KS2 APS	P	0.36
KS2 maths points – KS2 overall APS	P	0.33
Irish	P	0.10
White British, male, non-FSM, non-EAL, non-SEN, non-in care <sup>1</sup>	P	0
White and Black Caribbean	P	-0.53
KS2 overall APS from fine grades	P	-3.92
KS2 SD (standard deviation) in cohort KS2 APS	S	-6.33
Age (yrs) (15-16 in OLS, 0-1 in MLM)	P	-14.01
FSM	P	-21.30
Joined school not in July / Aug / Sept Yr 7- 9	P	-23.76
Traveller of Irish heritage	P	-25.96
Unclassified ethnic group	P	-35.55
In care while at this school	P	-36.01
SEN other (school action) A	P	-39.21
Gypsy / Roma	P	-45.06
SEN statemented / "action plus" / Q	P	-65.02
IDACI score of postcode <sup>2</sup>	P	-65.09
Joined school after Sept Yr 10	P	-75.39

1 each of the separate characteristics is given a coefficient of 0

2 'Income Deprivation Affecting Children Index': the proportion of children under the age of 16 in a postcode area that live in low income households. The values range from 0 to 1 with the average being roughly 0.14. Further information is available from <http://www.odpm.gov.uk/>

P represents a pupil level coefficient and S represents a school level coefficient.

The constant used in the model is 89.94.

## 4.2 Shrinkage, multipliers and confidence intervals

When you are deciding whether a difference in points score represents exceptional progress, you cannot do this directly from the CVA score because it is not expressed in points. It is actually points multiplied by a shrinkage factor which depends upon the size of the cohort. For relatively small cohorts you will need to take the shrinkage factor into account when the points it represents appear to indicate exceptional progress, in order to check whether they do.

A school's CVA score is an estimate of the progress attributable to the school, although it is based upon the results of a group of pupils who may have unrepresentative characteristics, such as having a private tutor for all subjects. To calculate the school's CVA score, each individual pupil's CVA is first worked out in points derived from national curriculum levels or Key Stage 4 grades, then the average is found. For small schools this provides less information from which to derive an estimate for the CVA score than for larger schools. So the method for calculating adjusts for this increased uncertainty by multiplying by a shrinkage factor between zero and one. This has the effect of moving the CVA score for all schools nearer to the national average than was their average CVA in terms of points. It depends on the size of the cohort and has most effect on smaller schools. It moves them further towards the national average than larger schools. As the factor is roughly 0.9 for larger schools it moves their CVA score only slightly nearer to the national average than was their CVA in points.

The table below, for the 2004 overall CVA models, shows how the shrinkage from points to CVA score depends on the cohort size. The multiplier is the inverse of the shrinkage factor. It is provided in the table to help you calculate a school's points difference from average when you know how much its CVA score differs from average.

- Points difference x shrinkage factor gives CVA score difference
- CVA score difference x multiplier gives points difference

The table below also shows the size of the 95% confidence interval (CI) around the CVA score. It depends on the number of pupils in the cohort. The larger the cohort the smaller the confidence interval, as we are more confident that the CVA score reflects progress attributable to the school when it is based on the results of a large number of pupils who are therefore unlikely to have unrepresentative characteristics. The 95% confidence interval gives the range of values either side of the CVA score within which we are 95% confident that the actual progress attributable to the school lies.

Table 23: CVA shrinkage factors, multipliers and confidence intervals

These are for the 2004 CVA models only.

Cohort / Group Size	KS1-2 CVA			KS2-4 CVA		
	Shrinkage	Multiplier	95% CI*	Shrinkage	Multiplier	95% CI*
1	0.21	4.79	1.87	0.07	14.63	34.78
2	0.35	2.90	1.70	0.13	7.81	33.65
3	0.44	2.26	1.57	0.18	5.54	32.62
4	0.51	1.95	1.47	0.23	4.41	31.68
5	0.57	1.76	1.38	0.27	3.73	30.82
10	0.72	1.38	1.10	0.42	2.36	27.37
15	0.80	1.25	0.94	0.52	1.91	24.86
20	0.84	1.19	0.84	0.59	1.68	22.94
25	0.87	1.15	0.76	0.65	1.55	21.40
35	0.90	1.11	0.66	0.72	1.39	19.08
50	0.93	1.08	0.56	0.79	1.27	16.68
75	0.95	1.05	0.46	0.85	1.18	14.13
100	0.96	1.04	0.40	0.88	1.14	12.48
200	0.98	1.02	0.29	0.94	1.07	9.10
250	0.99	1.02	0.26	0.95	1.05	8.19
300	0.99	1.01	0.23	0.96	1.05	7.51

\* a confidence interval of 0.4 stretches 0.4 above and 0.4 below the CVA score

The figures in Table 23 may be applied to overall CVA scores for key stages and groups. They are a close enough approximation to also be used for KS1-2 subject CVA scores. However, they are not appropriate for use with KS2-4 subject CVA scores, which have a much smaller range than do the overall scores.



## 5. Notes for judging standards and progress

### Check against the national distribution

You should be mindful of the national distribution graphs in section 3, from which you can estimate where the school's result lies. In particular, you should note whether it lies on the steep part at either end of the curve, in which case grades 1 or 4 may be appropriate. However, you should not pay undue attention to its precise percentile rank because this does not take account of the school's confidence interval (CI). The school's true standards or progress, rather than the results of the particular cohort of pupils, could lie near either end of its CI. If this were relatively wide, the school's rank might change substantially, particularly if its result was not on the steep part of the graph. The rank could actually change to the positions shown by two thirds of the CI.

### Questions to ask yourself about differences between school and national average results

1. What educational importance do they have? Is the difference exceptional? (Bear in mind the rough guide to exceptional performance.)
2. Are they statistically significant? (Bear in mind the national proportion that is significant.)
3. How much do they vary between key stages, subjects and groups?

### Educational importance

Table 24 gives a rough guide for evaluating the educational importance of differences from national averages in attainment and progress, and judging whether they are exceptional. For any key stage, subject or group for which differences exceed the number of points in the table, performance is either exceptionally high or exceptionally low, as explained in sections 1.1c and 1.2b.

Table 24: Rough guide to exceptionally high or low performance at each key stage

	Proportion of pupils gaining one level or grade different*	Points score difference for an individual subject	Difference in overall core APS at KS1 to 3 or capped total score at KS4
KS1 attainment	1/3	2	2
KS2 attainment	5/12	2.5	2.5
KS3 attainment	1/2	3	3
KS1-2 <b>progress</b>	1/4	1.5	1.5
KS4 attainment	all	6	48
KS2-4 <b>progress</b>	1/2	3	24
KS4 attainment (old scoring system)	all	1	8

\* difference from national average for attainment judgements, difference from national expected progress for progress judgements. You can also use this guide to judge the educational importance of other differences, such as year-on-year or between groups or subjects.

## Data indicators for graded judgements on standards and progress

Your two separate professional judgements on standards and on progress should be informed, but not constrained, by the data indicators shown in Table 25. For each grade, the indicators in **each** of the three columns should be present.

When judging standards, you should bear in mind the high proportion of schools with significant APS results and weigh up the importance of significant results at thresholds, such as sig- for subjects at Level 7+, and the absence of sig- (a positive measure) for 'no passes' at KS4 or '<' the lowest level in KS1-3 tables.

Table 25: Data indicators for graded judgements on standards and progress

Grade	Educational importance	Statistical significance	Variation between key stages, subjects and groups
1	Exceptionally high (as in the rough guide) i.e. highly positive on all measures	Sig+ on all measures if a large cohort, not necessarily sig+ for a very small cohort as long as consistent over time	Consistently high performance
2	No example of exceptionally low or large negative for a key stage, subject or group, even for small groups, no examples of large negatives for individuals without a convincing explanation, some positive	No examples of sig- for groups, no other important examples of sig-	No large variation that includes substantially below average performance (learners with learning difficulties and disabilities should not have notably lower CVA than others)
3	The only example of large negative being for a very small group or a few individuals		
4	Exceptionally low (as in the rough guide) i.e. large negative at a key stage or for a core subject, a number of courses or any group of a significant size	Sig- if a large cohort or group, not necessarily sig- for a very small cohort if consistently low over time	Consistently very low performance or varying with a very low key stage, subject, group or significant number of individuals

Progress grades: 1 outstanding, 2 good, 3 satisfactory, 4 inadequate

Grades for standards of attainment: 1 exceptionally and consistently high, 2 generally above average with none significantly below average, 3 broadly average, 4 exceptionally low

### Steps to take when grading

Firstly, are the data indicators in each column for grade 4 present?

Secondly, are the data indicators in each column for grade 1 present?

Thirdly, are the data indicators in each column for grade 2 present?

Grade 3 is indicated when none of these is present.