



Department  
for Education

# **Primary school accountability in 2019: technical guide**

**A technical guide for primary maintained  
schools, academies and free schools**

**December 2019**

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# Summary

## About this guidance

This guidance explains the primary accountability measures, including how a school's progress scores are calculated.

Schools received their own revised progress scores on 11 December 2019. Annex B of this guidance provides the national distribution of schools' progress scores in 2019 to help schools interpret and contextualise their own scores.

The assessments used to measure the progress that schools help their pupils achieve between Key Stage 1 and Key Stage 2 are:

- Key Stage 1 results in English reading, English writing and mathematics teacher assessments, that were administered in summer 2015, when the 2019 Year 6 cohort were aged 7; and
- Key Stage 2 results in English reading and mathematics tests, reported as scaled scores, and the English writing teacher assessments that were administered in summer 2019.

## Updates to the guidance in December 2019

As in previous versions, the tables and diagrams in the guidance have been updated to reflect the revised 2019 data.

## Expiry or review date

This guide will next be reviewed in September 2020.

## Who is this guidance for?

This guide is for:

- head teachers, teachers, other school staff and governing bodies in all primary schools, including maintained schools, academies, alternative provision, free schools and special schools;
- local authorities; and
- academy trusts.

## Primary school accountability measures

There continues to be a range of forms of accountability in place for primary schools, including published data and school inspection.

### 2019 performance tables

The headline measures, which will appear in the performance tables in December 2019, include progress and attainment measures. These are:

- the percentage of pupils achieving the 'expected standard' in English reading, English writing and mathematics at the end of Key Stage 2
- the pupils' average scaled score:
  - in English reading at the end of Key Stage 2
  - in mathematics at the end of Key Stage 2
- the percentage of pupils who achieve at a higher standard in English reading, English writing and mathematics
- the pupils' average progress:
  - in English reading
  - in English writing
  - in mathematics.

The percentage of pupils achieving the expected standard is a combined measure across the three subjects. To be counted towards the measure, a pupil must have a scaled score of 100 or more in reading and a scaled score of 100 or more in mathematics; and have been teacher assessed in writing as 'working at the expected standard' or 'working at greater depth'.

The percentage of pupils achieving at a higher standard is also a combined measure across the three subjects. To be counted towards the measure, a pupil must have a 'high scaled score' of 110 or more in reading and mathematics; and have been teacher assessed in writing as 'working at greater depth'.

Unlike the expected standard, which was determined by the Standards and Testing Agency's standard-setting teacher panel, the high score was determined by the department solely with reference to the distribution of pupils' test results, to identify the pupils who achieved the highest marks on the tests.

In addition, the performance tables also include a range of measures, which cover attainment and progress in individual subjects and for various pupil groups. For example,

the percentage of pupils gaining the expected standard in English grammar, punctuation and spelling. Further details about what is included in the performance tables are set out in the 2019 Statement of Intent<sup>1</sup>.

## **Schools that may benefit from support**

From September 2019, the floor and coasting standards no longer apply. The Government has set out a new support offer for schools that were identified as 'requires improvement' in their latest Ofsted report<sup>2</sup>.

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<sup>1</sup> <https://www.gov.uk/government/publications/school-and-college-performance-tables-statements-of-intent>.

<sup>2</sup> <https://www.gov.uk/guidance/school-improvement-support-for-the-2019-to-2020-academic-year>.

# Calculating a school's progress scores

## Overview of the progress measures

The progress measures aim to capture the progress that pupils make from the end of Key Stage 1 to the end of primary school. They are a type of value-added measure, which means that pupils' results are compared to the actual achievements of other pupils nationally with similar prior attainment.

This type of progress measure rewards schools for making progress with all of their pupils, whether they are low-, middle- or high-attainers. Any increase in attainment achieved by each pupil is reflected in the school's progress scores.

This measure is a school-level accountability measure. Progress is calculated for individual pupils solely in order to calculate the school's overall progress scores. Schools should not share individual pupil progress scores with pupils or parents.

Schools should continue to focus on improving the attainment of all their pupils and report on their attainment and progress to parents, as specified in the Assessment and Reporting Arrangements for Key Stage 1<sup>3</sup> and Key Stage 2<sup>4</sup>. For more information, including on assessment without levels, see the Standard and Testing Agency's pages on Gov.uk<sup>5</sup>.

A school's progress scores in English reading, English writing and mathematics are calculated as the average of its pupils' subject progress scores. These scores give an indication of whether, as a group, pupils in the school made above or below average progress in a subject compared with pupils with similar starting points in other schools.

## Calculating an individual pupil's progress scores

Progress scores are calculated for individual pupils for the sole purpose of constructing a school progress score. Pupil scores are calculated separately for English reading, English writing and mathematics. Pupils who do not have Key Stage 1 data for all of English reading, English writing and mathematics (for example, those who entered a school from another jurisdiction, or who were absent at the time of the Key Stage 1

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<sup>3</sup> <https://www.gov.uk/government/publications/2019-key-stage-1-assessment-and-reporting-arrangements-ara>.

<sup>4</sup> <https://www.gov.uk/government/publications/2019-key-stage-2-assessment-and-reporting-arrangements-ara>.

<sup>5</sup> <https://www.gov.uk/government/organisations/standards-and-testing-agency>.

assessments), cannot be included in the progress measures, but their Key Stage 2 scores will be included in their school's attainment measures.

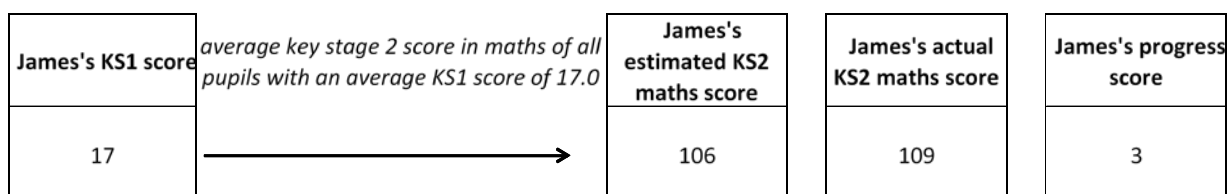
**The first step** is to assign pupils into groups with other pupils nationally, who had similar starting points (Key Stage 1 achievement, see pages 12-13).

**The second step** is to work out the average Key Stage 2 score for each prior attainment group. This is worked out as the mean average of the actual Key Stage 2 scores of all the pupils in the prior attainment group.

**Finally**, a pupil's progress score is calculated. This is done by working out the difference between their actual Key Stage 2 outcome and the average Key Stage 2 outcome for the other pupils nationally, who are in the same prior attainment group.

For example:

- James has an average Key Stage 1 score of 17.0, which means he is in prior attainment group 19 (for further explanation of prior attainment groups, please see pages 12-13)
- his result in the Key Stage 2 mathematics test is a scaled score of 109
- the national average scaled score in mathematics for pupils with an average Key Stage 1 score of 17 is 106
- James, therefore, has a mathematics progress score of +3.0



In this example, James has met the 'expected standard' (a scaled score of 100 or more). He has done better than other pupils with the same Key Stage 1 attainment and, therefore, has a positive progress score. This will not necessarily be the case for all pupils.

Some pupils will meet the 'expected standard', but will make less progress compared to other pupils in their prior attainment group.

Other pupils will fail to meet the 'expected standard', but will make more progress than the other pupils in their prior attainment group.



## Calculating a school's progress scores

A school's progress score, for a subject, is the mean average of its pupils' progress scores in that subject.

For example,

James is one of 60 pupils in his school's Key Stage 2 cohort. These pupils have mathematics progress scores as follows:

Pupil #	Pupil name	Mathematics Progress score
1	James	+3.0
2	Chloe	+1.2
...	...	...
59	Ebony	-6.5
60	Harry	-1.9
...	<b>Sum</b>	<b>+132.4</b>

The school's mathematics progress score will be  $132.4 / 60 = +2.2$

This process is then repeated for each subject.

Schools are then allocated three progress scores:

- one for English reading
- one for English writing<sup>6</sup>
- one for mathematics

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<sup>6</sup> See page 17 for an explanation of how we calculate writing progress scores.

## Pupils with extremely negative progress scores

We limit how negative<sup>7</sup> a pupil's progress score can be when calculating the school average. These pupils still have large negative scores (to reflect that they have made much less progress than other pupils in the same prior attainment group as them), but the disproportionate effect they have on a school's score has been reduced.

We do this by setting a minimum progress score that can be assigned to pupils within the prior attainment groups (for further explanation of prior attainment groups please see pages 12-13) where extremely negative scores exist. Some of the prior attainment groups will not have a minimum progress score threshold set. These are prior attainment groups 1 to 7<sup>8</sup>, where the average scaled scores at Key Stage 2 are not high enough to allow for extreme negative progress scores. For example:

- if the average scale score at Key Stage 2 for prior attainment group 7 was 83 in English reading, then the minimum possible progress score for that group would be -24 (59-83<sup>9</sup>). This minimum progress score would be above the threshold for this prior attainment group as -24 is not an extremely negative score; but
- If the average scaled score at Key Stage 2 for prior attainment group 16 was 104 in English reading, then the minimum possible score for that group would be -45 (59-104). This minimum progress score is extremely negative compared to other pupils nationally in group 16, and would be below the limit for prior attainment group 16. Therefore, the pupil's score would be adjusted to -14.60.

Where a minimum score is set for a prior attainment group, this is determined based on the variation in pupil progress scores within that prior attainment group (as measured by the standard deviation). The minimum scores are fixed at a set number of standard deviations below the mean so that approximately 1% of pupils are identified nationally<sup>10</sup> (in most cases, this is no more than 1 or 2 pupils per school). By design, these minimum scores will change each year. As such, predicting which pupils will, and will not, have their score affected by this methodology change, in advance of progress scores being made available, was not possible. Further information on the calculation, the number of

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<sup>7</sup> We are not setting a maximum limit on how positive a pupil's progress score can be as there are much smaller numbers of extremely positive progress scores that have a disproportionate impact than extremely negative ones.

<sup>8</sup> Additionally for writing, prior attainment group 8 has an average score which is not high enough to allow for extreme negative progress scores (see page 31 for the minimal thresholds for each prior attainment group)

<sup>9</sup> The lowest possible points a pupil can get at Key Stage 2 in the progress model is 59, as set out on page 19.

<sup>10</sup> Due to natural fluctuation of performance year-on-year, it may not be possible to use the same standard deviation value each year to calculate the minimum scores.

standard deviation(s) and minimum thresholds per prior attainment group is available in annex C.

The school performance tables published on 13 December 2019 display the progress figures calculated using the methodology outlined below. However, we have also published the figures that do not place limits on pupil progress scores for transparency and to help inspectors and others identify how particular schools have been affected.

## Allocating points scores

### Key Stage 1 prior attainment groupings

To calculate progress scores, pupils are allocated into prior attainment groupings with all other pupils nationally with similar Key Stage 1 attainment.

In 2019, pupils' prior attainment was based on their teacher assessments at the end of Key Stage 1. These assessments took place in 2015 and were reported in national curriculum levels. Individual Key Stage 1 subject teacher assessments were converted into points as outlined in the table below.

### Key Stage 1 point scores for all subjects

National curriculum teacher assessment level	Point score equivalent
Level 4	27
Level 3	21
Level 2A	17
Level 2B or undifferentiated Level 2	15
Level 2C	13
Level 1	9
W – Working towards Level 1	See the next section
M – Missing	Disregard
D – Disapplied	Disregard
A – Absent	Disregard

A pupil's Key Stage 1 point scores for English reading, English writing and mathematics is then combined to give them a Key Stage 1 average point score (APS).

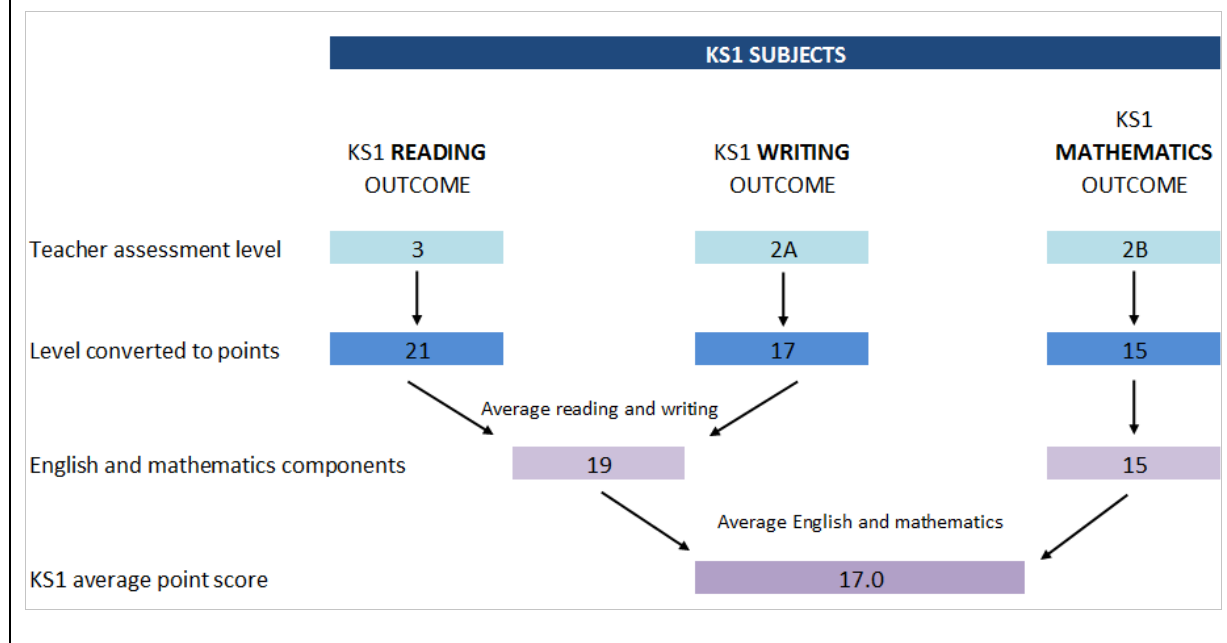
The average point score is weighted 50:50 for English and mathematics, as this provides a strong correlation to Key Stage 2 results in all three subjects – English reading, English writing and mathematics.

This is calculated by working out an average score for English (reading and writing) and giving this equal weight alongside mathematics.

## Worked example

James's Key Stage 1 assessment results were Level 3, Level 2A and Level 2B in English reading, English writing and mathematics respectively.

The diagram below sets out how these are converted into an average point score for James.



Pupils stay in the same prior attainment group, which is based on their average point score at Key Stage 1, when we calculate their separate progress scores in English reading, English writing and mathematics.

## Pupils working below level 1 at Key Stage 1

As we do with all other pupils, we allocate points to pupils working below level 1 at Key Stage 1. To recognise differences in the abilities of these pupils, we determine different points<sup>11</sup> allocate to them. The following table shows the points scores associated with each P scale for KS1 assessments that took place in 2015:

<sup>11</sup> The allocation of points changed at the beginning of the 2019/20 academic year due to the changes in the revised pre-key stage standards. Please see following section on 'Pupils below the standard of the test or assessment in 2019', from page 18.

## Key Stage 1 point scores for pupils below level 1 for all subjects

Teacher assessment	Point score equivalent
W – Working towards L1, but not on P scales	3
P8	2.75
P7	2.5
P6	2.25
P5	2.0
P4	1.75
P3ii	1.5
P3i	1.25
P2ii	1.0
P2i	0.75
P1ii	0.50
P1i	0.25

The following rules apply to the way we allocate these points to each subject:

### English reading and writing

- If a pupil is teacher assessed as working towards level 1 (W), but has P4-8 in reading, the P scales score is used as the points score.
- If a pupil does not have P4-8 in reading, but has P1-3 in English, this is used as the points score.
- If a pupil is teacher-assessed as working towards level 1, but does not have P4-8 in reading or P1-3 in English, then they are given three points.
- As above for writing.

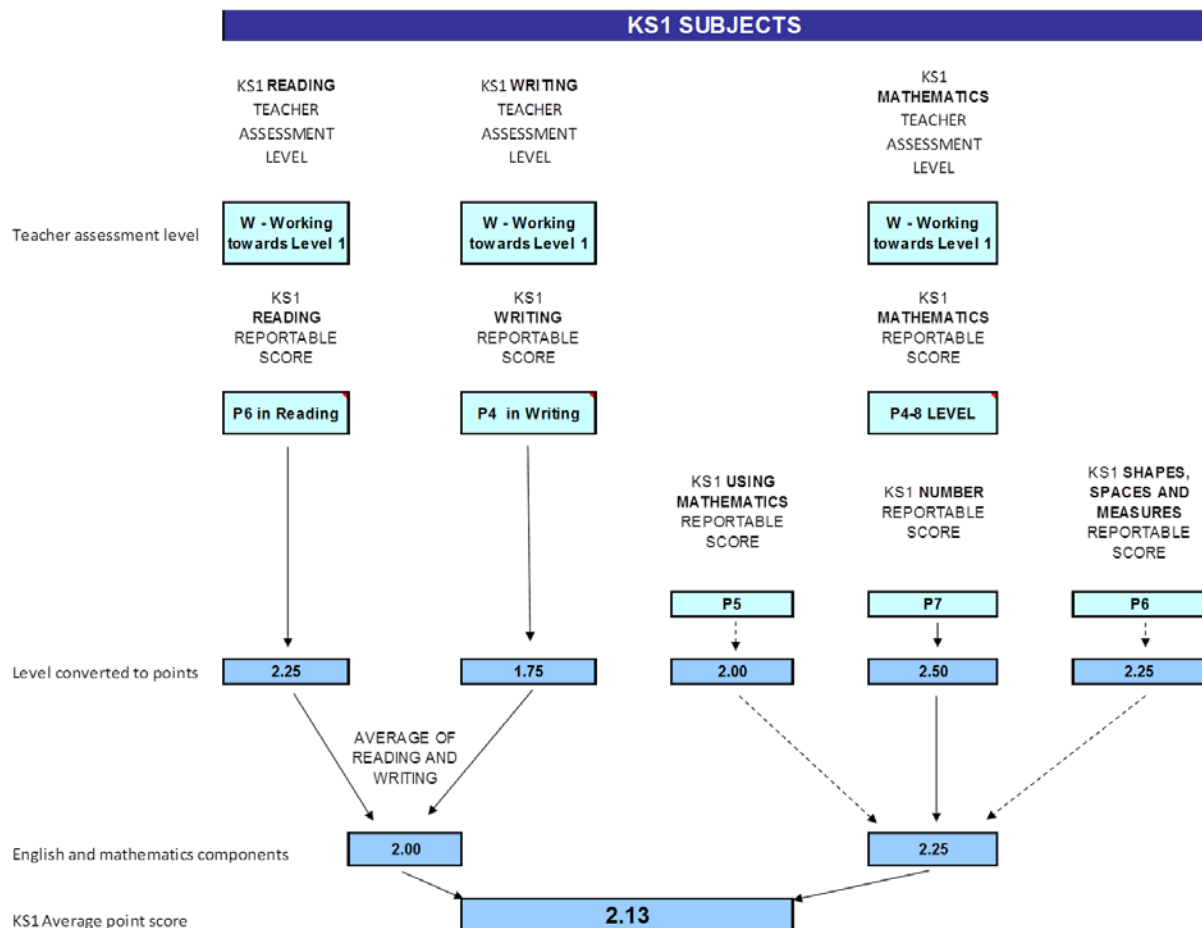
### Mathematics

- If a pupil is teacher-assessed as working towards level 1 (W), but has P4-8 in use of mathematics, numbers and shapes, an average is taken.
- If a pupil does not have P4-8 in mathematics, numbers and shapes, but does have P1-3 in mathematics, then the P scales score is used as the points score.
- If a pupil is teacher-assessed as working towards level 1, but does not have P4-8 in mathematics, numbers and shapes or P1-3 in mathematics, then they are given three points.

Allocating points to pupils below the level of the test in this way means that when we determine prior attainment groups, there are six P scale assessment groups that cover

those who average broadly at the equivalent of P1-3, P4, P5, P6, P7 and P8. This is to keep pupils with similar prior attainment in the same prior attainment group, allowing like-for-like comparisons to be made of their progress whilst keeping group sizes large enough to ensure national averages are as reliable as possible.

## Worked example



## Prior attainment groups

The process described above created 24 prior attainment groups to which pupils have been allocated depending on their Key Stage 1 results.

Schools can use the table below to see which prior attainment group a pupil will have been allocated to depending on their Key Stage 1 average point score and the national Key Stage 2 averages for each of these groups in 2019 by subject. As described earlier in this guide, a pupil's progress score is the difference between their own Key Stage 2 result and the national average Key Stage 2 result for their prior attainment group.

<b>Prior Attainment Group (PAG)</b>	<b>KS1 average points score</b>	<b>Average KS2 Reading Score for PAG</b>	<b>Average KS2 Writing Score for PAG</b>	<b>Average KS2 Maths Score for PAG</b>
1	>0 to <1.75	61.82	61.76	62.11
2	>=1.75 to <2	66.02	65.58	66.71
3	>=2 to <2.25	69.35	68.75	70.16
4	>=2.25 to <2.5	72.74	72.27	73.88
5	>=2.5 to <2.75	76.49	75.53	77.44
6	>=2.75 to <3	79.26	78.68	80.18
7	>=3 to <6	82.87	82.00	85.04
8	>=6 to <9	86.40	84.79	88.46
9	>=9 to <10	89.04	88.03	90.38
10	>=10 to <12	93.43	91.88	94.72
11	>=12 to <13	95.69	93.70	97.59
12	>=13 to <14	97.68	96.36	98.66
13	>=14 to <14.5	99.08	98.24	100.51
14	>=14.5 to <15	100.56	99.10	101.79
15	>=15 to <15.5	101.64	100.90	102.73
16	>=15.5 to <16	103.70	101.97	103.56
17	>=16 to <16.5	103.70	102.46	105.10
18	>=16.5 to <17	105.31	103.06	106.09
19	>=17 to <18	106.64	104.47	106.47
20	>=18 to <19	108.00	105.44	107.81
21	>=19 to <20	109.00	106.68	109.00
22	>=20 to <21	109.96	106.95	110.82
23	>=21 to <21.5	112.33	110.06	112.10
24	>= 21.5	115.46	111.74	115.57



## Key Stage 2 points scores

### English reading and mathematics tests

For English reading and mathematics, Key Stage 2 test results have been reported as scaled scores, with 100 as the 'expected standard'. The scaled score for each subject is used as the pupil's Key Stage 2 outcome in the progress score calculation.

### English writing teacher assessment

In 2018/2019, as in previous years, Key Stage 2 English writing results were reported as teacher assessments. Pupils working at the standard of the national curriculum were assessed against the revised statutory framework for the teacher assessment of writing, first used in 2017/2018. The framework includes three categories: working towards the expected standard, working at the expected standard and working at greater depth.

For the purpose of calculating writing progress scores **only**, pupils were allocated points for each of the teacher assessment outcomes. Pupils still receive their teacher assessment as their Key Stage 2 outcome and no pupil will receive our point score as their Key Stage 2 outcome. The points that were allocated to each teacher assessment category are detailed below:

Teacher assessed writing categories	Points (within the scaled score range)
Working towards the standard	91
Working at the expected standard	103
Working at greater depth	113

The same point score is attached to all pupils in the same category. This is because there are only three categories of teacher assessment for those working at the standard of the Key Stage 2 framework and it was therefore not possible to differentiate between pupils within each category. This means, for example, that all pupils working at the expected standard were allocated 103 points.

The points for English writing have been guided by outcomes on the Key Stage 2 English reading and mathematics tests, and performance in English writing. The points were determined by considering the percentage of pupils achieving each category of English writing teacher assessment, identifying the corresponding percentages of pupils on the

English reading and mathematics tests and finding the mean scaled score for each group. The points allocated to each writing teacher assessment reflect the most appropriate points for a typical pupil's performance in English writing.

This method means that the writing points are based on available information that aligns with a pupil's performance in English reading and mathematics.

## **Pupils below the standard of the test or assessment in 2019**

In 2018/19, the new pre-key stage standards were used for the first time to report teacher assessment in English reading, English writing and mathematics for pupils working below the standard of national curriculum assessments engaged in subject-specific study. The pre-key stage standards replaced the interim pre-key stage standards and P scales 5-8. The pre-key stage standards include four standards at Key Stage 1 and six standards at key stage 2.

P scales 1 to 4 will continue to be used for the statutory assessment of pupils not yet engaged in subject-specific study at the end of Key Stage 2 (and Key Stage 1) until the end of the 2019/20 academic year. From the 2020/21 academic year, we will be replacing P scales 1 to 4 with a new assessment approach, based on the seven aspects of engagement model.

As we have done in previous years, we have allocated a nominal point for pupils without a pre-key stage teacher assessment who were entered for the test but gained too few marks to achieve a scaled score. In 2019, the points assigned are 79.

## **Key Stage 2 points for pupils below the standard of the test in 2019**

The points allocated to each teacher assessment category are detailed below:

<b>Pre-key stage teacher assessment for pupils below the level of the test at Key Stage 2</b>	<b>Points (below the scaled score range)</b>
Standard 6 (working at the KS1 expected standard)	79
Standard 5 (working towards the KS1 expected standard)	76
Standard 4	73
Standard 3	70
Standard 2	67

Standard 1	64
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The points allocated to P scale assessments are detailed below:

<b>P scale teacher assessment for pupils below the level of the test and below pre-key stage standards at Key Stage 2</b>	<b>Points (below the scaled score range)</b>
P4	61
P1i to P3ii	59
Pupils below the pre-key stage standard but not on P scales	62

The following rules apply to the way we allocate these points to each subject:

### English reading and writing

- If a pupil is teacher-assessed as working below the pre-key stage standards (BLW), but has P4 in reading, then P4 is used as the points score.
- If a pupil does not have P4 in reading, but has P1-3 in English, this is used as the points score.
- If a pupil is teacher-assessed as working below the pre-key stage standards, but does not have P4 in reading or P1-3 in English, then they are given a point score of 62.
- As above for writing.

### Mathematics

- If a pupil is teacher assessed as working below the pre-key stage standards (BLW), but has P4 in use of mathematics, numbers and shapes, then P4 is used as the points score.
- If a pupil does not have P4 in mathematics, numbers and shapes, but does have P1-3 in mathematics, then the P scales score is used as the points score.
- If a pupil is teacher-assessed as working below the pre-key stages (BLW), but does not have P4 in use of mathematics, numbers and shapes or P1-3 in mathematics, then they are given a point score of 62.

## Interpreting a school's progress scores

Individual pupil-level progress scores are calculated in comparison to other pupils nationally. For all mainstream pupils nationally, the average progress score will be zero.

A school's progress scores for English reading, English writing and mathematics are calculated as its pupils' average progress scores. This means that school-level progress scores is presented as positive and negative numbers either side of zero.

- A score of zero means pupils in this school, on average, do about as well at Key Stage 2 as those with similar prior attainment nationally.
- A positive score means pupils in this school, on average, do better at Key Stage 2 than those with similar prior attainment nationally.
- A negative score means pupils in this school, on average, do not make as much progress by the end of Key Stage 2 as those with similar prior attainment nationally. A negative score does not necessarily mean a school is below the floor.

For example, a school with a mathematics progress score of -4 would mean that, on average, pupils in this school achieved 4 scaled score points lower in the Key Stage 2 mathematics test than other pupils with similar prior attainment nationally.

English writing progress scores differ from English reading and mathematics progress scores and do not directly relate to scaled scores. As there is no test in writing, Key Stage 2 teacher assessments are used to create the progress scores. To do this we assign points to teacher assessment before creating the progress scores in our model (see page 17). A progress score of -5 in English writing, therefore, could be seen as meaning pupils in this school on average achieve 5 points lower in our progress model than other pupils with similar prior attainment nationally.

A negative English reading score does not mean that pupils did not make any progress between Key Stages 1 and 2. A negative score means that they made less progress than other pupils nationally with similar prior attainment.

## What we publish for progress

Each school will have three published progress scores:

- average progress in English reading,
- average progress in English writing, and
- average progress in mathematics.

## Using performance data to predict individual pupils' scores and sharing pupils' progress data

The Government response to the Workload Advisory Group report 'Making Data Work'<sup>12</sup> provides advice to schools about proportionate use of setting predictions or targets for individual pupils to aid teaching. It makes that clear predicting pupils' attainment can sometimes be appropriate, but that pupils or their parents need not be routinely told the levels that they 'should' or 'are likely to' achieve at the end of Key Stages 1 or 2. The Group also stated that 'flight paths', where pupils are told the levels they will achieve based on the performance data of pupils with similar starting points in previous years are not valid as a prediction, as they understate the variation in pupil trajectories of development. Schools are not held to account by the Department for pupil targets and predictions, and local authorities or academy trusts should not routinely request such information.

Similarly, schools should not share individual pupil progress scores with pupils or parents. Schools should not try to predict pupil or school level progress scores in advance of official provisional data being available each September. The primary progress scores are an in-year relative measure.

### Confidence intervals

Progress results are calculated for a school based on a specific cohort of pupils. A school may have been just as effective, but have performed differently with a different set of pupils. Similarly, some pupils may be more likely to achieve high or low results independently of which school they attend. To account for the natural uncertainty, 95% confidence intervals around progress scores are provided as a proxy for the range of scores each school's underlying performance can be confidently said to lie within.

School progress scores should be interpreted alongside their associated confidence intervals.

If the lower bound of the school's confidence interval is greater than zero, it can be interpreted as meaning that the school has achieved greater than average progress compared to pupils with similar starting points nationally. Similarly, if the upper bound is below zero, then the school has made less than average progress. Where a confidence

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<sup>12</sup> <https://www.gov.uk/government/publications/teacher-workload-advisory-group-report-and-government-response>

interval overlaps zero, this means that the school's progress score is not significantly different from the national average.

The results of schools with small cohorts tend to have wider confidence intervals. This reflects the fact that performance of a small number of pupils taking Key Stage 2 tests can have a disproportionate effect on the school's overall results. Both the progress score and the confidence interval for a school should be taken into account when comparing with other schools or pupil groups.

Further information on confidence intervals is available in annex A.

## Pupils in particular circumstances

If pupils have moved schools between Key Stage 1 and Key Stage 2, we will retrieve their Key Stage 1 data and include them in the progress calculation for their current school.

In limited circumstances, schools may request that a pupil be omitted from performance measures (for example, if pupils have recently arrived from overseas).

There are also a number of circumstances where a pupil's results are not included in the progress measures, but are included in the attainment measure as 'not meeting' the expected standard. These include:

- pupils who are working at the standard of the tests, but who have no test data in English reading or mathematics, for example, due to absences;
- in cases where pupils have no Key Stage 1 data, their results are not included in the school's progress measures, but are included in the attainment measures.

## Annex A: Confidence intervals

Progress results are calculated for a school based on a specific cohort of pupils. A school may have been just as effective, but have performed differently with a different set of pupils. Similarly, some pupils may be more likely to achieve high or low results independently of which school they attend. To account for the natural uncertainty 95% confidence intervals around progress scores are provided as a proxy for the range of scores within which each school's underlying performance can be confidently said to lie.

The confidence interval, denoted  $[LowCI_s, UppCI_s]$ , is given by the formula:

$$[LowCI_s, UppCI_s] = [P_s - CI_s, P_s + CI_s]$$

where:

$LowCI_s$	is the lower confidence limit for the school's progress score
$UppCI_s$	is the upper confidence limit for the school's progress score
$P_s$	is the school's progress score
$CI_s$	is the size of the confidence interval for the school's progress score

$$CI_s = 1.96 \times \frac{\sigma_N}{\sqrt{n_s}}$$

where:

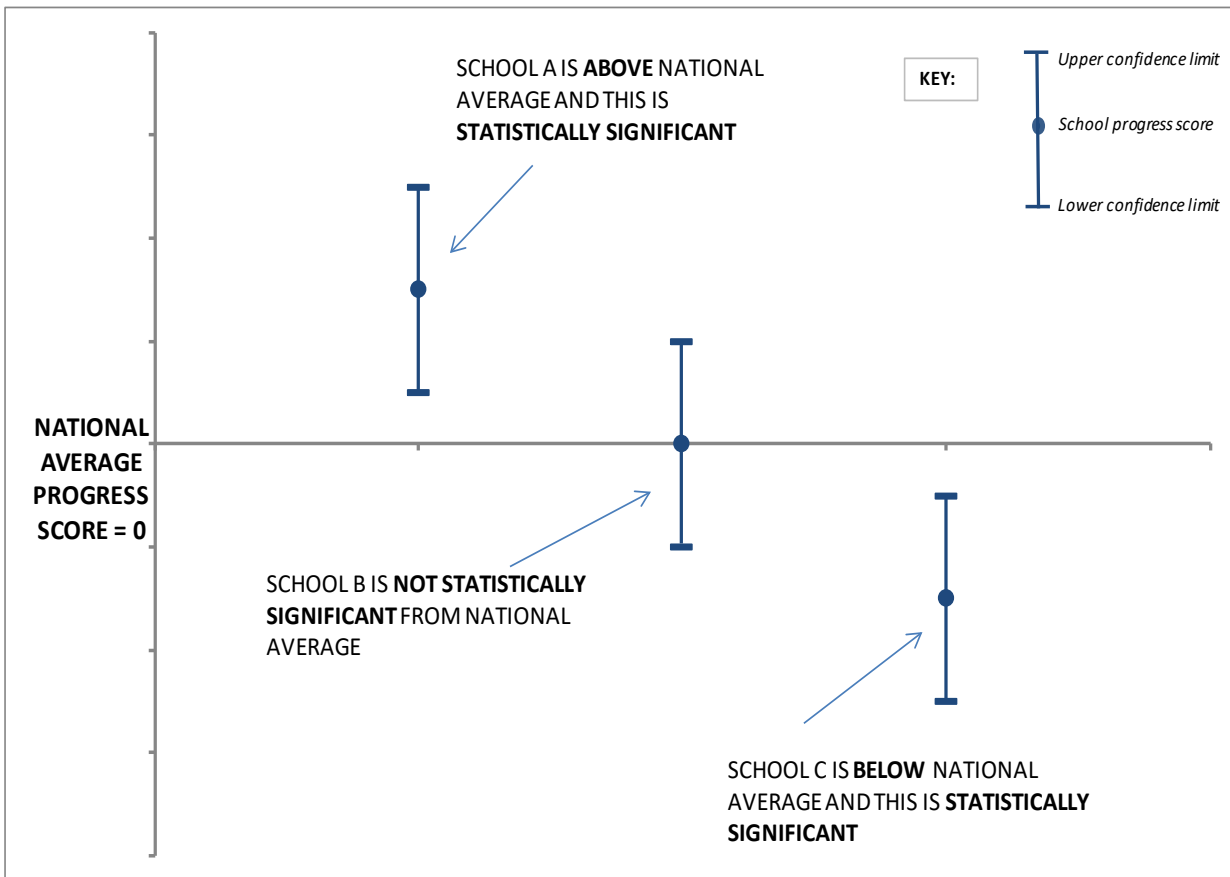
1.96	is the critical value for a 95% confidence interval;
$\sigma_N$	is the standard deviation of the progress scores for all eligible pupils <u>nationally</u> ;
$n_s$	is the number of eligible pupils that belong to the school

The national average progress score of all pupils at state-funded maintained mainstream school scores will be 0.

- when a school has their lower confidence interval limit higher than zero ( $LowCI_s > 0$ ), the school's progress score is above average and the result is statistically significant
- when a school has their upper confidence interval limit lower than zero ( $UppCI_s < 0$ ), the school's progress score is below average and the result is statistically significant



- in the other case when the confidence interval straddles zero ( $LowCI_s < 0 < UppCI_s$ ), the school's progress score is likely to be above or below average, and the result is not statistically significant



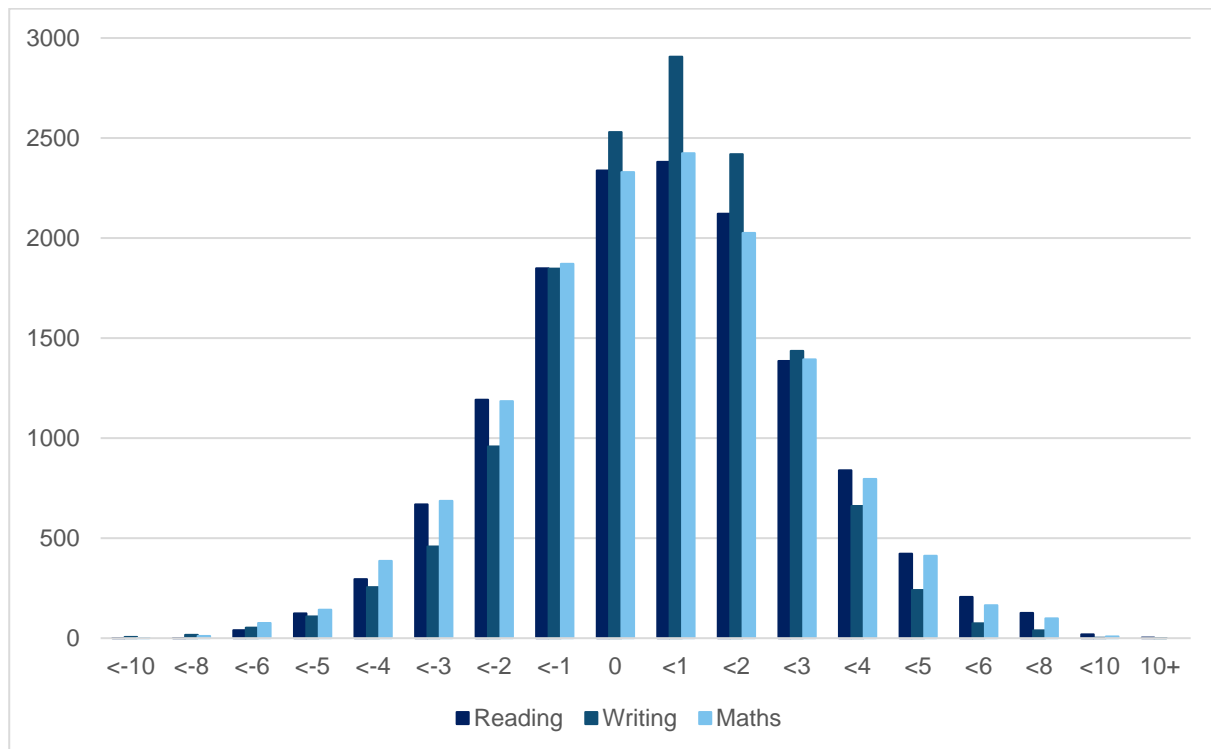
The table below provides the standard deviation of pupil progress scores in each of the three subjects. The standard deviation is a measure to quantify the amount of variation in a set of values. A low standard deviation indicates that the data points tend to be close to the mean, while a high standard deviation indicates the data are spread out over a wider range of values.

The values in the table have been used in the calculation of confidence intervals as outlined in this section.

Subject	Reading	Writing	Mathematics
Standard deviation	6.1736	5.6941	5.3899

## Annex B: Distribution of progress scores

The chart below and table shows the distribution of schools' progress scores by subject.



The table below provides the percentile distribution across the three subjects.

Percentiles	Reading	Writing	Maths
Top 5%	4.1 and above	3.3 and above	3.9 and above
Next 20%	1.7 to 4.0	1.5 to 3.2	1.6 to 3.8
Next 15%	0.7 to 1.6	0.7 to 1.4	0.7 to 1.5
Middle 20%	-0.4 to 0.6	-0.3 to 0.6	-0.5 to 0.6
Next 15%	-1.4 to -0.5	-1.1 to -0.4	-1.4 to -0.6
Next 20%	-3.6 to -1.5	-3.4 to -1.2	-3.9 to -1.5
Bottom 5%	-3.7 and below	-3.5 and below	-4.0 and below

## Annex C: Adjusting extremely negative progress scores – worked example, number of standard deviations and prior attainment group thresholds

### Adjusting progress scores for pupils with extremely negative progress scores (example of how we calculate it)

The threshold score applied to the pupil's progress score will depend on the prior attainment group that the pupil is in.

**The first step** is to ascertain the standard deviation of the bottom 1% of pupils for each of the subjects, English reading, English writing and mathematics.

**The second step** is to calculate the standard deviation of all pupils within each prior attainment group for each of the subjects.

**The third step** is to multiply the result from the first step with the results from the second step to give the threshold for each prior attainment group – the minimum score for that prior attainment group.

For example:

- The standard deviation that corresponds to 1% of pupils nationally is 2.46 in English reading.
- The standard deviations for each prior attainment group and the corresponding threshold for English reading are shown below:

<b>KS1 PAG</b>	<b>SD</b>	<b>Threshold score (-2.46)</b>
1	4.8182	-11.83
2	5.1639	-12.68
3	6.7072	-16.47
4	7.6848	-18.87
5	8.2594	-20.29
6	8.8511	-21.74
7	10.4570	-25.68
8	10.3909	-25.52
9	9.1413	-22.45
10	8.5282	-20.95
11	8.0983	-19.89
12	7.3169	-17.97
13	6.9013	-16.95
14	6.6296	-16.28
15	6.2386	-15.32
16	5.9431	-14.60
17	5.9786	-14.68
18	5.6767	-13.94

19	5.6297	-13.83
20	5.6568	-13.89
21	5.5228	-13.56
22	5.2291	-12.84
23	5.0202	-12.33
24	4.8965	-12.03

As set out above, the lowest prior attainment groups (1-7) have minimum scores that are above the threshold for that prior attainment group, due to the average for those prior attainment groups being close to the lowest possible scaled score (i.e. no pupils have scores extreme enough to be below the threshold). These prior attainment groups are shaded in grey, see above. The middle to higher prior attainment groups (8-24) contain pupils with extreme progress scores below the threshold as defined by the standard deviation. The thresholds are set out above without shading- these are the only prior attainment groups where pupils' scores have been changed by this new methodology.

**The fourth step:** a pupil's progress score will be replaced by the minimum, only if their original score falls below this minimum.

For example:

- School B has nine pupils with the following progress scores for English reading.
- The pupils' progress scores are reviewed against the threshold at each prior attainment group.

Pupil	KS1 PAG	Progress Score	Threshold Score	Adjusted Progress Score
1	4	-5.24	-18.87	-5.24
2	7	13.50	-25.68	13.50
3	11	4.57	-19.89	4.57
4	3	-2.70	-16.47	-2.70
5	8	-29.52	-25.52	-25.52
6	15	3.05	-15.32	3.05
7	21	-15.66	-13.56	-13.56
8	8	1.39	-25.52	1.39
9	3	0.61	-16.47	0.61

- If the pupil's progress score is lower than the threshold, the score will be replaced with the threshold score (these are the pupils shaded in grey above).

**Finally**, the school's progress score is calculated by averaging the adjusted progress score.

## Standard deviations

The set number of standard deviations below the mean so that approximately 1% of pupils are identified nationally when adjusting extremely negative progress scores are as follows:

<b>Subject</b>	<b>Reading</b>	<b>Writing</b>	<b>Mathematics</b>
Standard deviation	-2.4561	-2.8103	-2.5865

The minimum thresholds derived from the above constants are as follows:

Prior Attainment Group (PAG)	KS1 average points score	Reading	Writing	Mathematics
1	>0 to <1.75	N/A	N/A	N/A
2	>=1.75 to <2	N/A	N/A	N/A
3	>=2 to <2.25	N/A	N/A	N/A
4	>=2.25 to <2.5	N/A	N/A	N/A
5	>=2.5 to <2.75	N/A	N/A	N/A
6	>=2.75 to <3	N/A	N/A	N/A
7	>=3 to <6	N/A	N/A	N/A
8	>=6 to <9	-25.52	N/A	-28.20
9	>=9 to <10	-22.45	-25.28	-23.39
10	>=10 to <12	-20.95	-23.23	-21.09
11	>=12 to <13	-19.89	-22.08	-19.24
12	>=13 to <14	-17.97	-20.19	-17.57
13	>=14 to <14.5	-16.95	-18.95	-15.85
14	>=14.5 to <15	-16.28	-18.03	-14.91
15	>=15 to <15.5	-15.32	-15.39	-13.81



16	$\geq 15.5$ to $< 16$	-14.60	-14.18	-12.95
17	$\geq 16$ to $< 16.5$	-14.68	-13.95	-12.62
18	$\geq 16.5$ to $< 17$	-13.94	-12.75	-11.94
19	$\geq 17$ to $< 18$	-13.83	-13.33	-11.86
20	$\geq 18$ to $< 19$	-13.89	-14.44	-11.75
21	$\geq 19$ to $< 20$	-13.56	-14.92	-11.60
22	$\geq 20$ to $< 21$	-12.84	-14.49	-11.12
23	$\geq 21$ to $< 21.5$	-12.33	-13.04	-11.28
24	$\geq 21.5$	-12.03	-11.69	-12.60



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