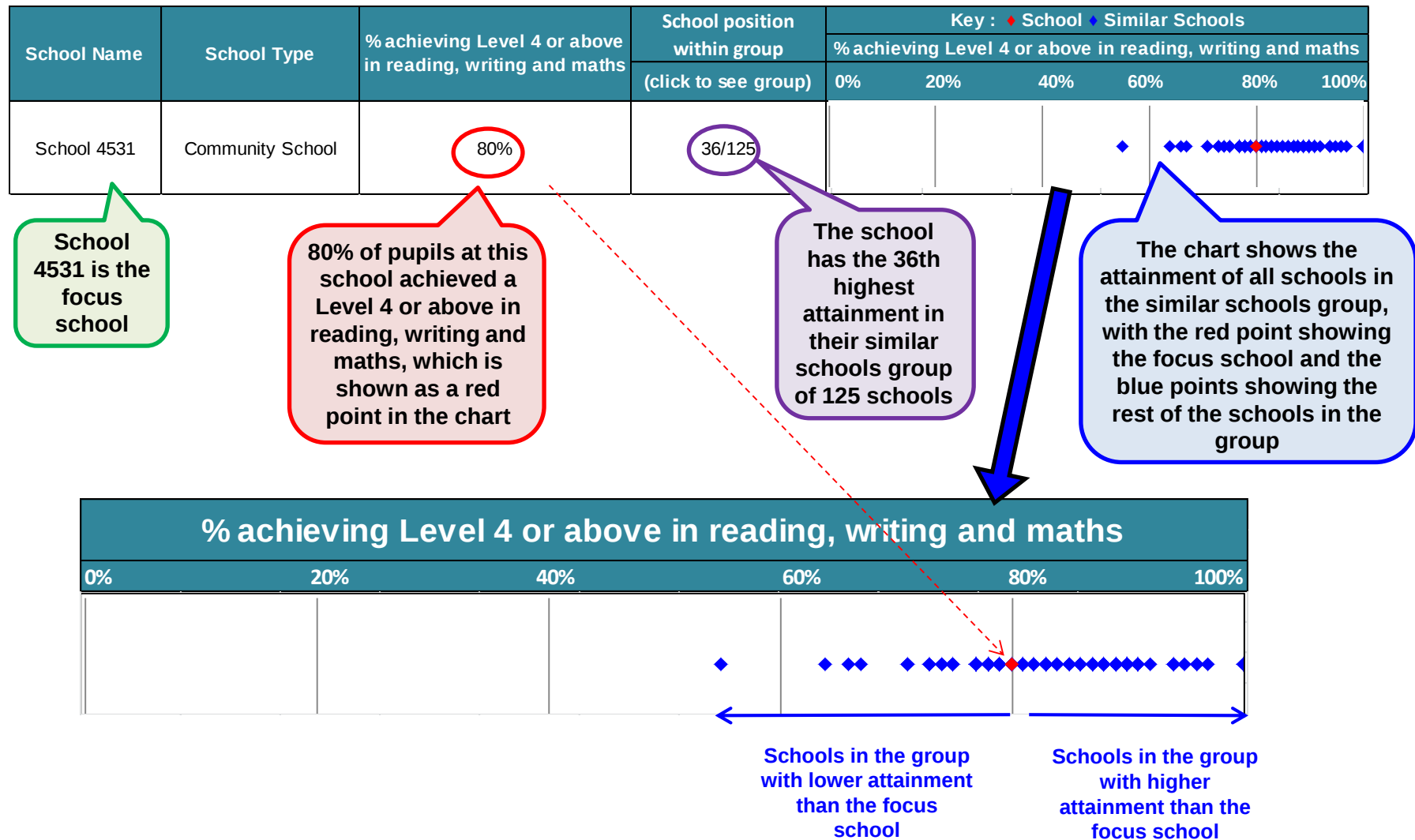


A GUIDE TO KEY STAGE 2 SIMILAR SCHOOLS IN 2015 SCHOOL & COLLEGE PERFORMANCE TABLES

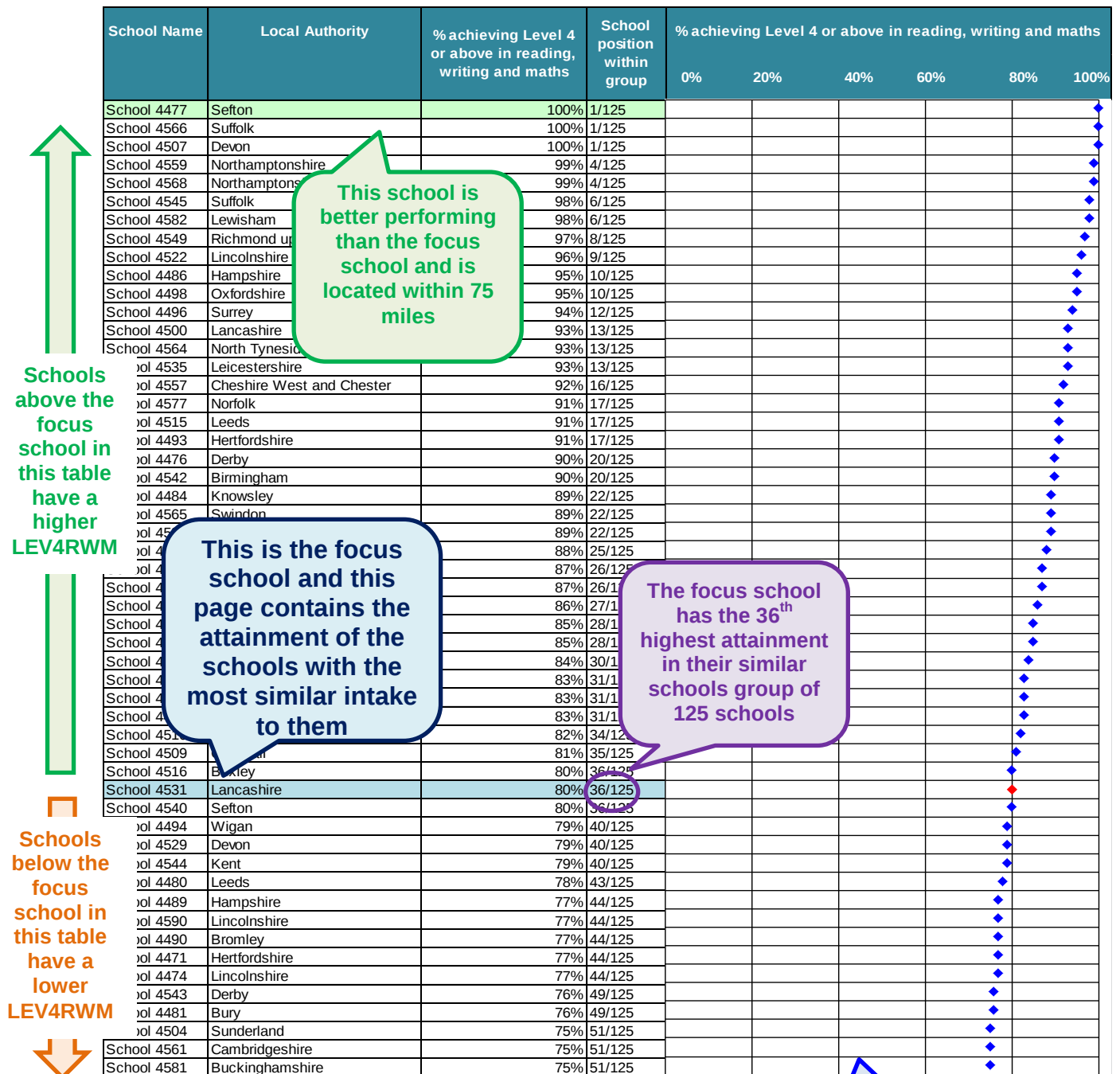
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SUMMARY – SIMILAR SCHOOLS COMPARISONS

Example of a similar schools comparison, showing how the focus school's Level 4 or above in reading, writing and maths (LEV4RWM) attainment compares to their similar schools group



Example of a similar schools group table, showing how the focus school's LEV4RWM attainment compares to their similar schools



WHAT IS SIMILAR SCHOOLS?

The purpose of similar schools is to provide further context around key stage 2 performance and an insight into how schools are performing compared to those with similar intakes.

To identify schools with similar intakes, we estimated the probability of each pupil achieving a **level 4 or above in reading, writing and maths (LEV4RWM)** at the end of key stage 2 (KS2). This estimate is based upon the attainment of pupils at the end of key stage 1(KS1).

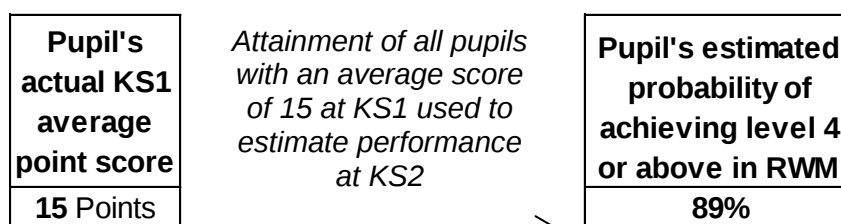
The pupil estimates can then be averaged for all KS2 pupils in a school to a school estimate of the percentage of pupils achieving LEV4RWM.

Once the similar school estimates have been calculated, a similar schools group is selected for each school by taking the 124 schools with the most similar estimates, 62 above and 62 below. This means that each school will have a unique group of 125 schools (including the focus school).

LEV4RWM attainment is then compared across the similar schools group. The summary diagrams on pages 2 and 3 shows how to interpret the similar schools comparisons.

SELECTING SIMILAR SCHOOL GROUPS

A statistical model is used to calculate the probability of achieving a level 4 or above in reading, writing and maths (LEV4RWM) for pupils at the end of KS2 in 2015. Each pupil's KS2 estimate is calculated based on the actual LEV4RWM attainment of all pupils nationally with the same level of achievement at KS1. For example, calculation of an estimated outcome for a pupil who scored an average of 15 points at KS1 will be based on the actual KS2 outcome of all pupils nationally that also scored an average of 15 points at KS1.



Section A of the technical annex provides a more detailed description of how pupils' estimated KS2 LEV4RWM attainment is calculated.

The individual pupil LEV4RWM estimated probabilities are then averaged to calculate a school estimate.

For more information on calculating school estimates, please see section B of the technical annex.

Once the similar school estimates have been calculated, a similar schools group is selected for each school by taking the 124 schools with the most similar estimates, 62 above and 62 below. This means that each school has a unique group.

The diagram below demonstrates how a school's similar schools group is selected.

Rank of school estimate	School	School estimate	
1	School 1	99.72%	
2	School 2	99.34%	
⋮	⋮	⋮	
4468	School 251	86.05%	
4469	School 4469	86.05%	
4470	School 4470	86.05%	
4471	School 4471	86.04%	
4472	School 4472	86.04%	
4473	School 4473	86.04%	
⋮	⋮	⋮	
4526	School 4526	85.96%	
4527	School 4527	85.96%	
4528	School 4528	85.96%	
4529	School 4529	85.96%	
4530	School 4530	85.96%	
4531	School 4531	85.95%	
4532	School 4532	85.94%	
4533	School 4533	85.94%	
4534	School 4534	85.94%	
4535	School 4535	85.94%	
4536	School 4536	85.94%	
⋮	⋮	⋮	
4589	School 4589	85.87%	
4590	School 4590	85.86%	
4591	School 4591	85.86%	
4592	School 4592	85.86%	
4593	School 4593	85.86%	
4594	School 4594	85.85%	
⋮	⋮	⋮	
14342	School 14342	13.57%	
14343	School 14343	8.96%	

**School 4531's
Similar Schools
group consisting of
125 schools**

62 most similar schools with a higher estimate

62 most similar schools with a lower estimate

BETTER PERFORMING SIMILAR SCHOOLS

Where possible we have highlighted schools within each similar schools group that are both better performing than the focus school *and* within travelling distance should schools wish to collaborate. To be highlighted as such a school needs to:

- Have at least 65% of their pupils achieving LEV4RWM;
- Have LEV4RWM attainment that is at least 12 percentage points higher than the focus school;
- Be located within 75 miles of the focus school

School Name	Local Authority	% achieving Level 4 or above in reading, writing and maths	School position within group
School 4477	Sefton	100%	1/125
School 4566	Suffolk	100%	1/125
School 4507	Devon	100%	1/125
School 4559	Northamptonshire	99%	4/125
School 4568	Northamptonshire	99%	4/125
School 4545	Suffolk	98%	6/125
School 4582	Lewisham	98%	6/125
School 4549	Richmond upon Thames	97%	8/125
School 4522	Lincolnshire	96%	9/125
School 4486	Hampshire	95%	10/125
School 4498	Oxfordshire	95%	10/125
School 4496	Surrey	94%	12/125
School 4500	Lancashire	93%	13/125
School 4564	North Tyneside	93%	13/125
School 4535	Leicestershire	93%	13/125
School 4557	Cheshire West and Chester	92%	16/125
School 4577	Norfolk	91%	17/125
School 4515	Leeds	91%	17/125
School 4493	Hertfordshire	91%	17/125
School 4476	Derby	90%	20/125
School 4542	Birmingham	90%	20/125
School 4484	Knowsley	89%	22/125
School 4565	Swindon	89%	22/125
School 4532	Birmingham	89%	22/125
School 4473	Hampshire	88%	25/125
School 4497	Essex	87%	26/125
School 4524	Hampshire	87%	26/125
School 4550	Norfolk	86%	27/125
School 4517	Northamptonshire	85%	28/125
School 4478	West Sussex	85%	28/125
School 4514	Wigan	84%	30/125
School 4488	Lincolnshire	83%	31/125
School 4539	Sunderland	83%	31/125
School 4499	Richmond upon Thames	83%	31/125
School 4510	Leicestershire	82%	34/125
School 4509	Cornwall	81%	35/125
School 4516	Bexley	80%	36/125
School 4531	Lancashire	80%	36/125
School 4540	Sefton	80%	36/125
School 4494	Wigan	79%	40/125
School 4529	Devon	79%	40/125

School 4477 is a better performing school because it has attainment that is 20 percentage points higher than the focus school and is located 50 miles away

The focus school is highlighted in blue

If there are no schools within a group that meet the above criteria we have, where possible, found an additional better performing school outside of the group. The information for this school is displayed at the bottom of the group page.

This better performing school will meet the criteria set out above and to ensure that the school has a similar intake, the school's similar school estimate must be within 10 percentage points of the focus school.

If a school has LEV4RWM attainment that is 89% or higher it is not possible for there to be a better performing school based on the criteria set out above. In these instances any additional, better performing school has to meet the following criteria:

- 100% LEV4RWM attainment;
- An average key stage 2 point score that is at least two points higher than the focus school;
- Located within 75 miles of the focus school;
- The school's similar school estimate must be within 8 percentage points of the focus school

AVERAGE LEVEL PER PUPIL

The similar schools page also shows an average level per pupil. This is based on the school's average point score as reported in performance tables.

The average level per pupil has been added to offer further context to the measure. Users can also select specific schools for wider comparison on the website by ticking the box next to the school name and then clicking the 'compare' button.

The average point score is calculated by dividing the total number of points achieved in reading, writing and maths assessments by the number of pupils on roll at the end of KS2. The average level is then calculated by applying the following level boundaries:

Average level	Total average point score per pupil
5A	34.0+
5B	32.0-33.9
5C	30.0-31.9
4A	28.0-29.9
4B	26.0-27.9
4C	24.0-25.9
3A	22.0-23.9
3B	20.0-21.9
3C	18.0-19.9
2	17.9 or below

**A GUIDE TO
KEY STAGE 2
SIMILAR SCHOOLS
IN 2015
SCHOOL & COLLEGE
PERFORMANCE TABLES
TECHNICAL ANNEX**

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SECTION A – CALCULATING PUPIL ESTIMATES

Behind the key stage 2 similar schools measure sits a statistical model used to identify schools with the most similar intakes. The model generates an estimate of attainment for each pupil achieving at least a level 4 in reading, writing and maths.

The estimated KS2 attainment outcome is expressed as a probability of achieving the attainment measure, and is based on the performance nationally of all pupils with the same KS1 prior attainment.

Pupil eligibility for inclusion in the similar schools models

Pupils are included in the KS2 similar schools model if:

- their key stage 2 attainment can be matched to their attainment at key stage 1;
- they have a KS1 average point score that is greater than zero;
- they attend a state-funded maintained mainstream school (including Academies).

Methodology for pupil similar schools calculation

The estimated KS2 attainment of the pupil, EP_p , is given by:

$$EP_p = \frac{1}{1 + e^{-E_p}}$$

where e^{-E_p} is the exponential function of E_p and

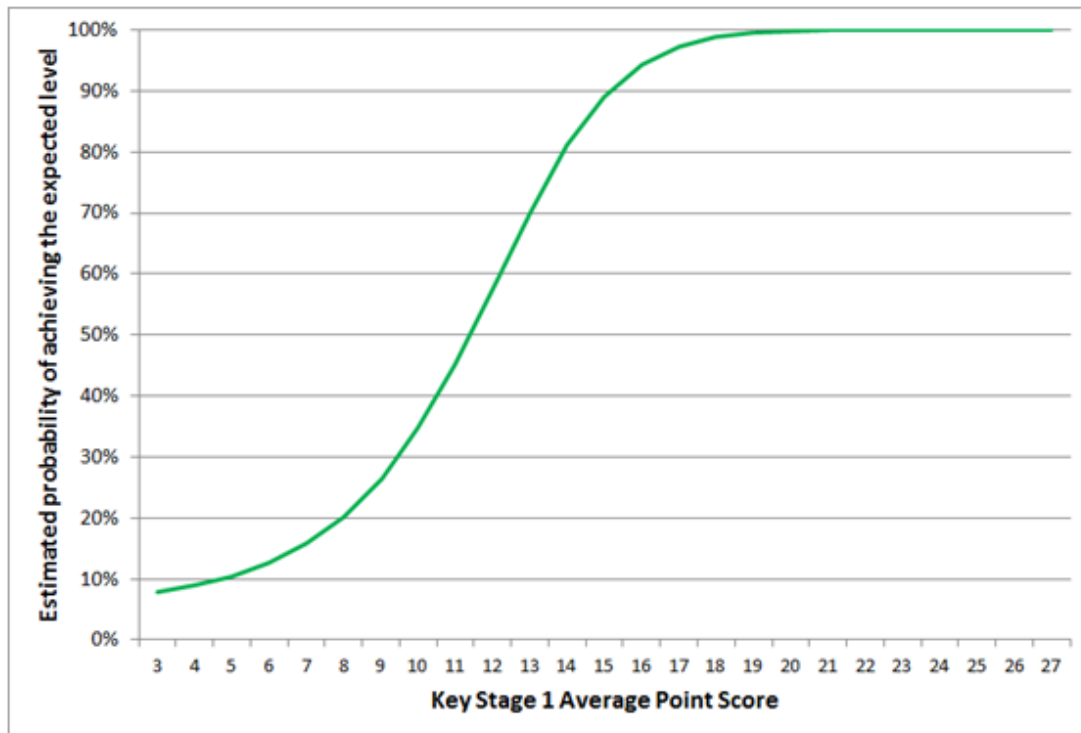
$$E_p = c + (c_1 \times KS1APS) + (c_2 \times KS1APS^2) + (c_3 \times KS1APS^3)$$

where:

$KS1APS$	is the pupil's KS1 average point score (APS)
$KS1APS^2$	is the pupil's KS1 APS squared
$KS1APS^3$	is the pupil's KS1 APS cubed
c_i	are the coefficients from the similar schools model
c	is the constant from the similar schools model

The constant and the coefficients are derived from the statistical model and based on the relationship between the attainment and prior attainment variables for all pupils.

The chart below shows the estimated probability of achieving LEV4RWM for different levels of prior attainment.



Worked example 1

A pupil at the end of key stage 2 has the following prior attainment:

Surname	Drake
Forename	Bob
KS1 average point score	16.33 (Level 2)

The first step to calculating Bob's estimated KS2 attainment is inserting the following values, reflecting his KS1 outcomes, into the formulae given above for E_p :

Notation	Description	Pupil value
$KS1APS$	KS1 APS	16.33
$KS1APS^2$	KS1 APS squared	266.67
$KS1APS^3$	KS1 APS cubed	4354.70

The table below presents the 2015 KS2 similar schools model coefficients:

Coefficient	Applied to	Coefficient
c	Constant applied to all pupils	-2.614103
c_1	$KS1APS$	-0.000020
c_2	$KS1APS^2$	0.017584
c_3	$KS1APS^3$	0.000225

Bobbie's estimated KS2 attainment, E_p , is then calculated as:

$$\begin{aligned} E_p &= c + (c_1 \times KS1APS) + (c_2 \times KS1APS^2) + (c_3 \times KS1APS^3) \\ &= -2.614103 + (-0.000020 \times 16.33) + (0.017584 \times 266.67) + (0.000225 \times 4354.70) \\ &= -2.614103 - 0.000327 + 4.689106 + 0.979808 \\ &= 3.054485 \text{ (to 6 decimal places, or d.p.)} \end{aligned}$$

We then need to calculate EP_p by inserting the value calculated for E_p

$$EP_p = \frac{1}{1 + e^{-3.054485}}$$

to give Bob's estimated probability of achieving a Level 4 or above in reading, writing and maths, $EP_p = 95.4976\%$. (to 4 d.p.)

SECTION B – CALCULATING SCHOOL ESTIMATES

The similar school estimate for a school is then calculated as the average similar school estimate of all pupils in the school.

School eligibility for inclusion in similar schools

All state-funded maintained mainstream schools will be included in Similar Schools, provided they have at least one eligible pupil in the measure.

Schools will be excluded from the measure if they have their level 4 in reading, writing and maths result suppressed in performance tables under the small numbers/suppression rules.

Methodology for similar school estimates

The school KS2 similar school estimate, EP_s , is given by:

$$EP_s = \frac{\sum_{p=1}^{n_s} EP_p}{n_s},$$

where:

n_s	is the number of eligible pupils in the school
$\sum_{p=1}^{n_s} EP_p$	is the sum of the similar school estimates of eligible pupils within the school

Continuation of worked example 1

Let us then say that Bob is one of 100 pupils in his school's KS2 cohort, who have a range of KS2 similar schools estimates:

Pupil #	Pupil name	Similar School estimate
1	Bob	95.4976%
2	Carl	86.1453%
⋮	⋮	⋮
100	Karolina	71.1645%
Average		85.9545%

To calculate $\overline{EP}_p$, the average similar schools estimate for all eligible pupils within the school KS2 cohort is calculated using the formula below:

$$EP_s = \frac{\sum_{p=1}^{n_s} EP_p}{n_s} = \frac{(95.4976\% + 86.1453\% + \dots + 71.1645\%)}{100} = 85.9545\% \text{ (to 4 d.p.)}$$

We then round this to 2 decimal places. Hence the final KS2 similar schools estimate for this school, EP_s , is 85.95%.

The school's group will then be made up of 124 schools with the closest estimates to 85.95%, with 62 schools above and 62 below.