## cat 4

## Group report for teachers

## CAT4 Group report for teachers

| School: Test School |  |  |  |  |  |
| :--- | :--- | :--- | :---: | :---: | :---: |
| Group: Year 7 |  |  |  | Level: D | No. of students: 60 |
| Date of test: $13 / 09 / 2011$ |  |  |  |  |  |

## What is CAT4?

The Cognitive Abilities Test (CAT) is a suite of tests that assesses a student's reasoning (thinking) abilities in key areas that support educational development and academic attainment. CAT4 is the fourth edition of the test and comprises the following sections or batteries which assess different aspects of ability:

## Verbal Reasoning Battery - thinking with words

## Verbal Classification

Three words are presented which are similar in some way or ways. From a selection of five possible answers, the student must identify a fourth word with similar properties.

The answer is snow because rain, fog and sunshine are all types of weather and snow is also a type of weather.


## Verbal Analogies

A pair of connected words is presented alongside a single word. From a selection of five possible answers, the student must select a word to complete the second pair in the same way.

The answer is window, because a carpet goes on a floor and a curtain hangs at a window.

```
carpet }->\mathrm{ floor: curtain }
```

| window | shade | hang | drapes |
| :---: | :---: | :---: | :---: |
| cloth |  |  |  |

## Quantitative (or Numerical) Reasoning Battery - thinking with numbers

## Number Analogies

Two pairs of related numbers are presented. From a selection of five possible answers, the student must select a number to complete a third pair.

The answer is 8 . Here 1 add 1 makes 2 , but that doesn't work for the second pair because 5 add 1 is 6 , not 10 . Instead, you have to multiply by 2 to get the second part of each pair, so 4
 times 2 is 8 .

## Number Series

A sequence of numbers created by a transformation rule is presented. From a selection of five possible answers, the student must identify the rule and continue the sequence.

The answer is 15 . There are two number patterns in this series. The first, third and fifth numbers go down by 1 at a time -18 , 17 then 16. The numbers in between them go up by two at a time $-5,7$ then 9 . This means the next number must be 16 minus 1 , giving 15 .

| 11 | 12 | 13 | 14 | 15 |
| :--- | :--- | :--- | :--- | :--- |

## Non-verbal Reasoning Battery - thinking with shapes

## Figure Classification

Three designs are presented which are similar in some way or ways. From a selection of five possible answers, the student must identify a fourth design with similar properties.

The answer is E because it is the only answer choice that is a striped semi-circle, like the first three figures.


## Figure Matrices

Designs are presented in a grid with one empty square and, from a selection of five possible answers, the student must identify the missing design.

The answer is $C$ because in the top pair 'one arrow up' goes to 'two arrows up', so in the second pair 'one arrow down' must go to 'two arrows down'.

| $\rightleftarrows$ | $\geq$ | II | It | $\uparrow$ |
| :---: | :---: | :---: | :---: | :---: |
| A | B | C | D | E |

## Spatial Ability Battery - thinking with shape and space

## Figure Analysis

A series of diagrams shows a square being folded repeatedly, and then punched through with holes. From a selection of five possible answers, the student must identify how the paper will appear when unfolded.

The answer is D. The hole is punched through both layers of paper, so as it is unfolded the holes will be a mirror image of each other, with the crease being the mirror line.


## Figure Recognition

Several complex designs are presented along with a single target shape. From a selection of five possible answers, the student must identify the target shape within one of the complex designs.

The answer is E. It isn't A because that shows the target flipped over. It isn't $B$ or $C$ because they have shapes that are the wrong size.


## Why use CAT4?

CAT4 is a comprehensive and objective test of your students' developed abilities - those that, in part, determine attainment and can be built upon and developed to improve outcomes. For example, verbal reasoning can be developed by supporting students' reading, comprehension and vocabulary.

CAT4 has many uses, but the focus of this group report is to inform teachers about the abilities of a pre-determined group of students - whether a whole year cohort, teaching group or tutor group or a group of students who share particular characteristics, for example students with English as an additional language.

CAT4 provides important information about your group of students because it is an objective measure of ability. Data from other sources such as teacher assessments and key indicators such as attendance may be used alongside CAT4 data to ensure that information about students' ability,attainment and any external factors affecting achievement that may impact on progress are part of the decision-making process at many levels.

Furthermore, results from CAT4:

- provide indicators of attainment for IB level which are a starting point for target setting for the group
- offer a comparison between performance of different groups of students in order to better identify needs and target resources
- identify groups of students who may be underachieving
- monitor trends and changes in the ability profile of the school's intake over time
- and, importantly, set a baseline against which to assess the value added by the school.


## Understanding CAT4 scores

| Battery | In CAT4 battery is the title given to each of the four pairs of tests which <br> assess different aspects of ability. |
| :--- | :--- |
| Questions attempted | The number of questions attempted can be important: a student may <br> have worked very slowly but accurately and not finished the test and this <br> will impact on his or her results. |
| Raw score (RS) | The raw score (RS) is the total number of questions a student has <br> answered correctly. |
| Standard Age Score (SAS) | The Standard Age Score (SAS) is the most important piece of <br> information derived from CAT4. The SAS is based on the student's raw <br> score which has been adjusted for age and placed on a scale that makes <br> a comparison with a nationally representative sample of students of the <br> same age across the UK. The average score is 100. The SAS is key to <br> benchmarking and tracking progress and is the fairest way to compare <br> the performance of different students within a year group or across year <br> groups. |
| Confidence band | Performance on a test like CAT4 can be influenced by a number of <br> factors and the confidence band is an indication of the range within <br> which a student's scores lies. The narrower the band the more reliable <br> the score. This means that $90 \%$ confidences bands are a very high level <br> estimate. |
| National Percentile Rank <br> (NPR) | The National Percentile Rank (NPR) relates to the SAS and indicates <br> the percentage of students obtaining any particular score. NPR of 50 is <br> average. NPR of 5 means that the students score is within the lowest 5\% <br> of the national sample; NPR of 95 means that the student's score is <br> within the highest 5\% of the national sample. |
| Stanine (ST) | The Stanine (ST) places the student's score on a scale of 1 (low) to 9 <br> (high) and offers a broad overview of his or her performance. |
| Group Rank (GR) | The Group Rank (GR) shows how each student has performed in <br> comparison to those in the defined group. The symbol = represents joint <br> ranking with one or more other students. |

## Relationship between CAT4 scores

| Description | Very Low | Below Average | Average |  |  |  |  |  | Above Average | Very High |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Stanine (ST) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |  |  |
| Standard Age Score (SAS) | 70 |  | 80 |  | 90 | 100 | 110 | 120 | 130 |  |  |
| National Percentile Rank (NPR) | 1 |  | 5 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 |

## Scores for the group (by overall mean SAS)

|  |  | Verbal |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Student name | Tutor group | No. attempted (/48) | SAS | $\begin{gathered} \text { GR } \\ (/ 60) \end{gathered}$ |
| Sara Shafiq | EM | 48 | 130 | 1 |
| Natasha Aransola | EM | 47 | 108 | =14 |
| Jenny Coyle | MCO | 48 | 101 | =25 |
| Samera Kan | DK | 48 | 113 | 9 |
| Lara Sandford | DK | 48 | 97 | 36 |
| Mia Shimizu | DK | 48 | 123 | =4 |
| Mia Shimizu | MCO | 48 | 122 | 6 |
| Anthony Jameson | MCO | 48 | 120 | 7 |
| Paisley McSeveney | MCO | 48 | 112 | = 10 |
| Gabriel Bester | DK | 48 | 125 | 2 |
| Petya Kan | EM | 48 | 100 | =28 |
| Khan Kareena | DK | 48 | 105 | =19 |
| Nick Watt | EM | 48 | 124 | 3 |
| Zaynab Ashfaiq | MCO | 48 | 95 | = 39 |
| Chloe Bullock | DK | 48 | 102 | 24 |
| Johanna Howles | DK | 48 | 119 | 8 |
| Liz Price | DK | 47 | 108 | = 14 |
| Elise Kelly | MCO | 48 | 112 | = 10 |
| Susan McGregor | EM | 48 | 108 | =14 |
| Connor Gibson | DK | 48 | 96 | =37 |
| Morrison Kirsty | MCO | 48 | 108 | = 14 |
| Neil Dawes | DK | 47 | 110 | 12 |
| Rob Reagan | DK | 48 | 100 | =28 |
| Peter Adetunde | MCO | 48 | 95 | =39 |
| Teodora Dunec | EM | 48 | 100 | =28 |
| Kunza Mohammad | MCO | 48 | 103 | 23 |


| Quantitative |  |  |
| :---: | :---: | :---: |
| No. <br> attempted <br> $(/ 36)$ | SAS | GR <br> $(/ 60)$ |
| 36 | $\mathbf{1 2 0}$ | $=3$ |
| 31 | $\mathbf{1 2 0}$ | $=3$ |
| 36 | $\mathbf{1 1 8}$ | 5 |
| 34 | $\mathbf{1 1 6}$ | 6 |
| 33 | $\mathbf{1 1 1}$ | $=9$ |
| 36 | $\mathbf{1 0 9}$ | 13 |
| 29 | $\mathbf{1 1 1}$ | $=9$ |
| 36 | $\mathbf{1 0 8}$ | 14 |
| 32 | $\mathbf{1 1 1}$ | $=9$ |
| 20 | $\mathbf{9 8}$ | $=29$ |
| 35 | $\mathbf{1 2 3}$ | $=1$ |
| 34 | $\mathbf{1 1 4}$ | 7 |
| 24 | $\mathbf{9 9}$ | $=27$ |
| 24 | $\mathbf{1 0 1}$ | $=24$ |
| 36 | $\mathbf{1 2 3}$ | $=1$ |
| 36 | $\mathbf{1 0 3}$ | $=17$ |
| 28 | $\mathbf{1 0 3}$ | $=17$ |
| 32 | $\mathbf{1 1 1}$ | $=9$ |
| 35 | $\mathbf{1 0 3}$ | $=17$ |
| 18 | $\mathbf{9 3}$ | $=41$ |
| 36 | $\mathbf{1 1 2}$ | 8 |
| 18 | $\mathbf{9 3}$ | $=41$ |
| 26 | $\mathbf{1 0 1}$ | $=24$ |
| 32 | $\mathbf{9 8}$ | $=29$ |
| 19 | $\mathbf{9 2}$ | 47 |
| 26 | $\mathbf{9 8}$ | $=29$ |
|  |  |  |


| Non-verbal |  |  |
| :---: | :---: | :---: |
| No. <br> attempted <br> $(/ 48)$ | SAS | GR <br> $(/ 60)$ |
| 48 | $\mathbf{1 1 9}$ | 3 |
| 41 | $\mathbf{1 2 4}$ | 1 |
| 48 | $\mathbf{1 1 5}$ | $=5$ |
| 43 | $\mathbf{1 1 5}$ | $=5$ |
| 48 | $\mathbf{1 2 1}$ | 2 |
| 43 | $\mathbf{1 0 3}$ | $=25$ |
| 48 | $\mathbf{1 1 2}$ | $=8$ |
| 48 | $\mathbf{1 0 6}$ | $=21$ |
| 46 | $\mathbf{1 1 2}$ | $=8$ |
| 37 | $\mathbf{1 0 1}$ | 30 |
| 46 | $\mathbf{1 0 8}$ | $=16$ |
| 43 | $\mathbf{1 0 5}$ | $=23$ |
| 34 | $\mathbf{1 0 2}$ | $=27$ |
| 48 | $\mathbf{1 1 5}$ | $=5$ |
| 40 | $\mathbf{1 0 7}$ | $=18$ |
| 48 | $\mathbf{9 4}$ | $=38$ |
| 40 | $\mathbf{1 0 9}$ | $=14$ |
| 47 | $\mathbf{9 9}$ | $=31$ |
| 41 | $\mathbf{1 0 6}$ | $=21$ |
| 42 | $\mathbf{1 1 7}$ | 4 |
| 48 | $\mathbf{1 1 1}$ | $=10$ |
| 45 | $\mathbf{1 1 1}$ | $=10$ |
| 40 | $\mathbf{1 1 1}$ | $=10$ |
| 48 | $\mathbf{1 0 9}$ | $=14$ |
| 48 | $\mathbf{1 1 1}$ | $=10$ |
| 42 | $\mathbf{1 0 8}$ | $=16$ |
|  |  |  |
| 4 |  |  |


| Spatial |  |  |
| :---: | :---: | :---: |
| No. <br> attempted <br> $(/ 36)$ | SAS | GR <br> $(/ 60)$ |
| 36 | $\mathbf{1 2 6}$ | $=2$ |
| 36 | $\mathbf{1 2 0}$ | $=4$ |
| 36 | $\mathbf{1 3 1}$ | 1 |
| 32 | $\mathbf{1 2 0}$ | $=4$ |
| 36 | $\mathbf{1 2 6}$ | $=2$ |
| 36 | $\mathbf{1 2 0}$ | $=4$ |
| 31 | $\mathbf{1 1 2}$ | 13 |
| 36 | $\mathbf{1 1 8}$ | 7 |
| 34 | $\mathbf{1 1 4}$ | $=9$ |
| 30 | $\mathbf{1 1 4}$ | $=9$ |
| 36 | $\mathbf{1 0 8}$ | $=17$ |
| 36 | $\mathbf{1 1 0}$ | $=14$ |
| 26 | $\mathbf{1 0 8}$ | $=17$ |
| 36 | $\mathbf{1 1 6}$ | 8 |
| 36 | $\mathbf{9 5}$ | $=44$ |
| 36 | $\mathbf{1 1 0}$ | $=14$ |
| 34 | $\mathbf{1 0 9}$ | 16 |
| 36 | $\mathbf{1 0 3}$ | $=29$ |
| 34 | $\mathbf{1 0 6}$ | $=22$ |
| 35 | $\mathbf{1 1 3}$ | $=11$ |
| 36 | $\mathbf{8 4}$ | $=53$ |
| 23 | $\mathbf{9 8}$ | $=38$ |
| 36 | $\mathbf{9 8}$ | $=38$ |
| 36 | $\mathbf{1 0 6}$ | $=22$ |
| 36 | $\mathbf{1 0 4}$ | $=27$ |
| 36 | $\mathbf{1 0 0}$ | $=35$ |
|  |  |  |


| Overall |  |
| :---: | :---: |
| Mean <br> SAS | GR <br> $(/ 60)$ |
| 124 | 1 |
| 118 | 2 |
| 116 | $=3$ |
| 116 | $=3$ |
| 114 | $=5$ |
| 114 | $=5$ |
| 114 | $=5$ |
| 113 | 8 |
| 112 | 9 |
| 110 | $=10$ |
| 110 | $=10$ |
| 109 | 12 |
| 108 | 13 |
| 107 | $=14$ |
| 107 | $=14$ |
| 107 | $=14$ |
| 107 | $=14$ |
| 106 | $=18$ |
| 106 | $=18$ |
| 105 | 20 |
| 104 | 21 |
| 103 | $=22$ |
| 103 | $=22$ |
| 102 | $=24$ |
| 102 | $=24$ |
| 102 | $=24$ |
|  |  |

The Standard Age Score (SAS) is based on the student's raw score which has been adjusted for age and placed on a scale that makes a comparison with a nationally representative sample of students of the same age across the UK. The average score is 100 .

The Group Rank (GR) shows how each student has performed in comparison to those in the defined group. The symbol = represents joint ranking with one or more other students.
The number of questions attempted can be important: a student may have worked very slowly but accurately and not finished the test and this will impact on his or her results.

## School: Test School

Group: Year 7
Date of test: 13/09/2011
Level: D
No. of students: 60

## Analysis of group scores (by battery)

The table below shows mean (average) scores for your group compared with those for the national sample.

|  | Verbal <br> mean SAS | Quantitive <br> mean SAS | Non-verbal <br> mean SAS | Spatial <br> mean SAS | Overall <br> mean SAS |
| :--- | :---: | :---: | :---: | :---: | :---: |
| National average | $\mathbf{1 0 0 . 0}$ | $\mathbf{1 0 0 . 0}$ | $\mathbf{1 0 0 . 0}$ | $\mathbf{1 0 0 . 0}$ | $\mathbf{1 0 0 . 0}$ |
| Group | 100.6 | 99.2 | 98.7 | 101.6 | 100.1 |

The table below shows the distribution of scores for your group compared with those for the national sample. In addition, the bar chart presents this information.

| Description | Very low | Below average |  |  | Average |  |  | Above average |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Very high |  |  |  |  |  |  |  |  |  |
| SAS bands | $<\mathbf{7 4}$ | $\mathbf{7 4 - 8 1}$ | $\mathbf{8 2 - 8 8}$ | $\mathbf{8 9 - 9 6}$ | $\mathbf{9 7 - 1 0 3}$ | $\mathbf{1 0 4 - 1 1 1}$ | $\mathbf{1 1 2 - 1 1 8}$ | $\mathbf{1 1 9 - 1 2 6}$ | $\mathbf{> 1 2 6}$ |
| National average | $\mathbf{4 \%}$ | $\mathbf{7 \%}$ | $\mathbf{1 2 \%}$ | $\mathbf{1 7 \%}$ | $\mathbf{2 0} \%$ | $\mathbf{1 7 \%}$ | $\mathbf{1 2 \%}$ | $\mathbf{7 \%}$ | $\mathbf{4 \%}$ |
| Verbal | $0 \%$ | $7 \%$ | $3 \%$ | $30 \%$ | $23 \%$ | $18 \%$ | $5 \%$ | $12 \%$ | $2 \%$ |
| Quantitative | $2 \%$ | $3 \%$ | $7 \%$ | $33 \%$ | $28 \%$ | $13 \%$ | $7 \%$ | $7 \%$ | $0 \%$ |
| Non-verbal | $5 \%$ | $7 \%$ | $8 \%$ | $20 \%$ | $20 \%$ | $25 \%$ | $10 \%$ | $5 \%$ | $0 \%$ |
| Spatial | $2 \%$ | $7 \%$ | $8 \%$ | $12 \%$ | $25 \%$ | $25 \%$ | $12 \%$ | $8 \%$ | $2 \%$ |

## Distribution of scores for your group compared with those for the national sample



## Group: Year 7

| Date of test: $13 / 09 / 2011$ | Level: D | No. of students: 60 |
| :--- | :--- | :--- |

## Student profiles

The analysis of CAT4 scores allows all students to be assigned a profile; that is they are assigned to one of seven broad descriptions of their preferences for learning. The Verbal Reasoning and Spatial Ability Batteries form the basis of this analysis and the profiles are expressed as a mild, moderate or extreme bias for verbal or spatial learning or, where no bias is discernable (that is, when scores on both batteries are similar), as an even profile.

The diagram shows the distribution of students across the seven profiles which are indicated by the coloured bands.Extreme verbal biasModerate verbal bias
Mild verbal biasNo bias
Mild spatial biasModerate spatial biasExtreme spatial bias

- Males
- Females



## General characteristics of each student profile

It may be helpful to consider which students fall into which broad profile, but this information must be treated with caution as the descriptors are general and not individualised: students' preferences for learning will be influenced by other factors. The CAT4 Individual report for teachers offers more fine detail.

|  | National | Group |  |
| :--- | :---: | :---: | :---: |
|  | $\%$ | $\%$ | No. of students |
| Extreme verbal bias | $2 \%$ | $2 \%$ | 1 |
| Moderate verbal bias | $4 \%$ | $3 \%$ | 2 |
| Mild verbal bias | $11 \%$ | $8 \%$ | 5 |
| No bias or even profile | $66 \%$ | $67 \%$ | 40 |
| Mild spatial bias | $11 \%$ | $8 \%$ | 5 |
| Moderate spatial bias | $4 \%$ | $10 \%$ | 6 |
| Extreme spatial bias | $2 \%$ | $2 \%$ | 1 |

## Extreme verbal bias

- These students should excel in written work and should enjoy discussion and debate.
- They should prefer to learn through reading, writing and may be very competent independent learners.
- They are likely to be high achievers in subjects that require good verbal skills such as English, modern foreign languages and humanities.
- They may prefer to learn step-by-step, building on prior knowledge, as their spatial skills are relatively weaker, being in the low average or below average range.

Students:
Niamh Ernst

## Moderate verbal bias

- Students in this group will have average to high scores for Verbal Reasoning and relatively weaker Spatial Ability with scores in the average range.
- These students are likely to prefer to learn through reading, writing and discussion.
- Step-by-step learning, which builds on prior knowledge incrementally, is likely to suit these students.

Students:
Morrison Kirsty
Shauna Mathews

## Mild verbal bias

- Some students with this profile will have low average or below average scores for Verbal Reasoning and relatively weaker Spatial Ability, but the gap between scores will be narrow.
- A slight bias for learning through reading, writing and discussion may be discerned in the students in this group.

Students:
Alex Honkanen
Johanna Howles
Elise Kelly
Alexandra Muraska
Nick Watt

## No bias or even profile

- Scores for students with this profile will be very similar for both Verbal Reasoning and Spatial Ability, but will be across the range from low to high.
- Students with high even scores will excel across the curriculum and will learn through the range of media and methods.
- Students with low even scores, conversely, may require significant levels of support to access the curriculum but will be open to a range of teaching and learning methods.

Students:
Suder
Connie Camp
Neil Dawes
Nathan Gill
Karin Hillyer
Anthony Jameson
Khan Kareena
Elena Mazzoni
Romana McSeveney
Webster Owen
Patel Purav
Sara Shafiq
David Smith
Adrian Watt

| Bisset Billy | Chloe Bullock |
| :--- | :--- |
| Tim Chung | Amy Cotellesa |
| Teodora Dunec | Joshua Dunlop |
| Nina Hanif | Philip Hanif |
| Alis Hussain | Charlotta Jacobs |
| Petya Kan | Samera Kan |
| Craig Kennedy | Amaya Kudayamage |
| Susan McGregor | Paisley McSeveney |
| Kunza Mohammad | Adia Mulila |
| Guilia Price | Liz Price |
| Rob Reagan | Azzah Rehman |
| Mia Shimizu | Mia Shimizu |
| Lily Versluis | Tim Vincent |
|  |  |

## Mild spatial bias

- Some students with this profile will have low average or below average scores for Spatial Ability and relatively weaker Verbal Reasoning skills but the gap between scores will be narrow.
- A slight bias for learning through visual media may be discerned in the students in this group.


## Students:

| Peter Adetunde | Natasha Aransola | Kyle Greenwood |
| :--- | :--- | :--- |
| Olivia Pessot | Brisilda Ymeri |  |

Brisilda Ymer

## Moderate spatial bias

- Students in this group will have average to high scores for Spatial Ability and relatively weaker Verbal Reasoning with scores in the average range.
- These students are likely to prefer to learn through visual and kinaesthetic media and will need to use diagrams, pictures, videos and objects to learn best.
- Students with above average or high Spatial Ability are often characterised as 'intuitive' or 'big picture' learners: attention to detail may be a weakness.
- Owing to a relative weakness in verbal skills, attainment may be uneven and they are likely to need support in subjects where the emphasis is on the written word.


## Students:

| Zaynab Ashfaiq | Alice Coyle | Connor Gibson |
| :--- | :--- | :--- |
| Romana Kudayamage | Lara Sandford | Bethany Thomas |

## School: Test School

Group: Year 7

| Date of test: 13/09/2011 | Level: D | No. of students: 60 |
| :--- | :--- | :--- |

## Diploma Programme Pointers

There has always been a significant and positive correlation (that is, a link which is supported by statistical data) between a student's scores on reasoning tests such as CAT4 and his or her performance in national tests and examinations. CAT4 provides a range of pointers of future attainment which can form the basis of discussion with an individual about targets for learning or help set realistic but challenging targets for national tests and examinations.
External factors will affect a student's eventual attainment - not least effort and motivation - but CAT4 results demonstrate what can be achieved because the test is established as a good predictor of subsequent attainment.
CAT4 scores and subsequent Diploma Programme results are collected from a large sample of schools and students. The Diploma Programme pointers are derived from the statistical relationship between CAT4 scores and Diploma Programme results. The pointers are updated regularly to reflect changes in IB attainment in the UK and abroad.

The indicated subject grades are given either as whole grades or where CAT4 scores indicate performance may be at the boundary between grades, as split grades ( $7 / 6,6 / 5$, etc).
Pointers are calculated from the mean CAT4 Standard Age Score (SAS) apart from those for English where the SAS for Verbal Reasoning is found to give more accurate results, so this is used when available.


