What CAT4 tells you – the test batteries explained

CAT4 comprises four test batteries, each of which contains two tests. The tests assess the main types of mental processing which play a substantial role in human thought. Together, they provide users with a comprehensive understanding of the core abilities related to learning. The test batteries are described below.

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Each of the test batteries is explored in further detail throughout this next section, highlighting what they assess and the types of questions featured. Examples from both the paper and digital versions are also included.
Verbal Reasoning Battery – thinking with words

The Verbal Reasoning Battery assesses reasoning ability with words representing objects or concepts. Whilst the test battery requires some reading ability, CAT4 limits the reading requirements to a modest level throughout and the vocabulary demands have been kept as low as possible. The background knowledge needed to answer the verbal questions is that which all pupils will have encountered in school or everyday life, rather than including topics that may only be familiar to certain socioeconomic or cultural groups.

Since the greater part of education is presented through the verbal medium, the importance of this battery for diagnosis and educational attainment is clear. Tests of verbal reasoning have always been among the best predictors of educational progress.

Example Questions

Verbal Classification

The example asks pupils to recognise the conceptual link between three given words and then choose the word from the options that belongs with the original set.

**Verbal Classification**

**Directions**

In each of these questions there are three words in bold type. These three words are similar in some way. Decide how they are the same. Then choose the word from the answer choices that goes with the first three words. Look at the example below.

**Example**

<table>
<thead>
<tr>
<th>green</th>
<th>blue</th>
<th>red</th>
</tr>
</thead>
<tbody>
<tr>
<td>A colour</td>
<td>B crayon</td>
<td>C paint</td>
</tr>
</tbody>
</table>

The first three words are green, blue and red. Green, blue and red are all colours. Look for the answer choice that is also a colour. The correct answer is D, yellow. This is how you would show the answer:

![Correct Answer]

**Verbal Analogies**

In each of these questions there are three words in bold type. The first two words go together. The third word goes together with one of the answer choices.

**Example**

new → old : wet →

A rain B drip C hot D sun E dry

Pupils are required to choose the word from the answer choices that goes with the third word. Since new is the opposite of old, pupils have to find the word that is the opposite of wet. Answer E, dry, is the opposite of wet.

Example questions from CAT4 Digital Level A
Quantitative Reasoning Battery – thinking with numbers

The Quantitative Reasoning Battery assesses reasoning ability with numbers. The test battery has been designed to be minimally reliant on mathematical knowledge. The Number Analogies test requires only basic arithmetical knowledge, and parallels the analogy tests in the Verbal and Non-verbal Reasoning Batteries. The Number Series test focuses as far as possible on the identification of relationships between the elements of the questions, though basic arithmetical knowledge is required too.

In this way, the Quantitative Reasoning Battery will give a genuine indication of most pupils' ability to think with numbers, with the exception of children with particularly low arithmetic skills.

Example Questions

Number Analogies

The example asks pupils to work out how the two given pairs of numbers are related and then choose the third number that has the same relationship from among the five options presented.

**Number Analogies**

**Directions**

Each of these questions starts with two numbers that are linked together in some way. Next there are two more numbers that are linked in exactly the same way. You have to work out how the numbers are linked and then complete the third pair. Look at the example below.

**Example**

\[
\begin{align*}
2 & \rightarrow 3 & 9 & \rightarrow 10 & 6 & \rightarrow 7 \\
A & & B & & C & \quad D & E
\end{align*}
\]

What do you have to do that gets you from 2 to 3 and also from 9 to 10?

You have to add 1. So, 6 changes to 7. The correct answer is E, 7. This is how you would show the answer:

\[
\text{E} \quad \text{F} \quad \text{A} \quad \text{B} \quad \text{C} \quad \text{D} \quad \text{E} \quad \text{F} \quad \text{A}
\]

This is just one example. In the test you might have to add, subtract, multiply or divide to get the second half of each pair. Remember, you must always check that what you decide for the first pair also works for the second pair.

**Number Series**

Each of these questions shows a series of numbers. Pupils have to work out the rule or rules used to arrange the numbers, then decide which number should come next in the series.

**Example**

\[
15 \quad 14 \quad 13 \quad 12 \quad \rightarrow \quad A \quad B \quad C \quad D \quad E \quad 14
\]

From among the five options, pupils are required to choose the number that continues the given sequence. In this example each number is one lower than the number before it. As 12 minus 1 is 11, the right answer is C, 11.

Example questions from CAT4 Digital Level D
Non-verbal Reasoning Battery – thinking with shapes

The Non-verbal Reasoning Battery assesses the ability to think and reason with non-verbal material and measures something distinct from the Spatial Ability Battery. The materials used are still shapes but the difficulty in the task lies not in creating, maintaining and mentally manipulating precise images but in reasoning with easily distinguishable shapes and designs.

Like the Verbal and Quantitative Reasoning Batteries, it measures basic reasoning processes such as identifying similarities and relationships but using shapes and designs rather than words or numbers.

Example Questions

Figure Classification

The example asks pupils to identify the common characteristics of the three given figures and choose the option from the five presented, which shares the same characteristics.

Figure Matrices

In each of these questions there are figures arranged in a large square. One figure is missing and its place is shown by a question mark.

Example

Pupils are required to identify the relationship of the figures in the square and from the five options presented, select the figure that has the same relationship. In this example the top pair of figures comprises a large square and a small square. They are the same shape but the second figure is smaller. Since the bottom figure is a large circle pupils are required to find the figure that completes the pair in the same way. The correct answer is D because this is a small circle.

Example questions from CAT4 Digital Level F

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Spatial Ability Battery – thinking with shape and space

The Spatial Ability Battery assesses how well pupils can create and retain mental images of precise shapes and objects, and then manipulate these in their minds. This ability is critical to effective working in many ‘spatial’ disciplines and careers (for example engineering, physical sciences, mathematics and architecture). Yet it has traditionally been under-appreciated or under-assessed in schools, either being ignored completely or viewed as relevant only to ‘low level’ manual skills.

As spatial tests make no demands on verbal ability, they can be highly effective indicators of potential in pupils with poor verbal skills as well as effectively identifying the weaker abilities of those who have verbal strengths. This then provides a more comprehensive picture of the pupils concerned.

Example Questions

Figure Analysis

Each of the questions in this test is about folding paper and punching holes in it. The example asks pupils to decide how the paper would look when it is unfolded, selecting from five given answers.

Figure Recognition

The test is about hidden shapes. Each question has a target shape and the target is hidden in one of five designs.

Example

A  B  C  D  E

Pupils are required to find where the target is hidden and mark the letter for that design. The target will be exactly the same size and way round and all sides of the target have to be shown on the design. Pupils are not required to imagine it turned around or flipped over. As shown above the target can be found in design B.

Example questions from CAT4 Digital Level G