



COSMOS

Test results

School

Class

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Presented here are the **results of the COSMOS Test**, taken during the 2023-24 academic year at your school. This test is part of the **Catch-up program** that will begin in January. **It is the assessment tool that we will use to screen students who will participate in the Intervention.**

The COSMOS Test

The COSMOS Test is a tool based on both cognitive and mathematical knowledge tasks that have been approved in previous studies ([ARTIST 2021-2022](#) i [ARTIST 2022-2023](#)) and adapted for the assessment of mathematical learning, mainly Numbers and Operation.

It is, therefore, a **diagnostic tool focused on identifying difficulties in learning math, especially in the Numbers and Operation content strand**. It is based on analyzing cognitive precursors and knowledge related to arithmetic fluency, to gain a more complete understanding of the factors that may be affecting a student's performance in math.

This assessment detects students with a lower performance in **Numbers and Operation**.

The day of the test

These are the results of a single day of assessment under specific conditions and, therefore, it is important to interpret them as indicators of what is assessed, and not as a definitive measurement. Particular circumstances (such as motivation, attention paid to instructions, and the student's personal state), at the time of the assessment, may affect the student's performance.

The results may not reflect the actual ability of the student if they were not given opportunities to encourage their maximum performance. On the other hand, if a student has scored highly, it indicates that they are capable of showing remarkable performance in some circumstances, even if they are not the most common. **Under no circumstances should psychological or diagnostic conclusions be drawn based solely on the following data.**

To find out what the test is like, you can watch the video on [this webpage](#).

What is the test?

The COSMOS Test aims to analyze, in an objective and standardized way, the cognitive factors and prior knowledge that influence children's academic performance during their first years of compulsory education. Each of these factors is **compared to both the universal scale** (made up of the results of all students who have taken the test) **and the other children in their class**.

It is a universal screening test for difficulties in learning math and is especially focused on the Numbers and Operation content strand. **The activity that has the most influence is the arithmetic fluency one**. However, with this test we also measure the cognitive and knowledge precursors to arithmetic fluency, in particular number comparison, knowledge of the Number Line and the automation and knowledge of natural numbers from 0 to 9.

In order to achieve results with distributions that allow us to ensure the validity of the test, the previously mentioned tasks are timed and, therefore, students have a time limit to correctly solve all the questions. That is why we also include two other activities, one to measure the time a student takes to answer, and another to measure visual processing speed. This measures the student's ability to process and react to visual inputs. The effect of these two tasks helps us measure the processing speed and intrinsic reaction of the student, which we then take into account when analyzing the timed tests.

Lastly, there are two tests, in this case untimed, that allow us to measure more generic learning styles. These are the working memory activity, which measures the ability to maintain and work with mental representations and is fundamental in any learning process, and the logical reasoning which measures the student's ability to work out and infer patterns, in this case visually, and which is pivotal in mathematical learning. These two activities allow us to complete the cognitive profile of the student when learning mathematics, but they are not used to suggest interventions within the framework of this study, since we only focus on Number and Operation.

When presenting your class' results for each activity, you will find a specific explanation for each one.

What is the class results report?

This report is divided into two sections which present the same information: the first section shows the **overall results of the class**, and the second, the **individual profiles compared with the universal results**.

In the Appendix, you can find the results of the factors and the students compared to the rest of their class, without taking the universal results into account.

The **results are standardized using the universal scale depending on age**, that is, students of the same age who get a grade between 0 and 1 in each test, with the best *universally* recorded score being 1.

The colored key indicates the performance of the students compared to the *universal scale*.

- **Orange:** students with a performance below 30 %.
- **Green:** Average performance.
- **Blue:** students with performance in the top 15 %.

Using these values, we consider that **students who are below the 30th percentile in a test have not obtained age-expected results**. You will find it indicated in the graph of each test marked with a **horizontal dotted line**.

The **combination of the different tests**, of varying weight, **determines which students should take part in the Catch-up**. These students will see them marked in bold.

Remember: To analyze which students need intervention and which do not, universal scales and standards according to the age of the students are used.

Interpretation of the results

If you have any questions about the test or the interpretation of the results, **do not hesitate to contact your advisor**.

List of students who will take part in the intervention

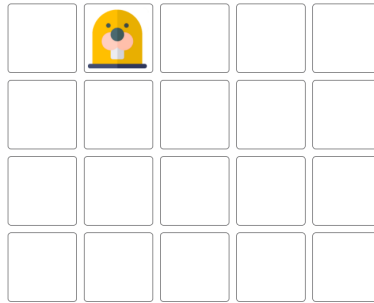
- Student 01
- Student 08
- Student 10

The following students have not completed enough activities to be able to calculate their level:
Student 03

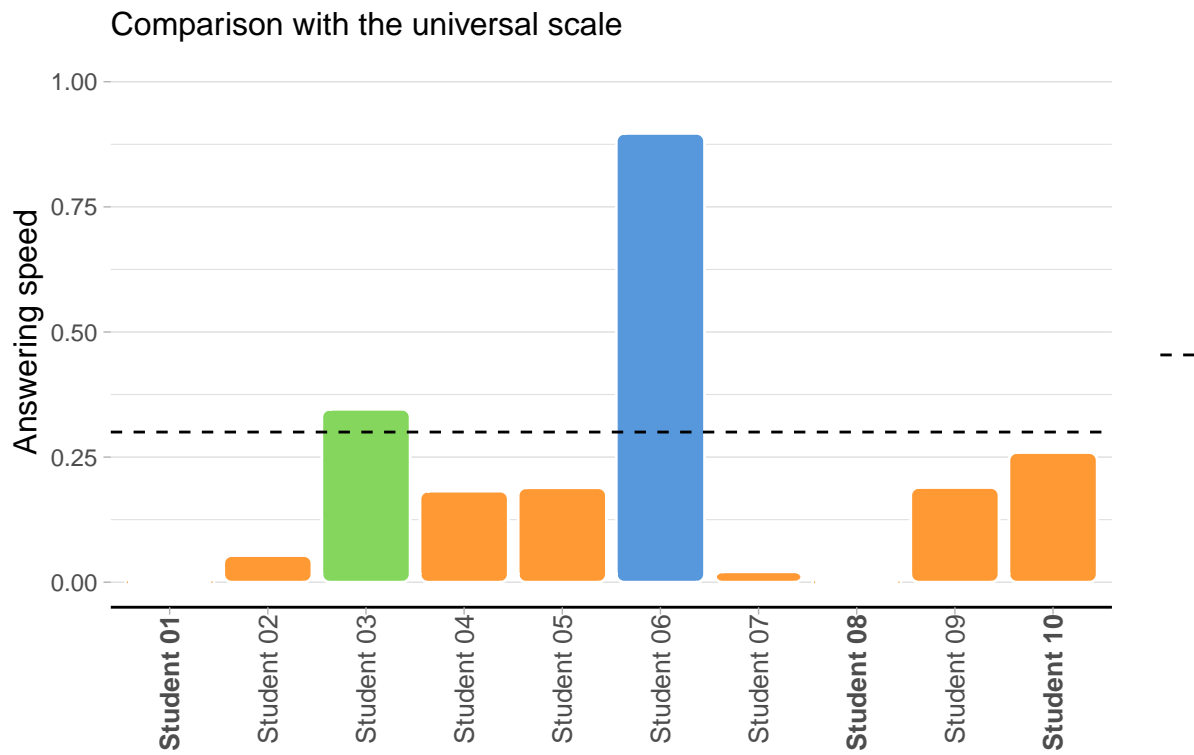
Results

Collective Report

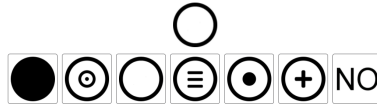
Answering speed



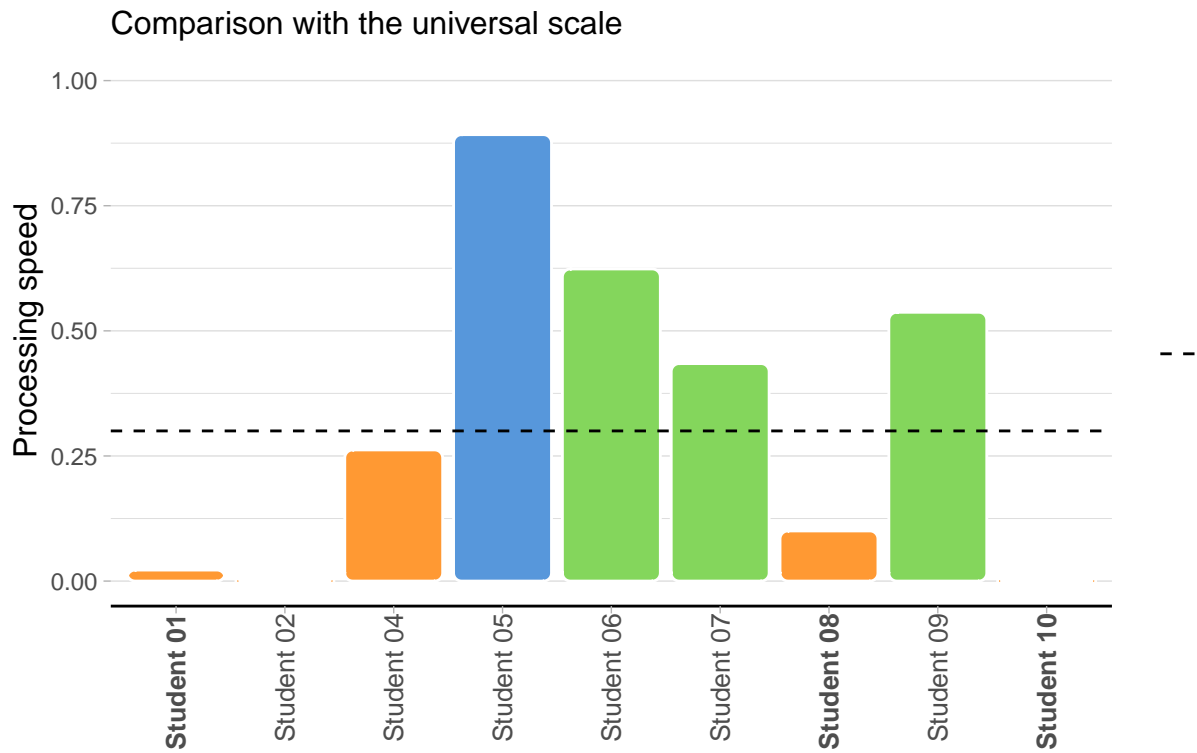
In this task, we measure how **quickly the student can use the device to answer the test**. This information is used when analyzing timed tasks.



Processing speed

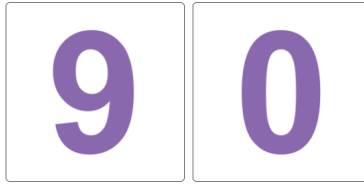


In this task, we measure students' **ability to perceive and make automatic decisions** based on simple visual stimuli.

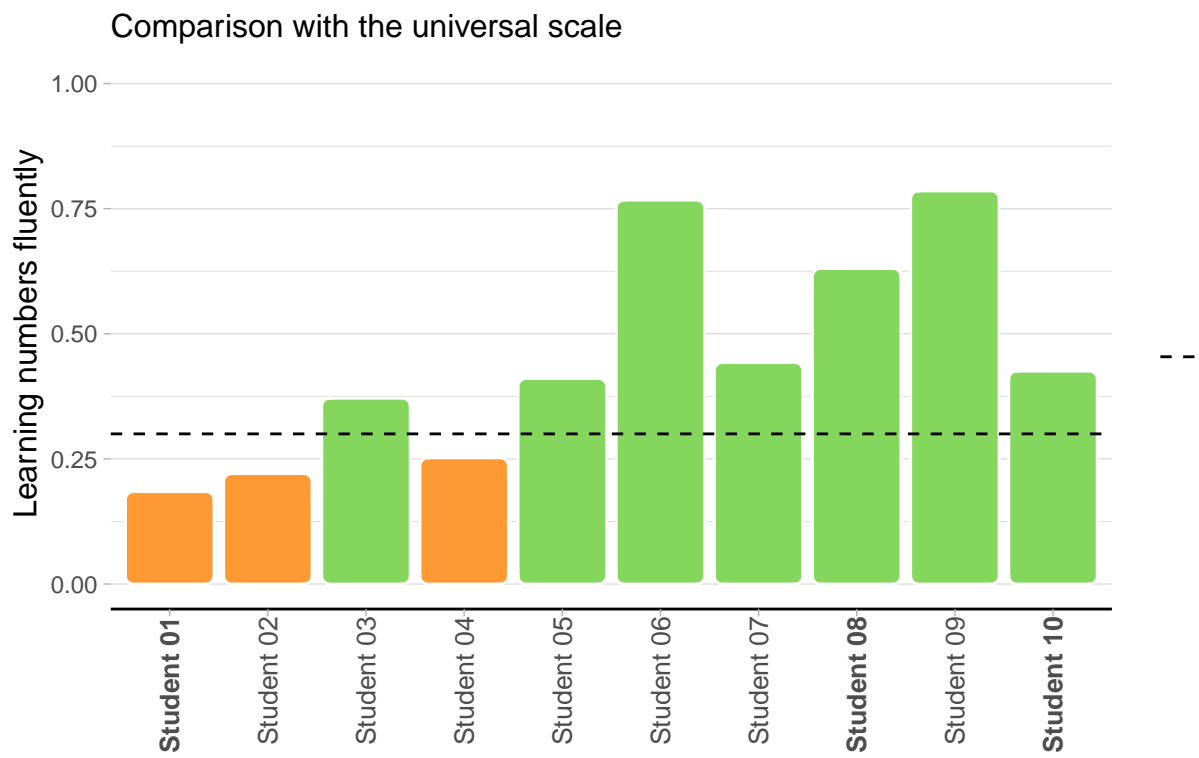


The following students have not completed the activity: Student 03

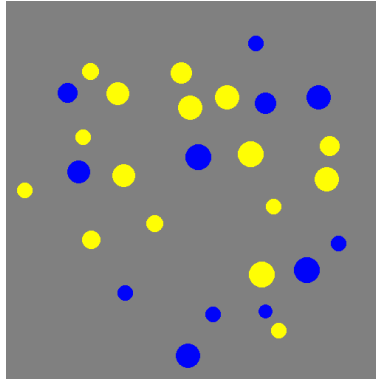
Learning numbers fluently



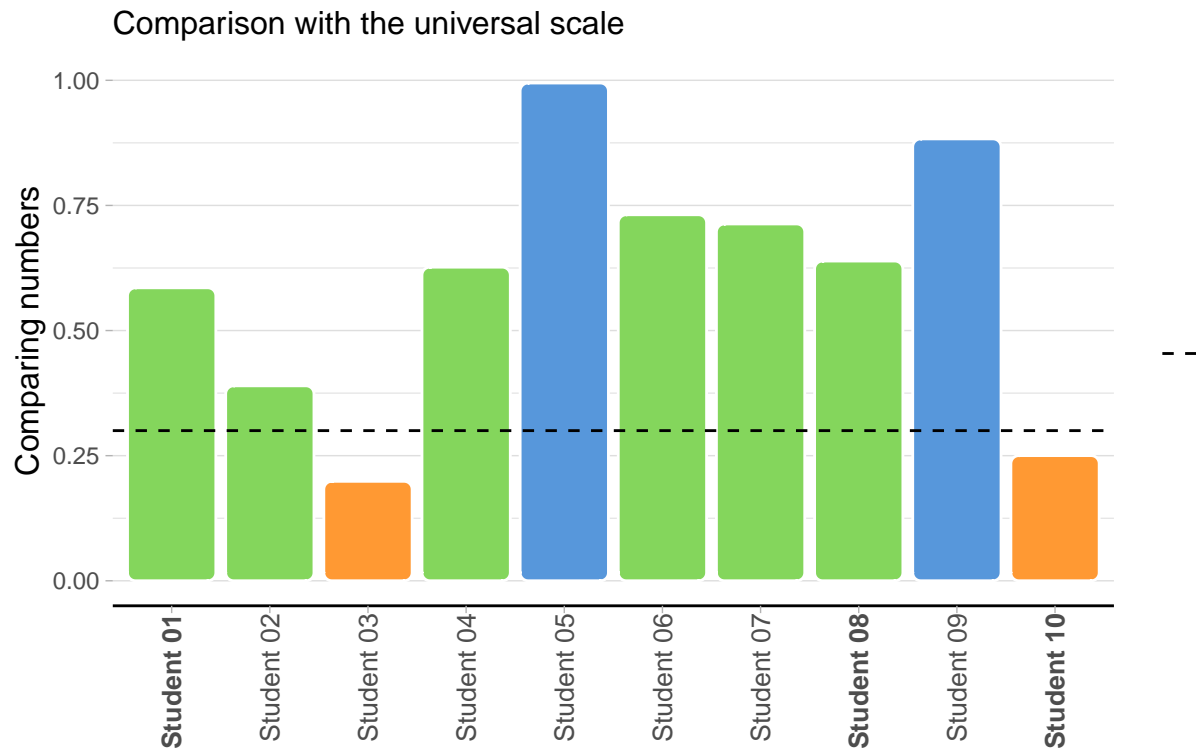
In this task, we measure the **degree of understanding and fluency of numerals in the 0-9 range** .



Comparing numbers



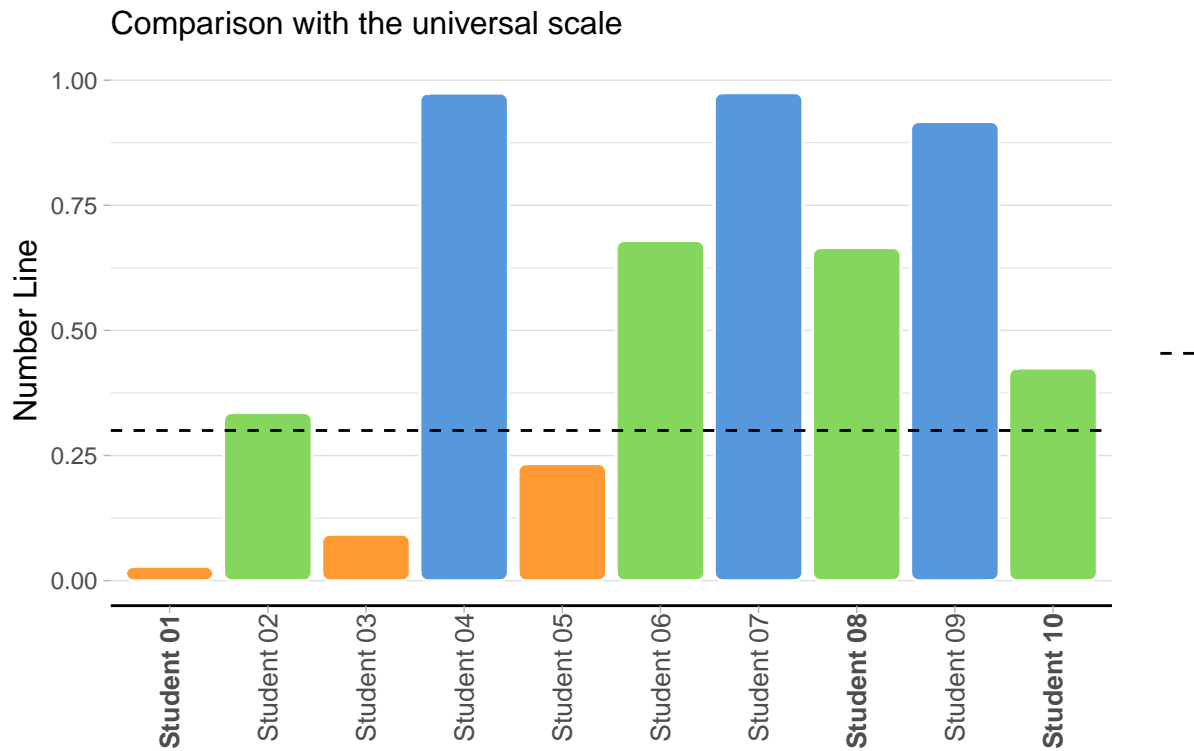
In this task, we measure the **degree of perception of magnitudes in analog format** (amount of points).



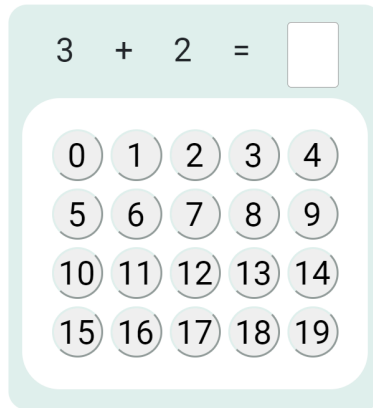
Number Line



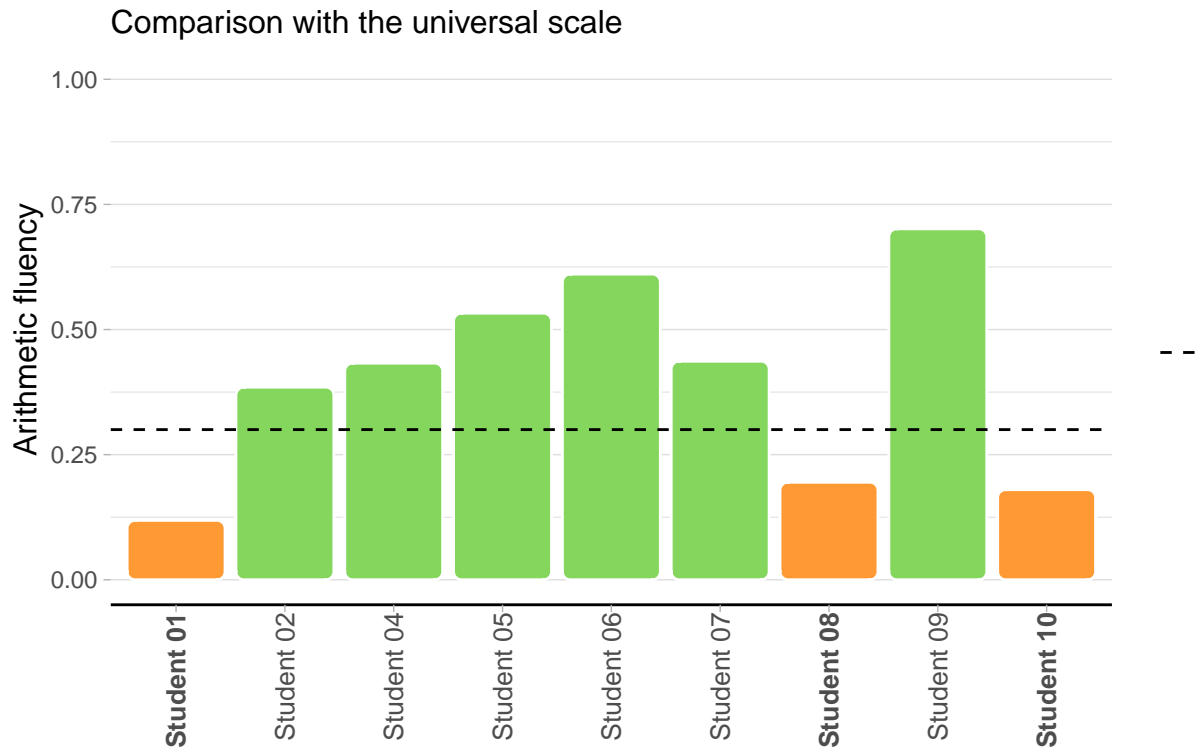
In this task, we measure the **degree of being able to place natural numbers up to the hundred on the Number Line**, that is, knowledge of the Number Line 0-100.



Arithmetic fluency

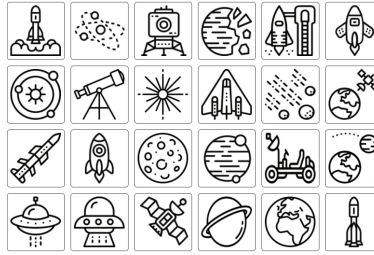


This is the **most important activity** of all, it measures the **process of learning basic numerical operations automatically**.

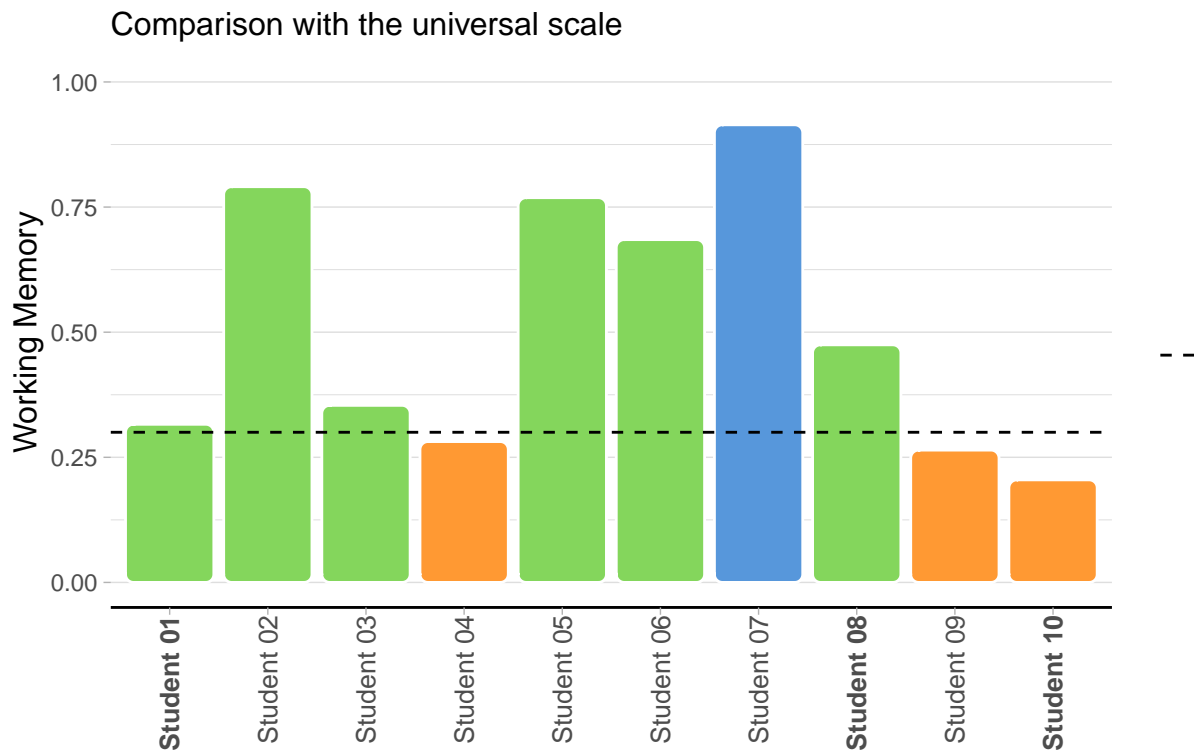


The following students have not completed the activity: Student 03

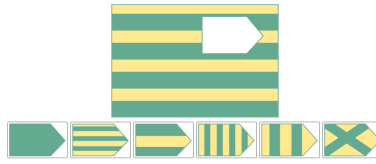
Working Memory



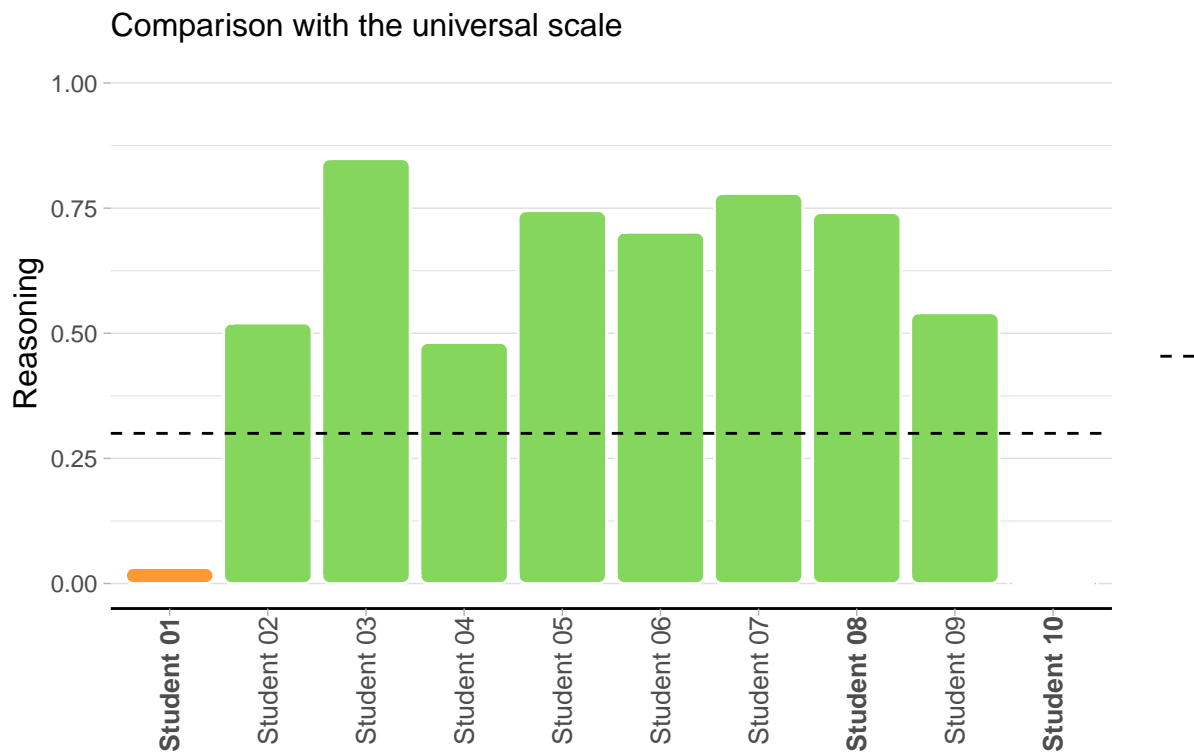
In this task, we measure the student's **ability to retain information and use their memory without getting distracted.**



Reasoning

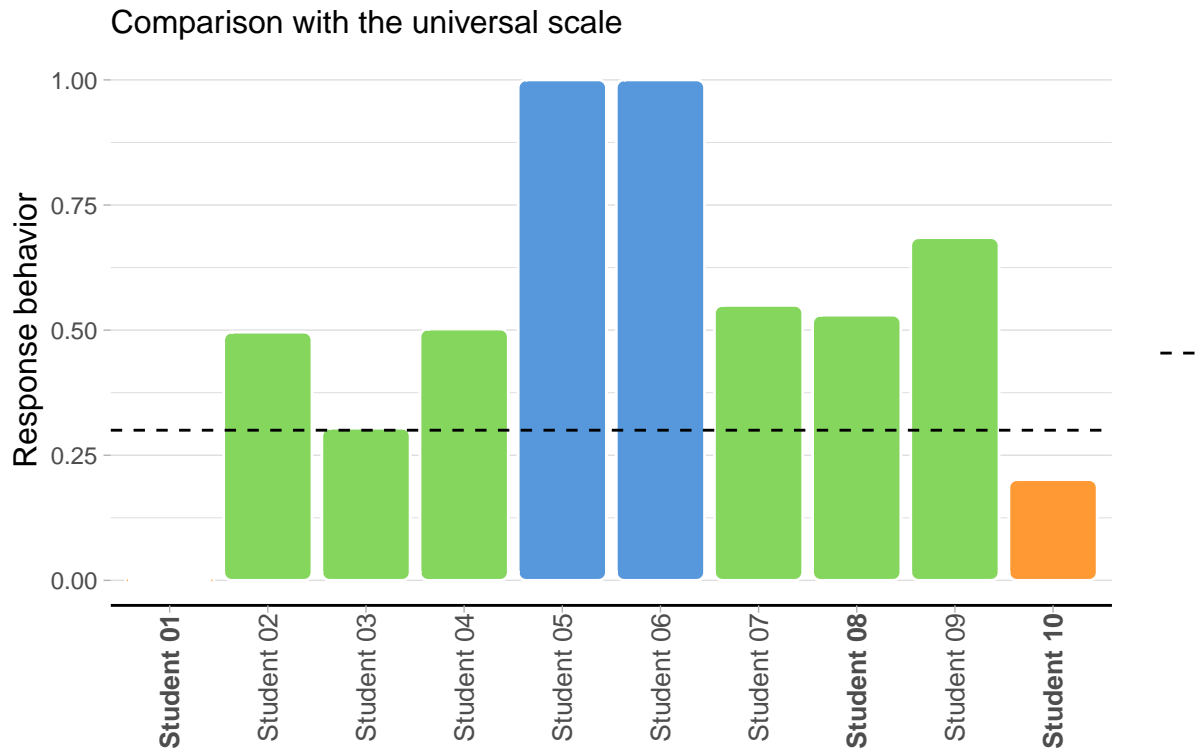


In this task, we measure the **capacity to reason with concepts, infer logical patterns and figure out how they continue.**



Response behavior

This factor is not an activity that has been performed, but it is calculated from the results of the others. It measures the **amount of errors made during the test**. This gives us information about the student's response style, in particular, whether they prioritize speed or accuracy.

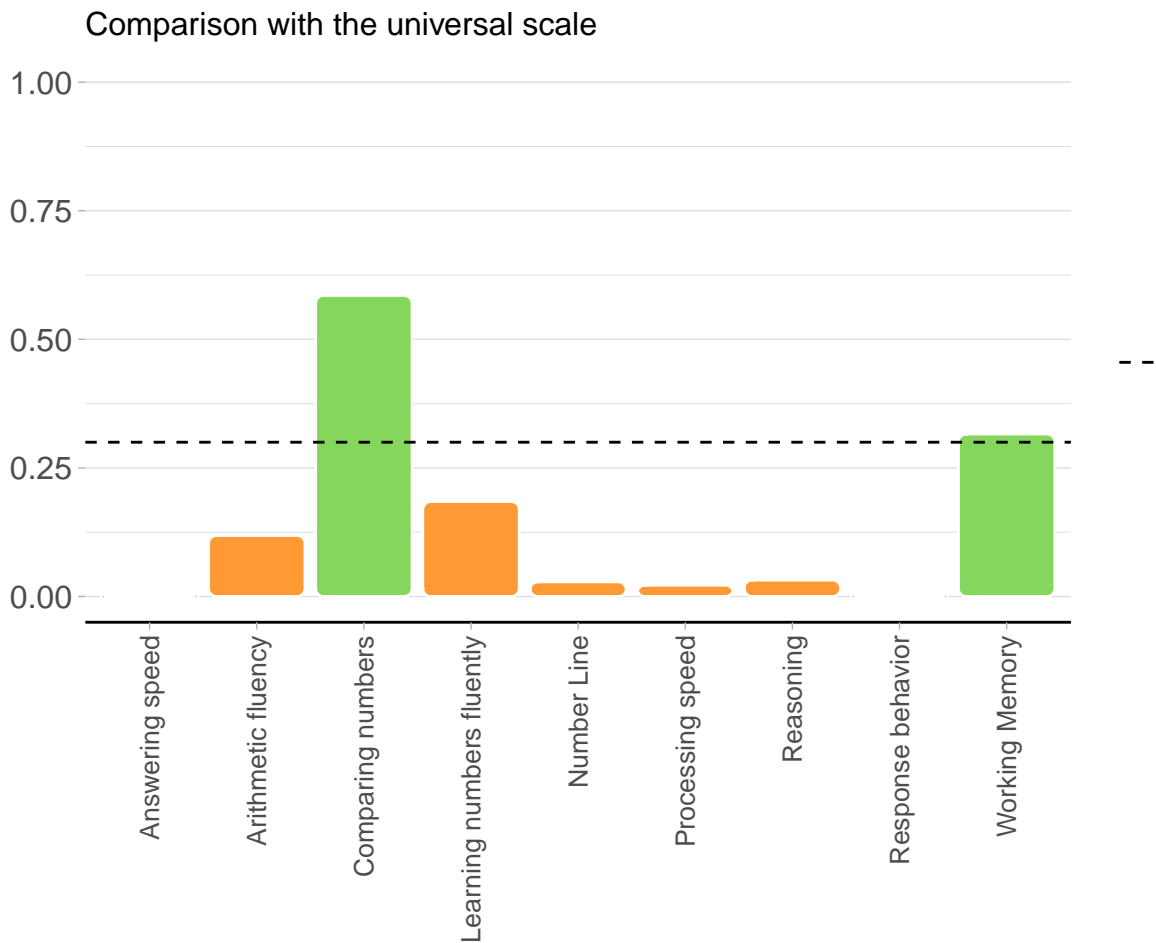


Individual Report

For each student we represent the data for each cognitive factor measured. The colors are the same as in the previous section.

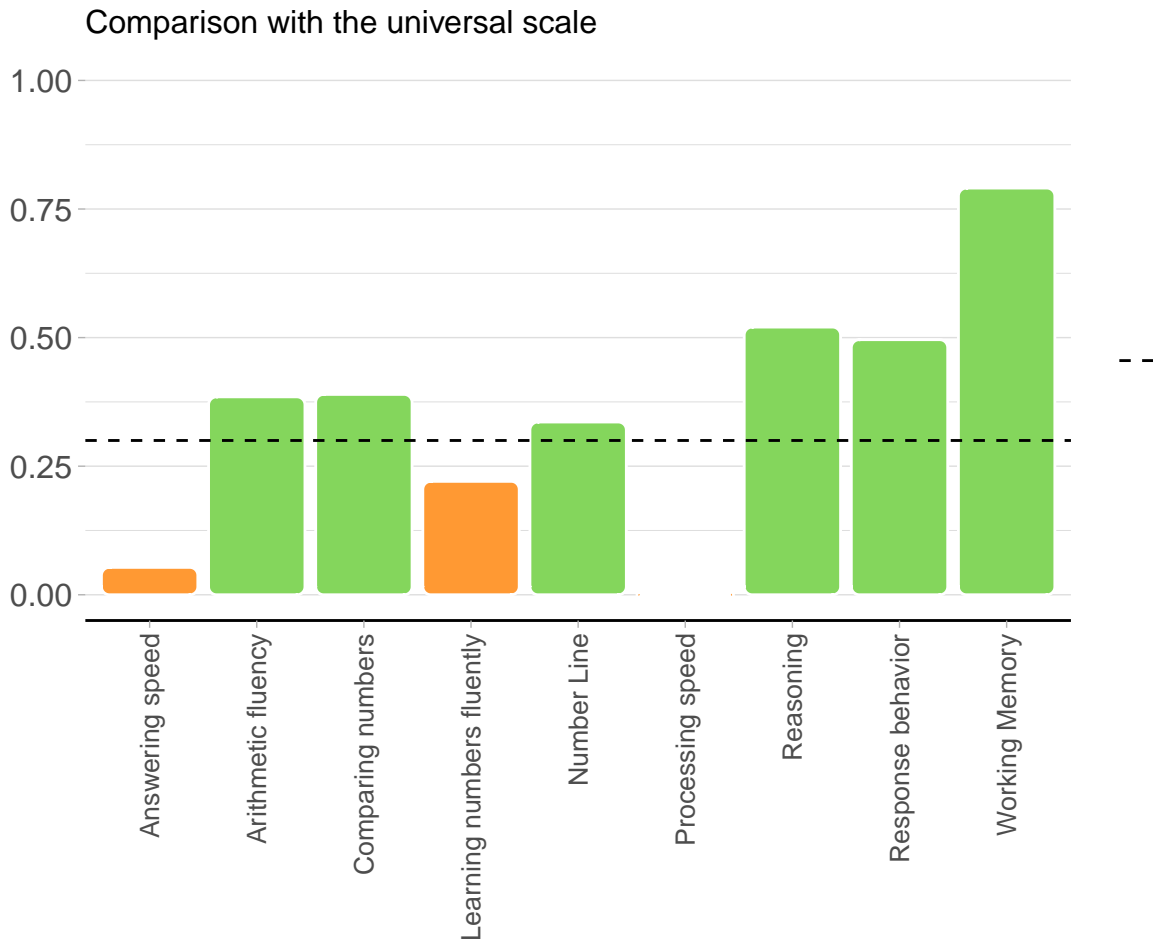
The values in orange show the students with lower scores compared to the universal scale. Green shows areas where the student got an average score, and blue shows where they got a higher score compared to the universal scale.

Student 01

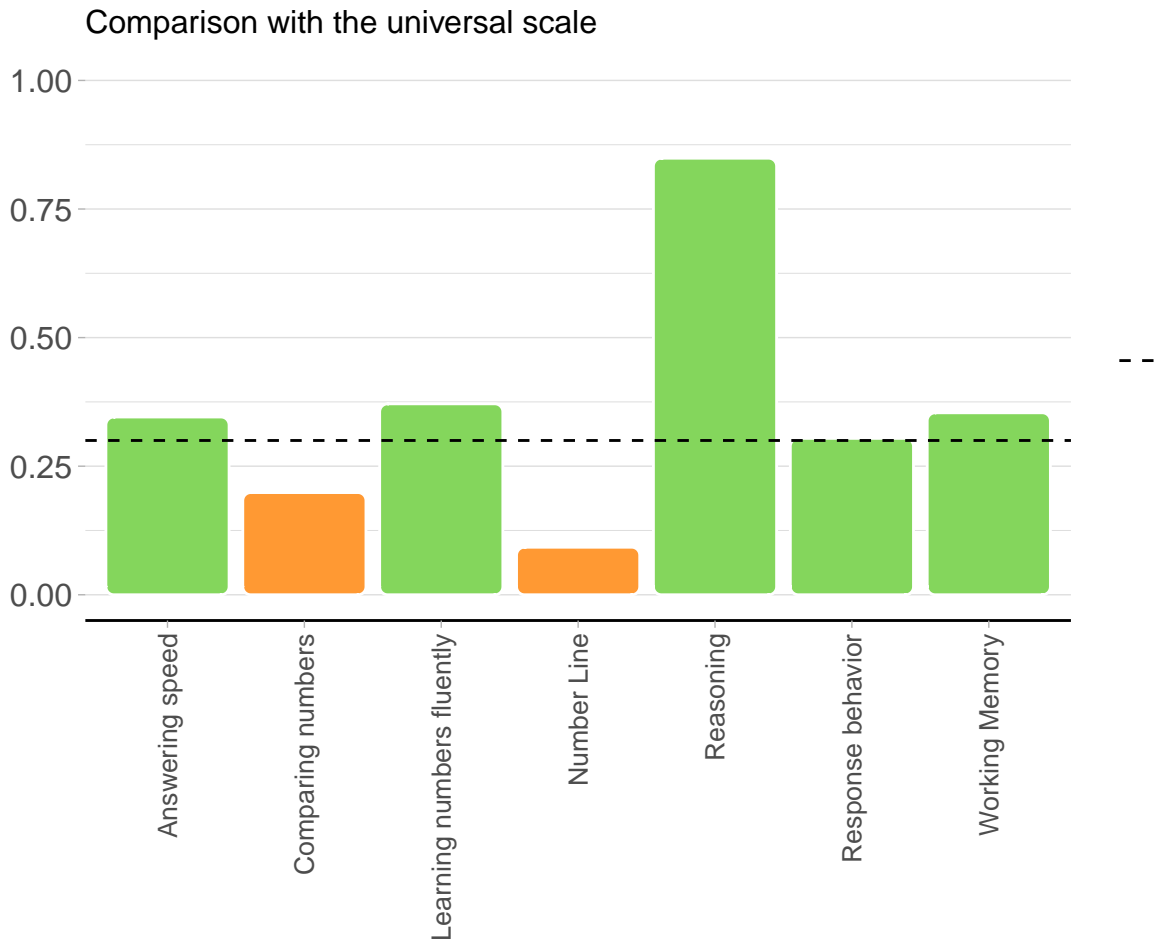


This student should take part in the Catch-up.

Student 02

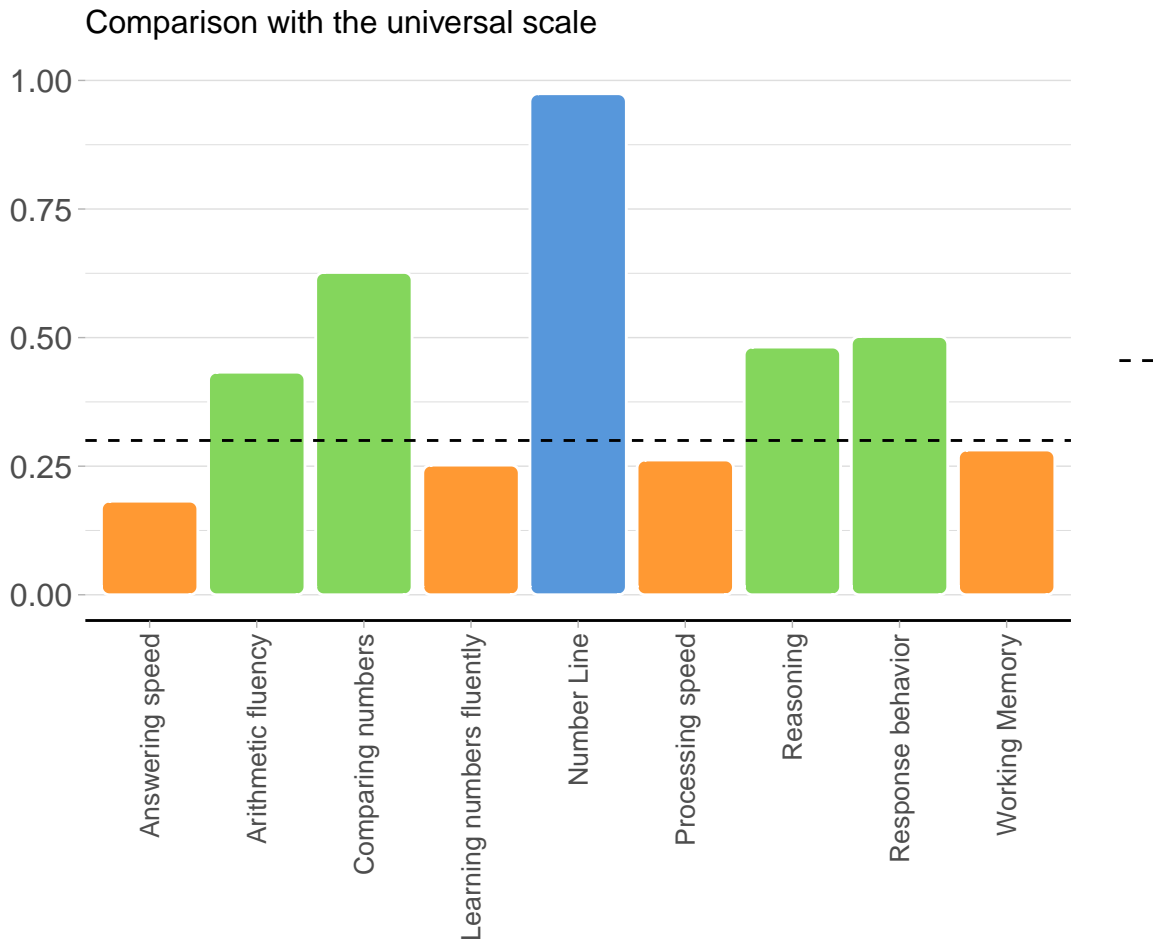


Student 03

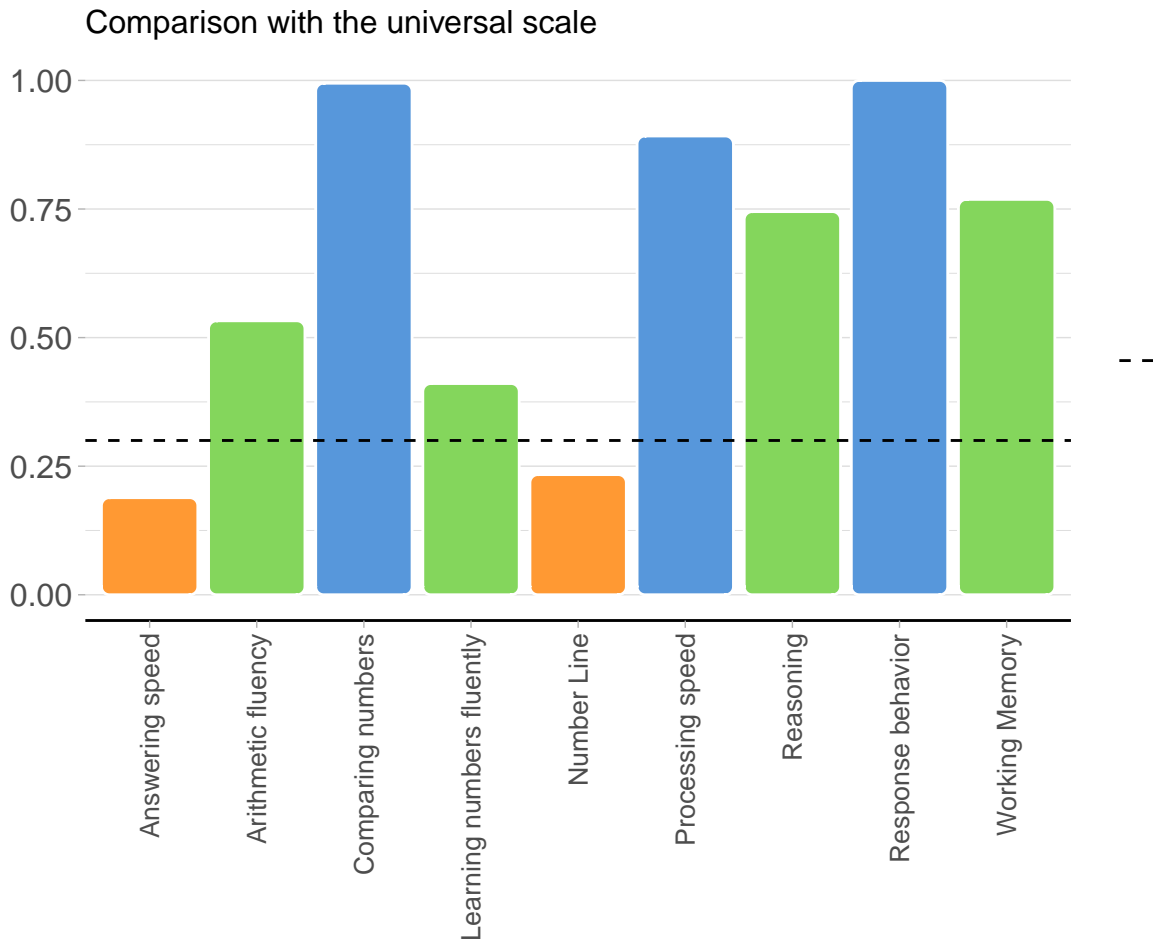


This student has not performed the following activities: Processing speed, Arithmetic fluency

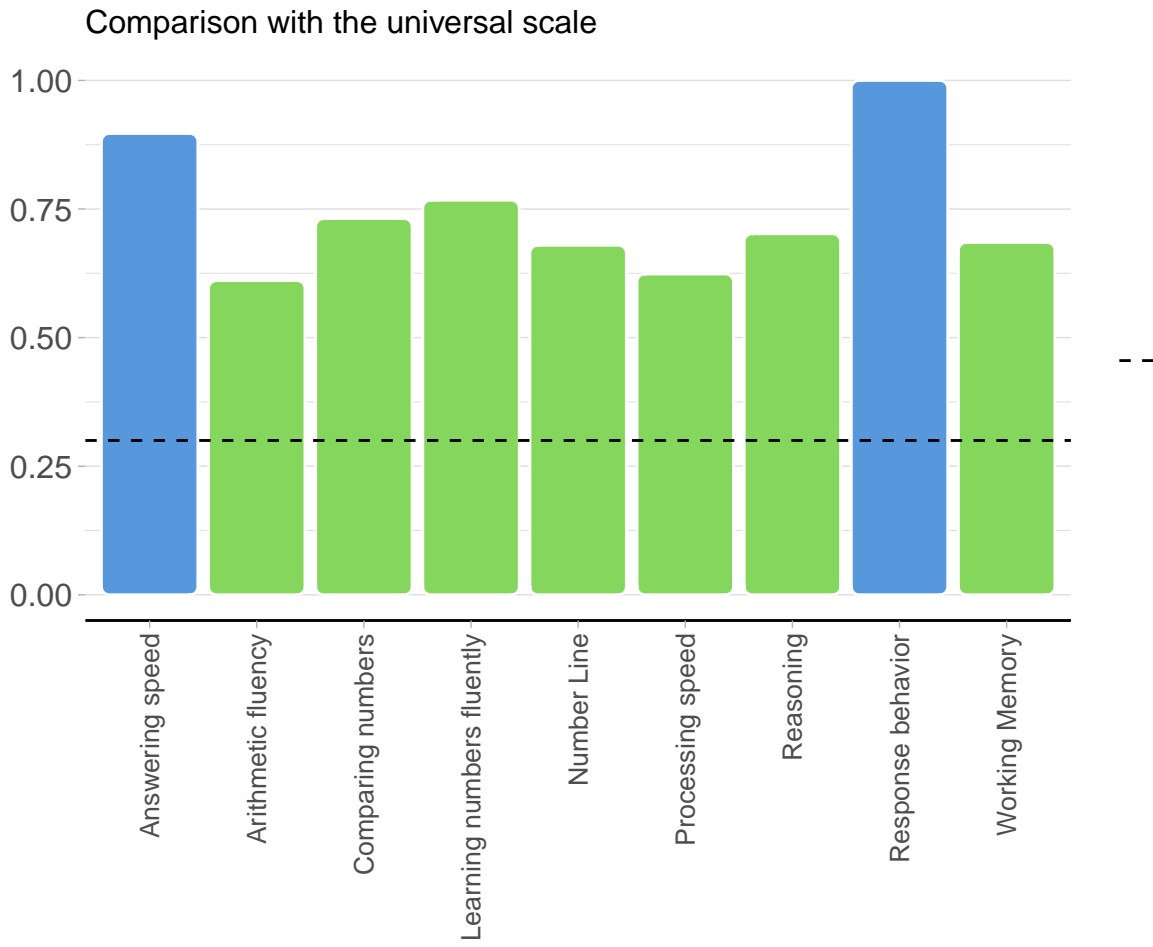
Student 04



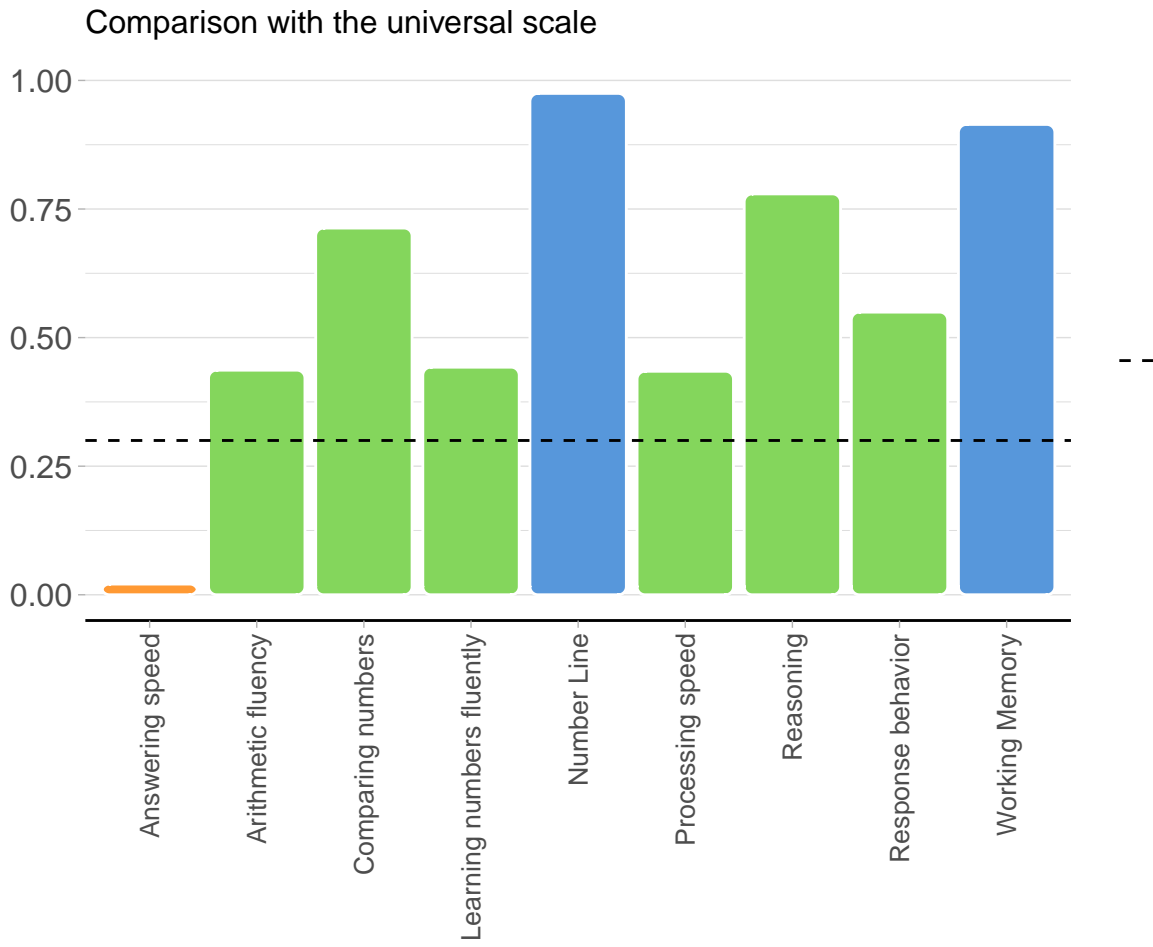
Student 05



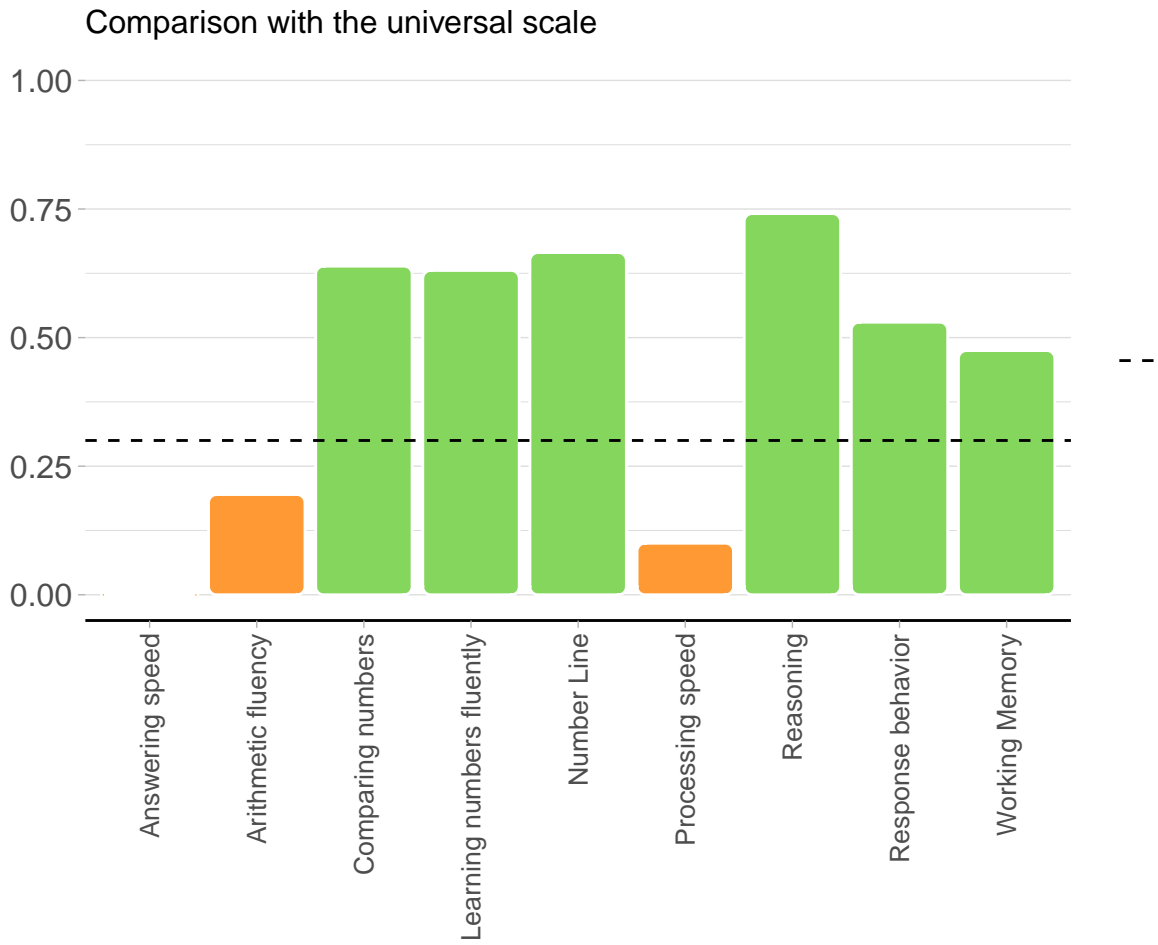
Student 06



Student 07

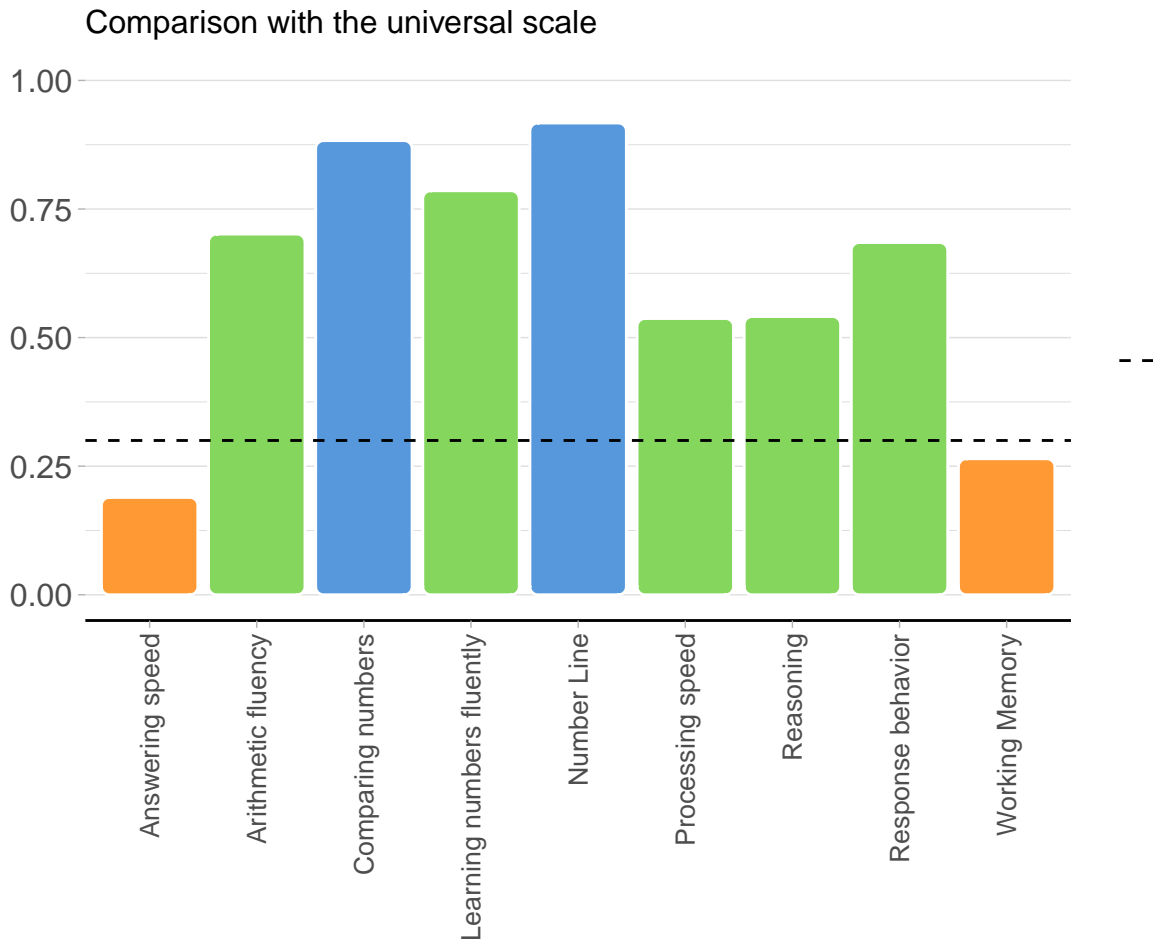


Student 08

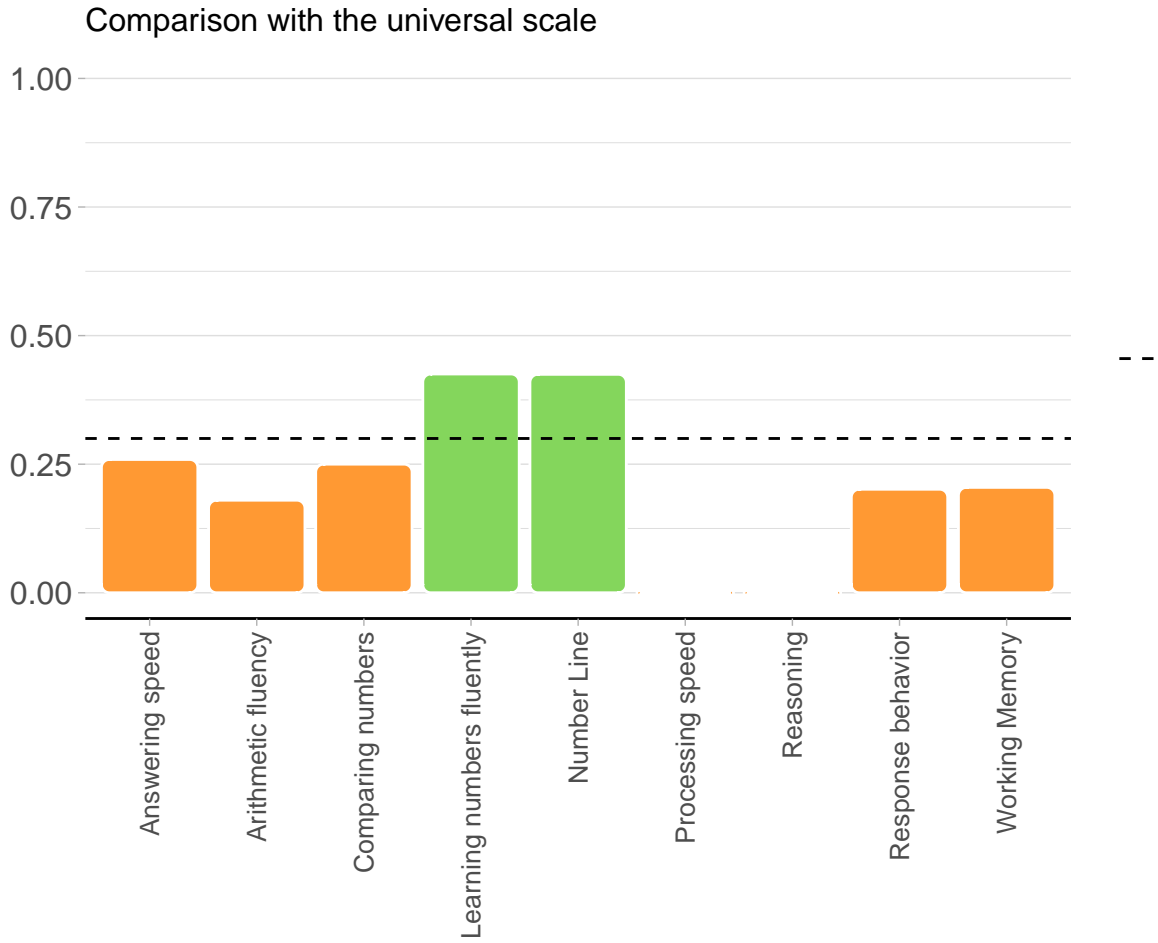


This student should take part in the Catch-up.

Student 09



Student 10

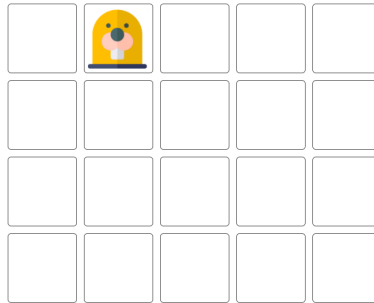


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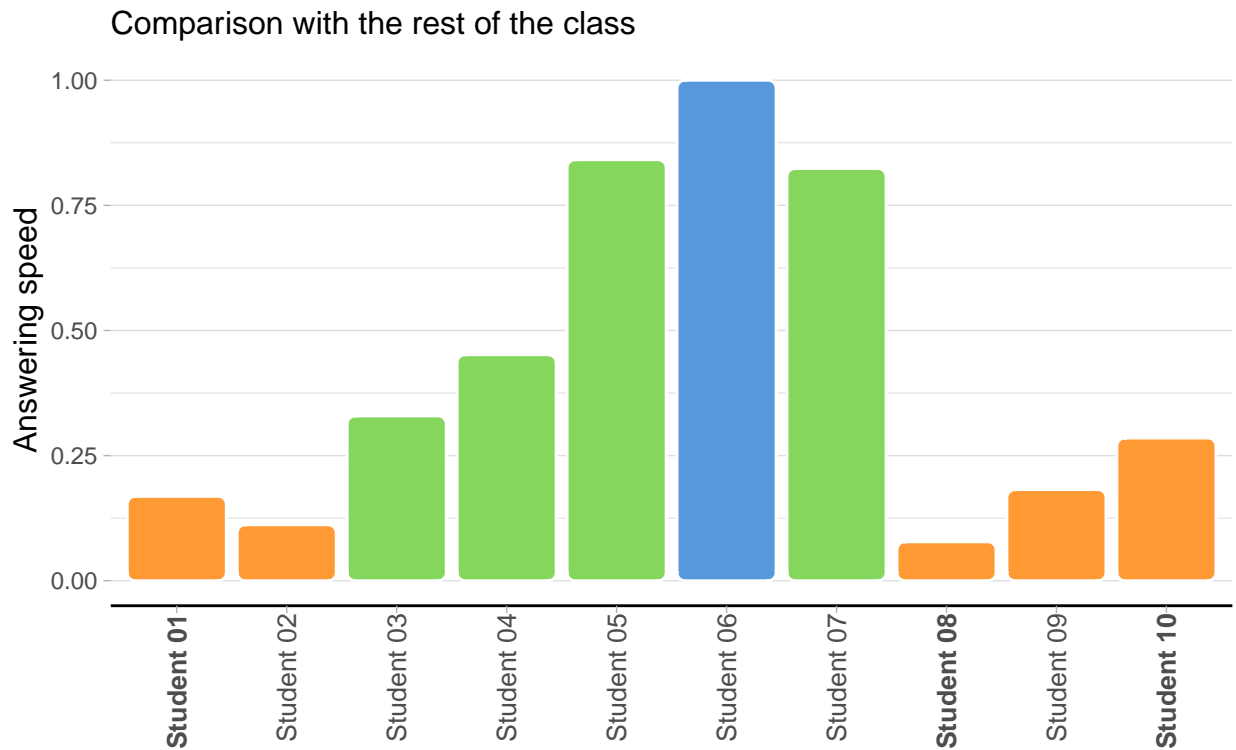
APPENDIX

APPENDIX 1: Your class' results: collective report

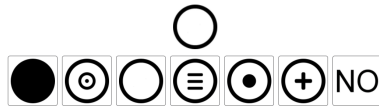
Answering speed



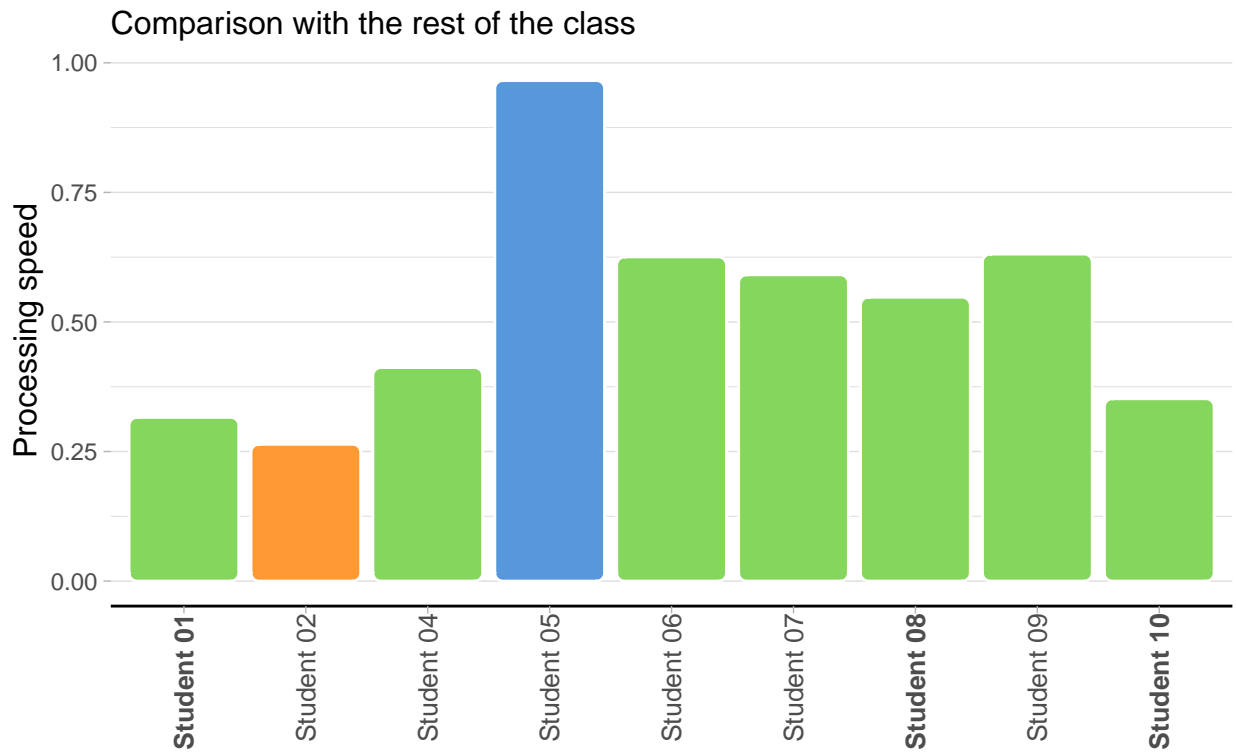
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Processing speed



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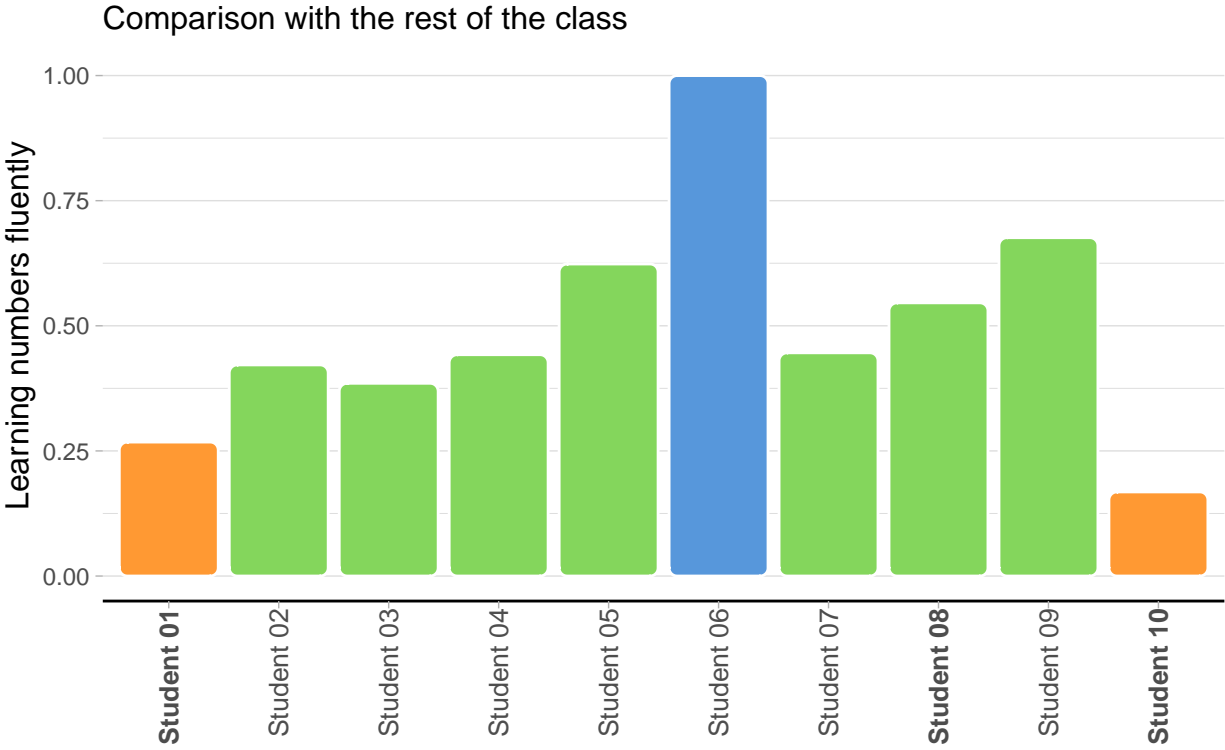


The following students have not completed the activity: Student 03

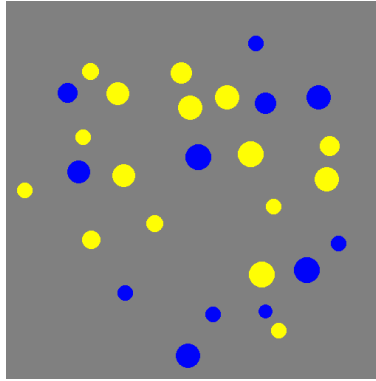
Learning numbers fluently



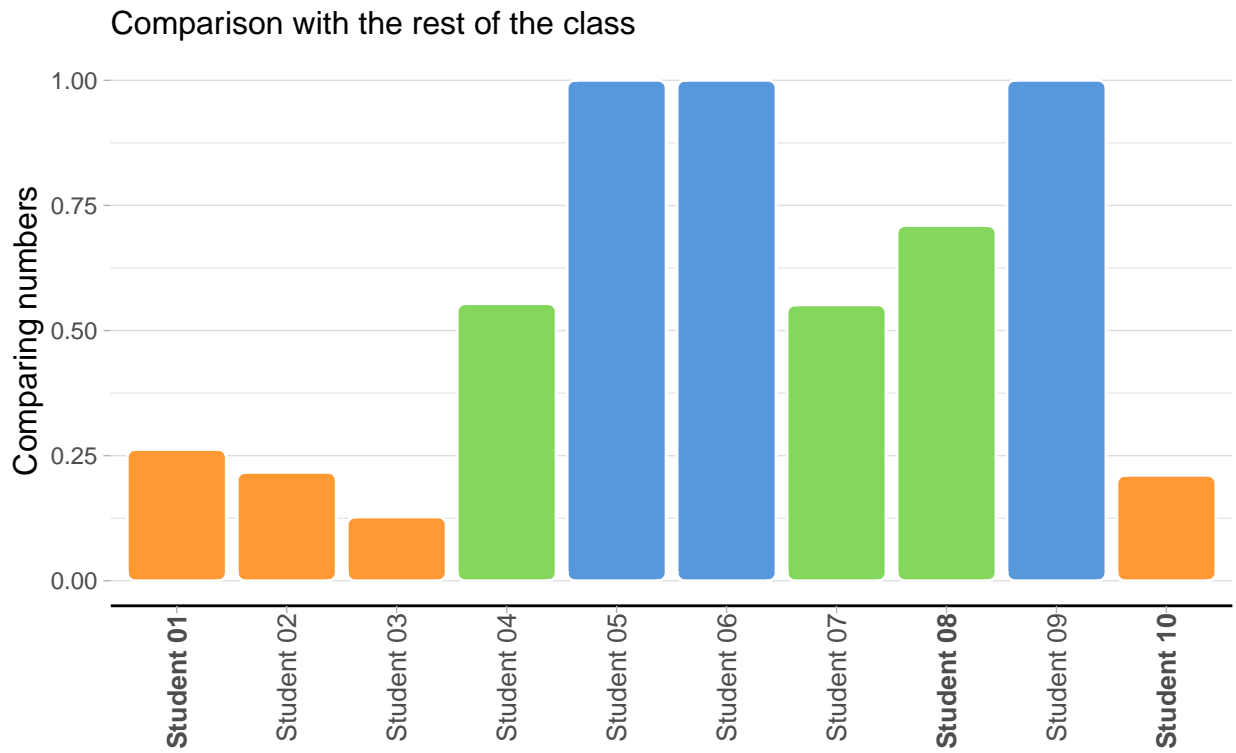
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Comparing numbers



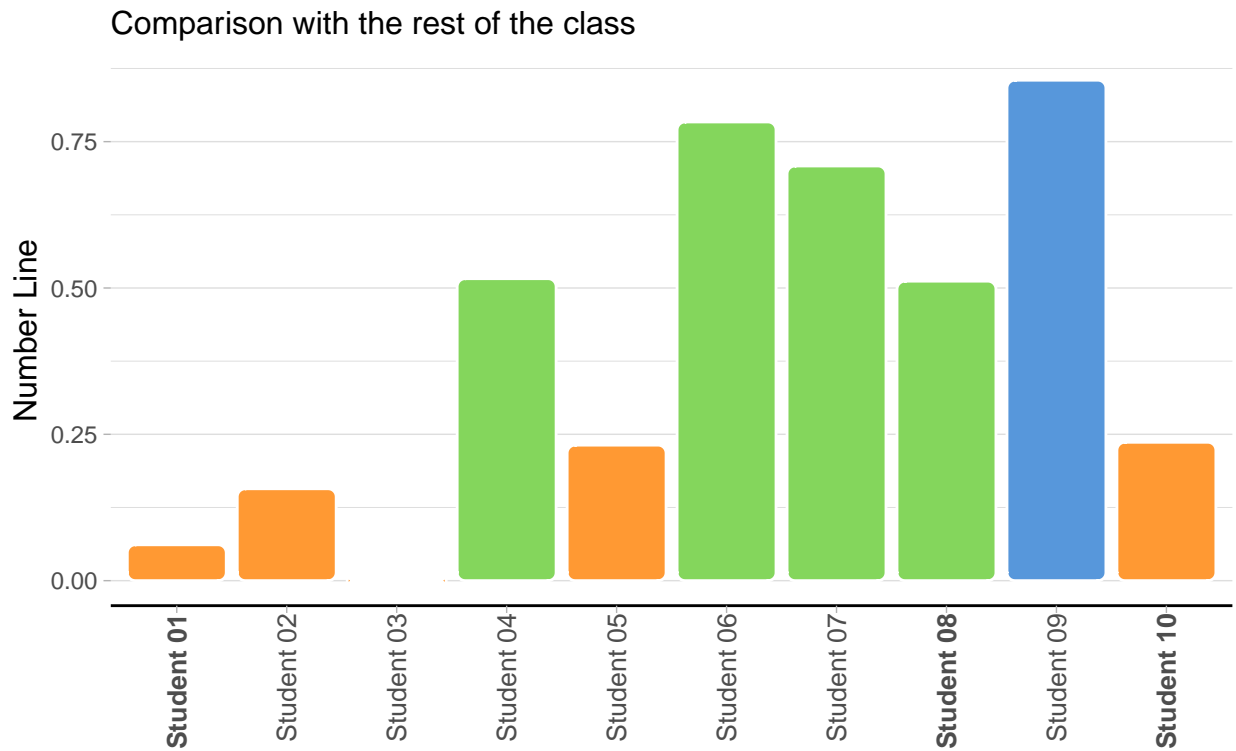
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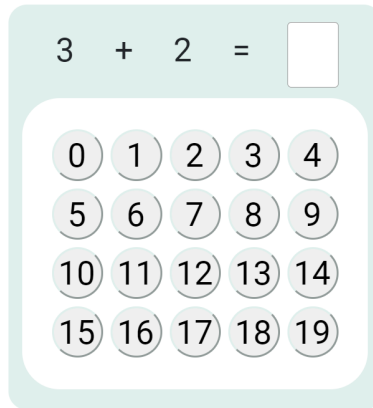
Number Line



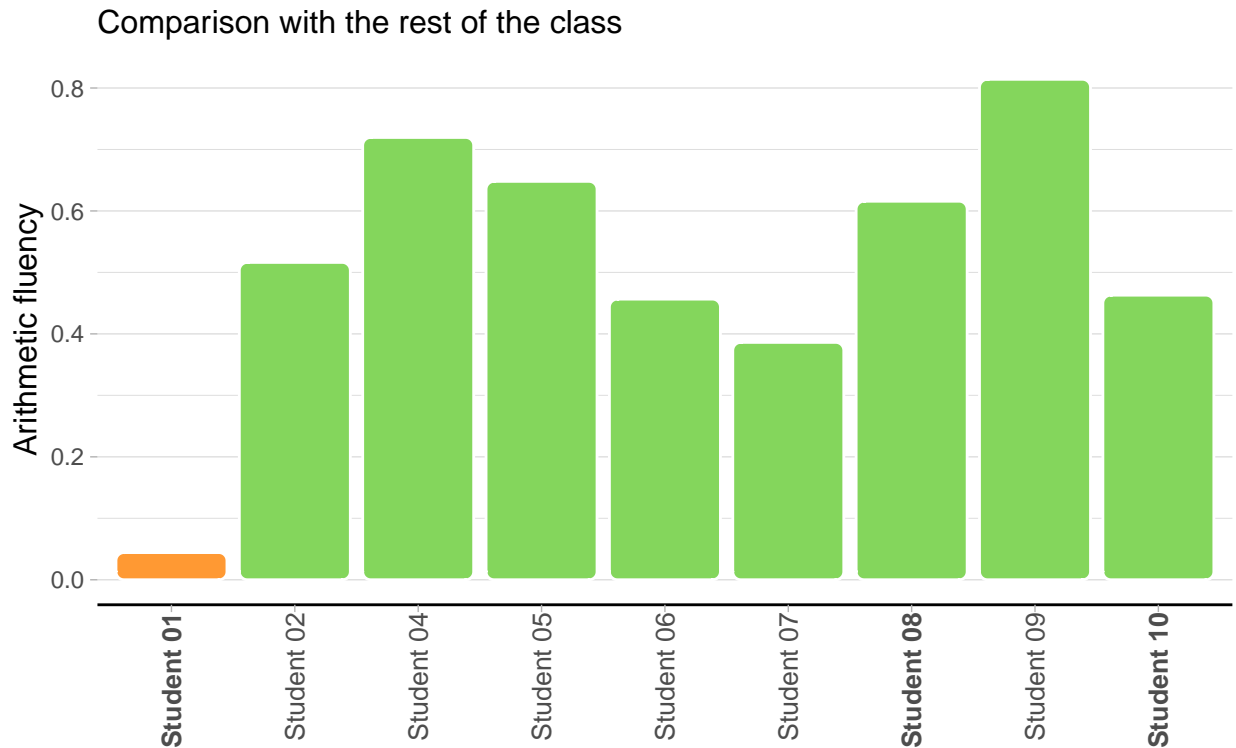
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Arithmetic fluency

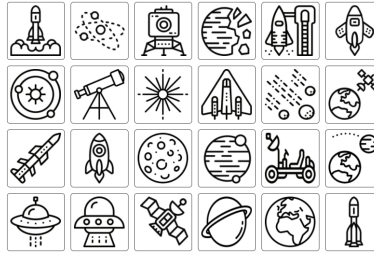


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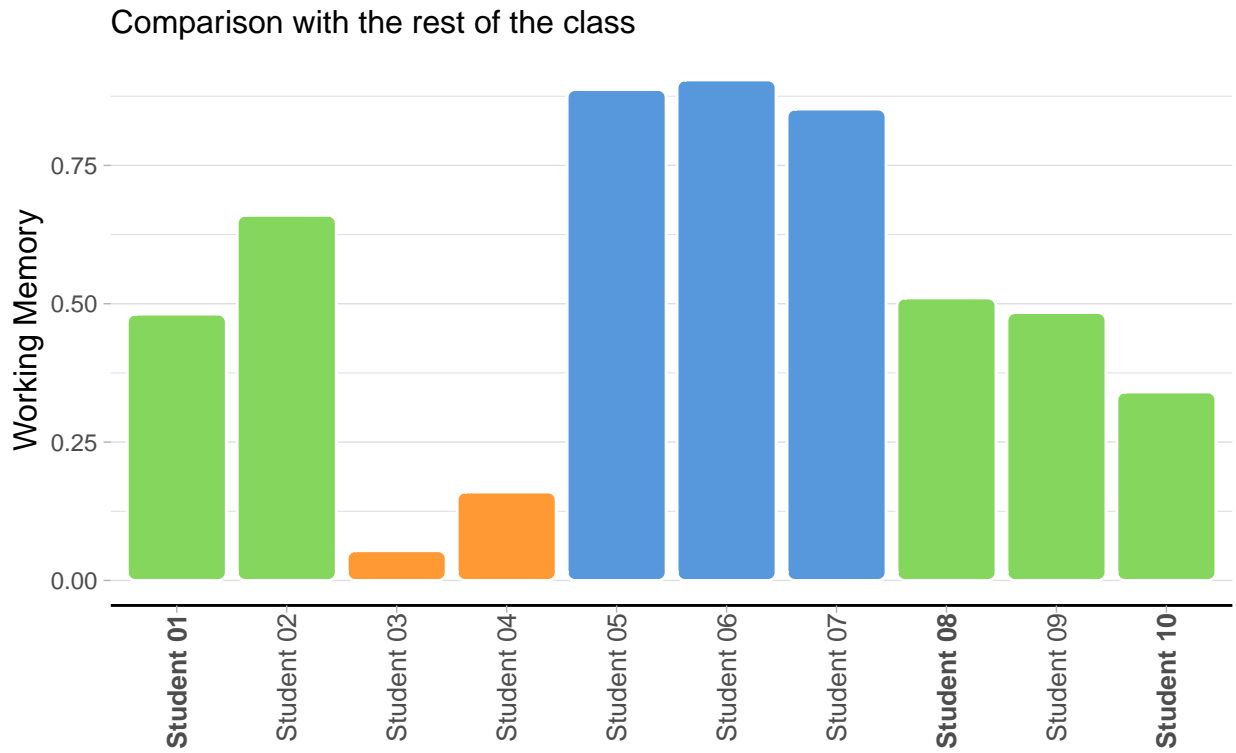


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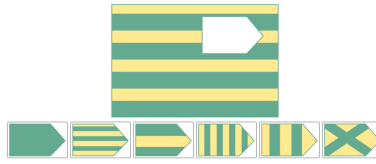
Working Memory



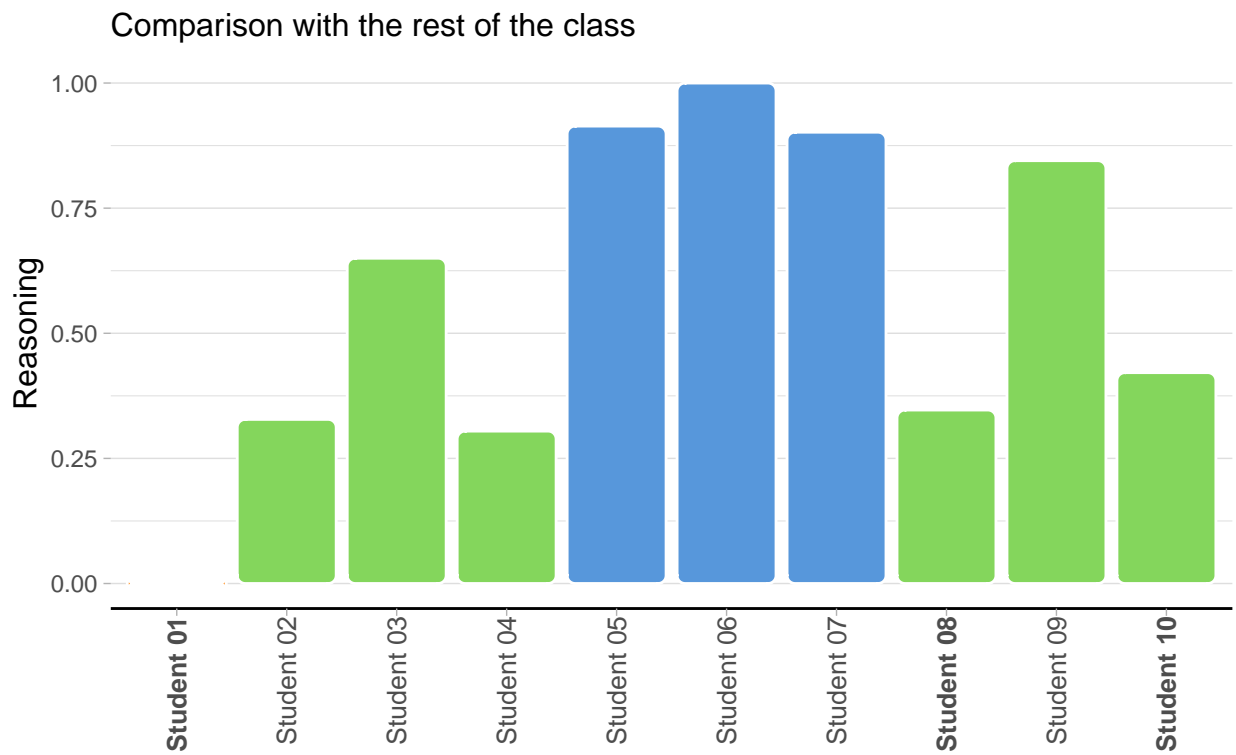
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Reasoning

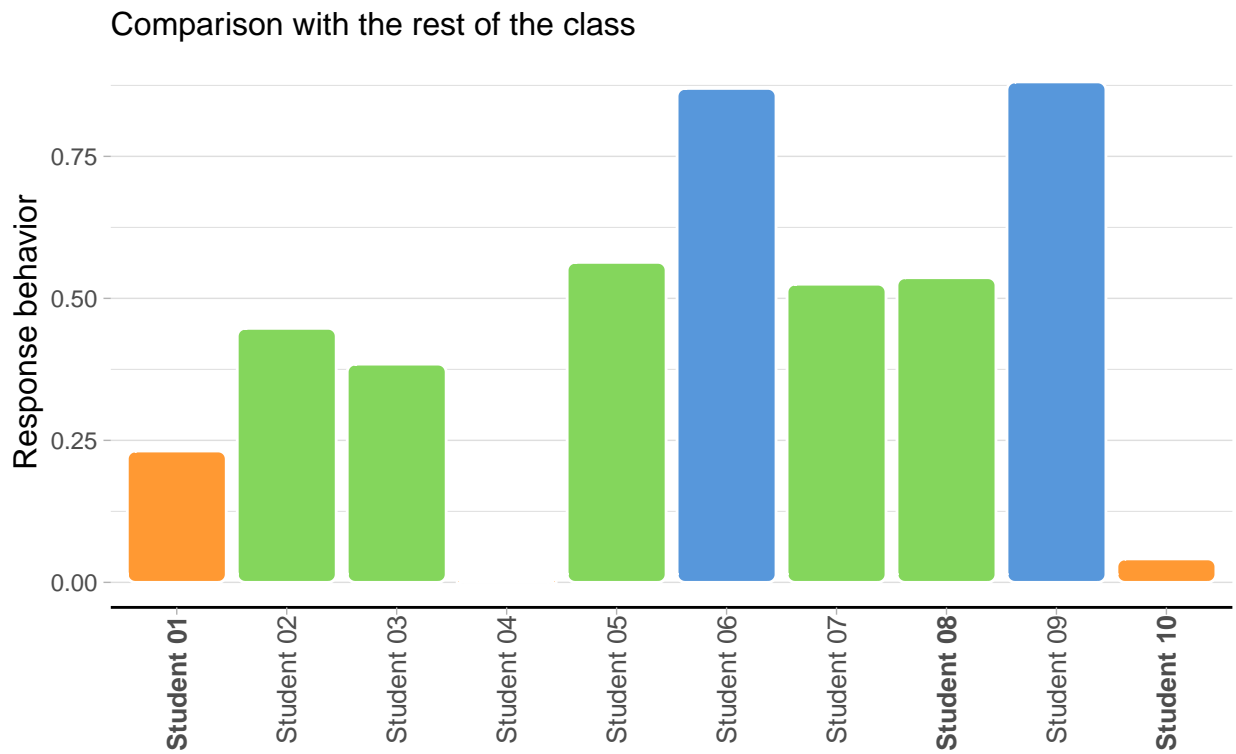


In this task, we measure the **capacity to reason with concepts, infer logical patterns and figure out how they continue.**



Response behavior

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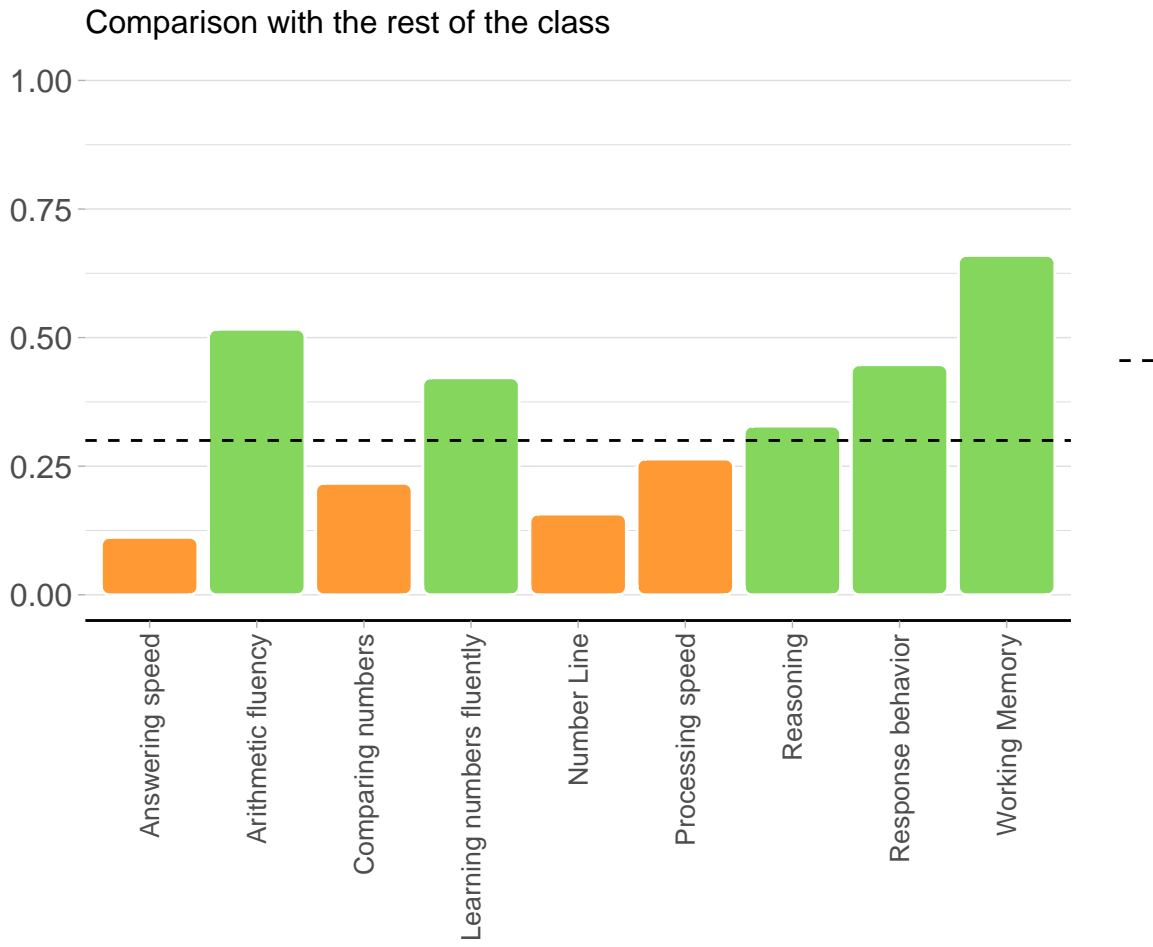
APPENDIX 2: Your class' results: individual report

Student 01

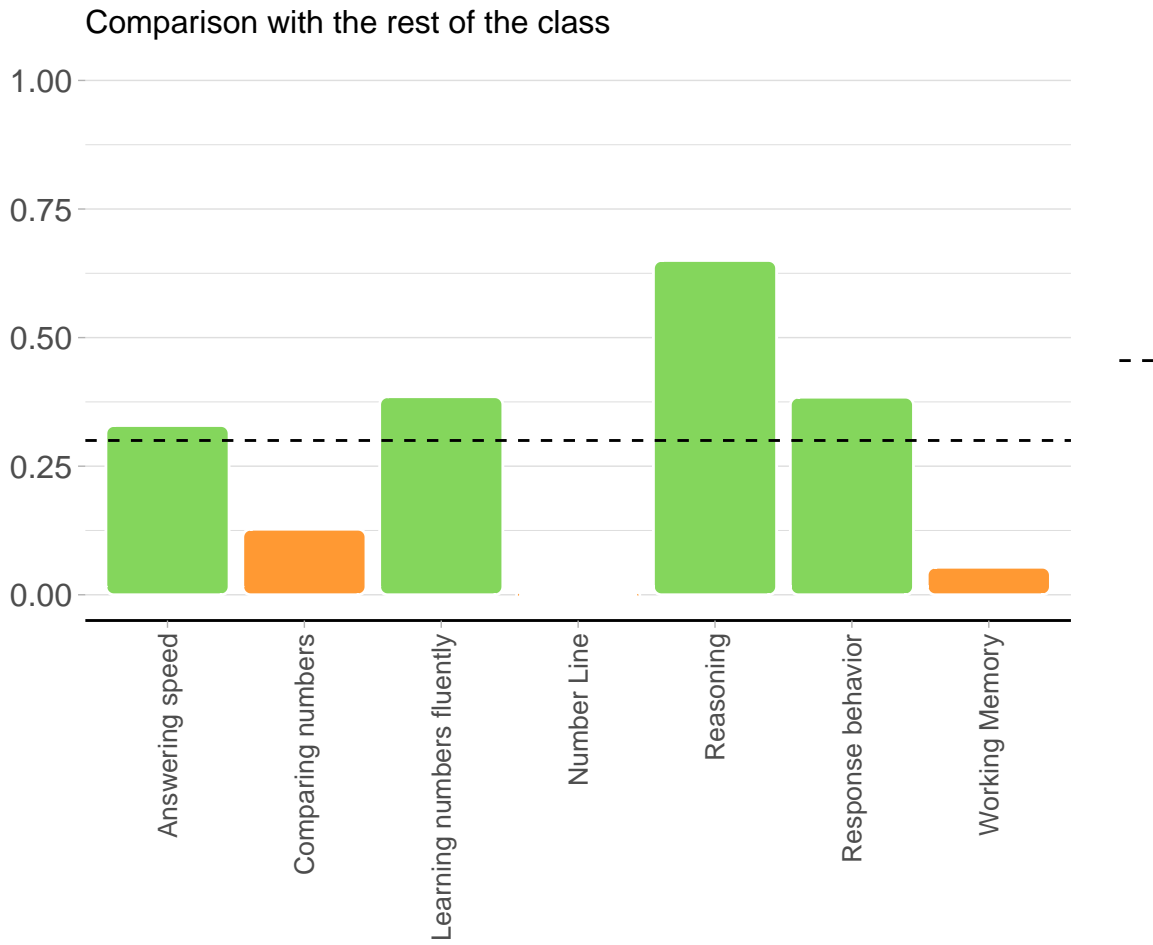


This student should take part in the Catch-up.

Student 02

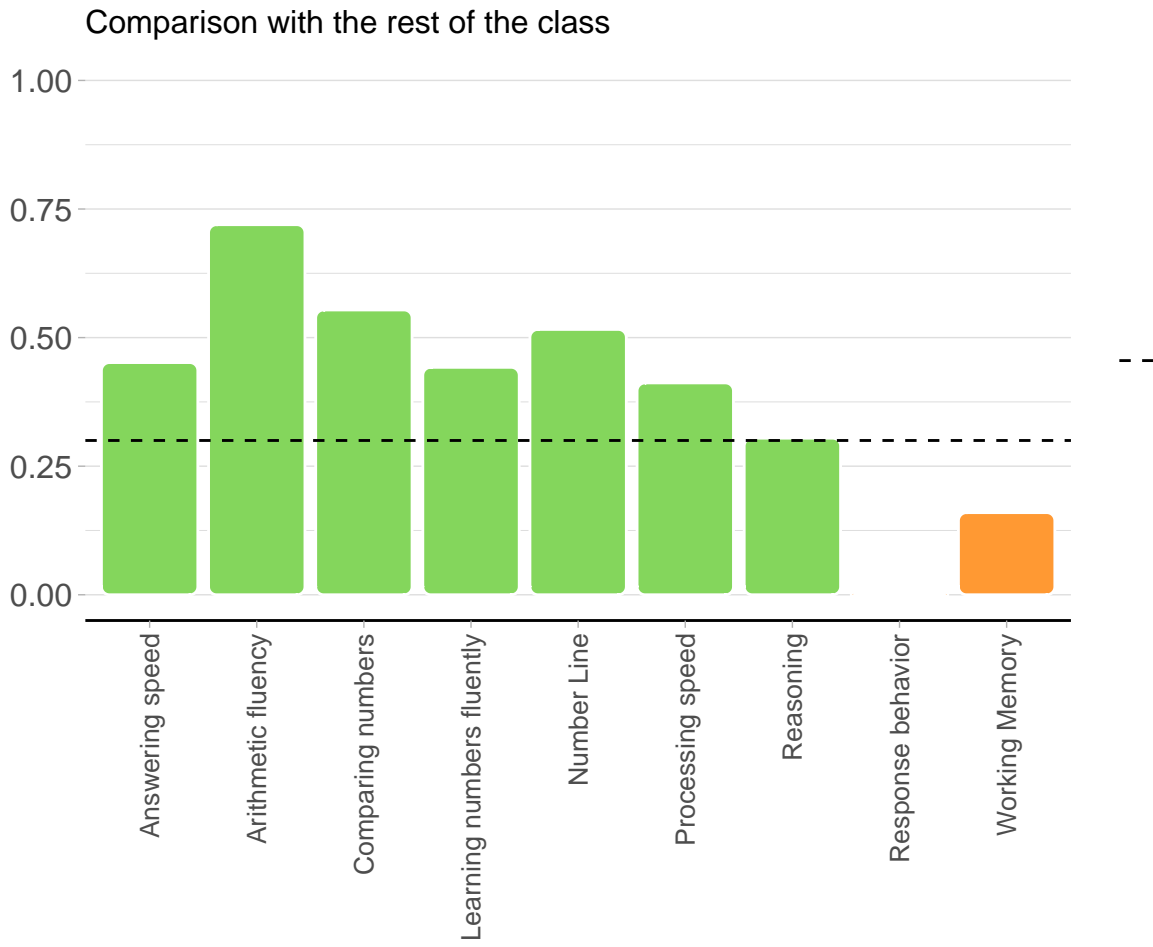


Student 03

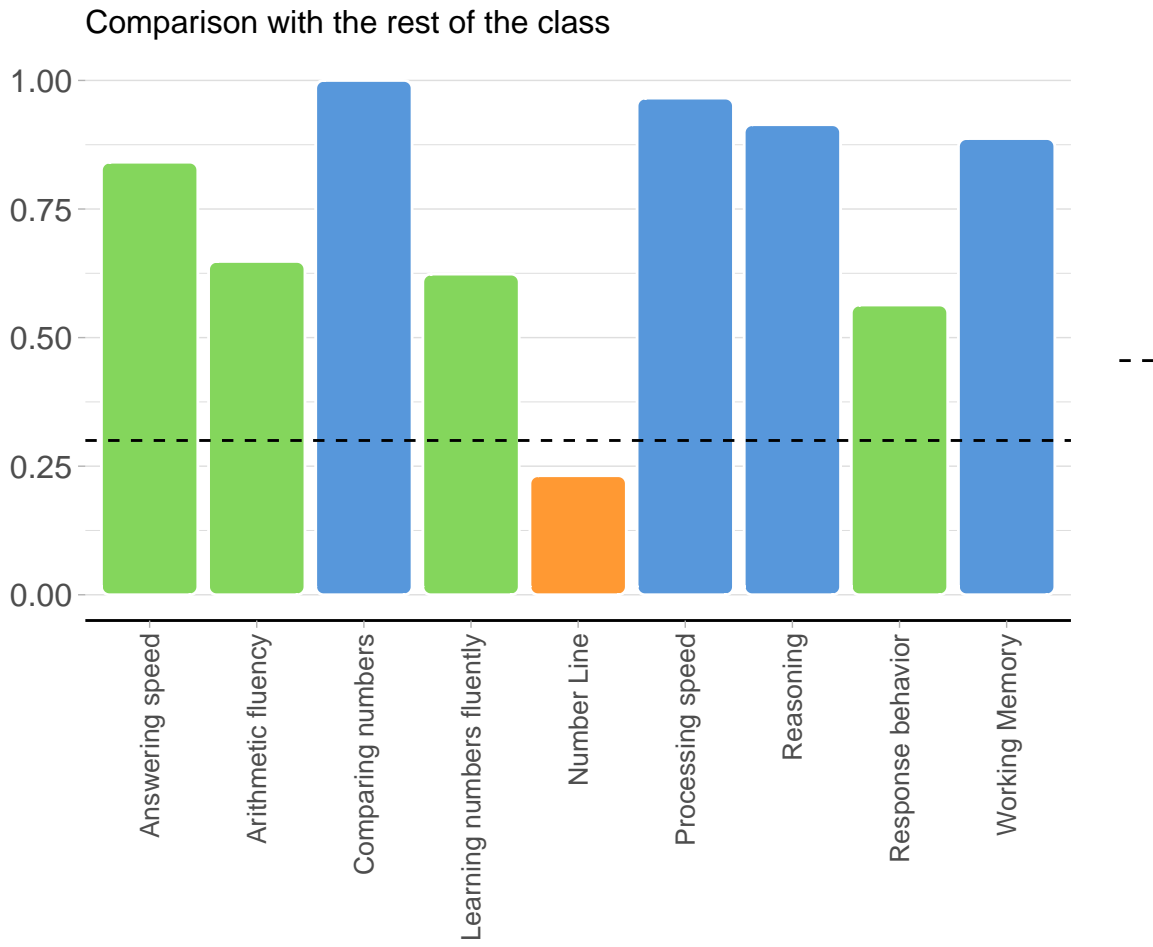


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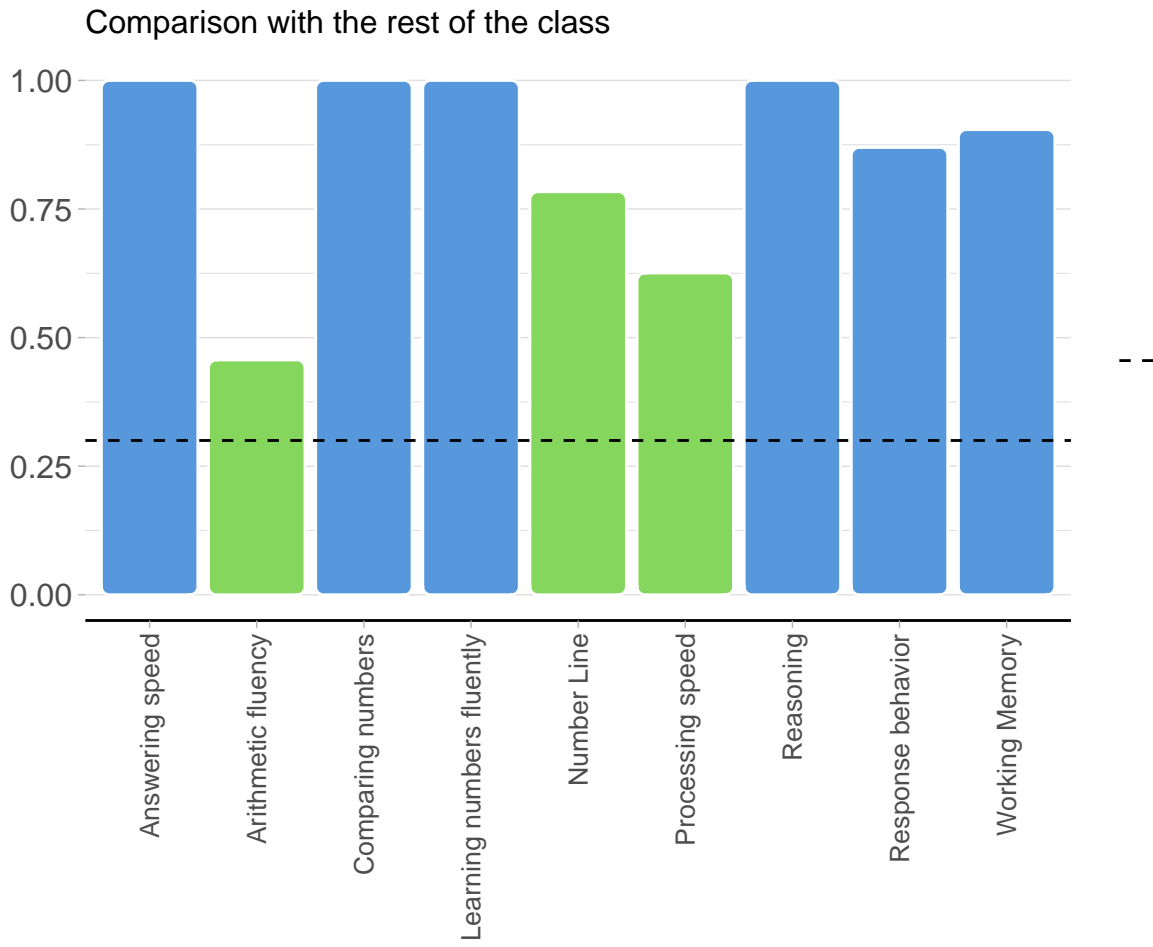
Student 04



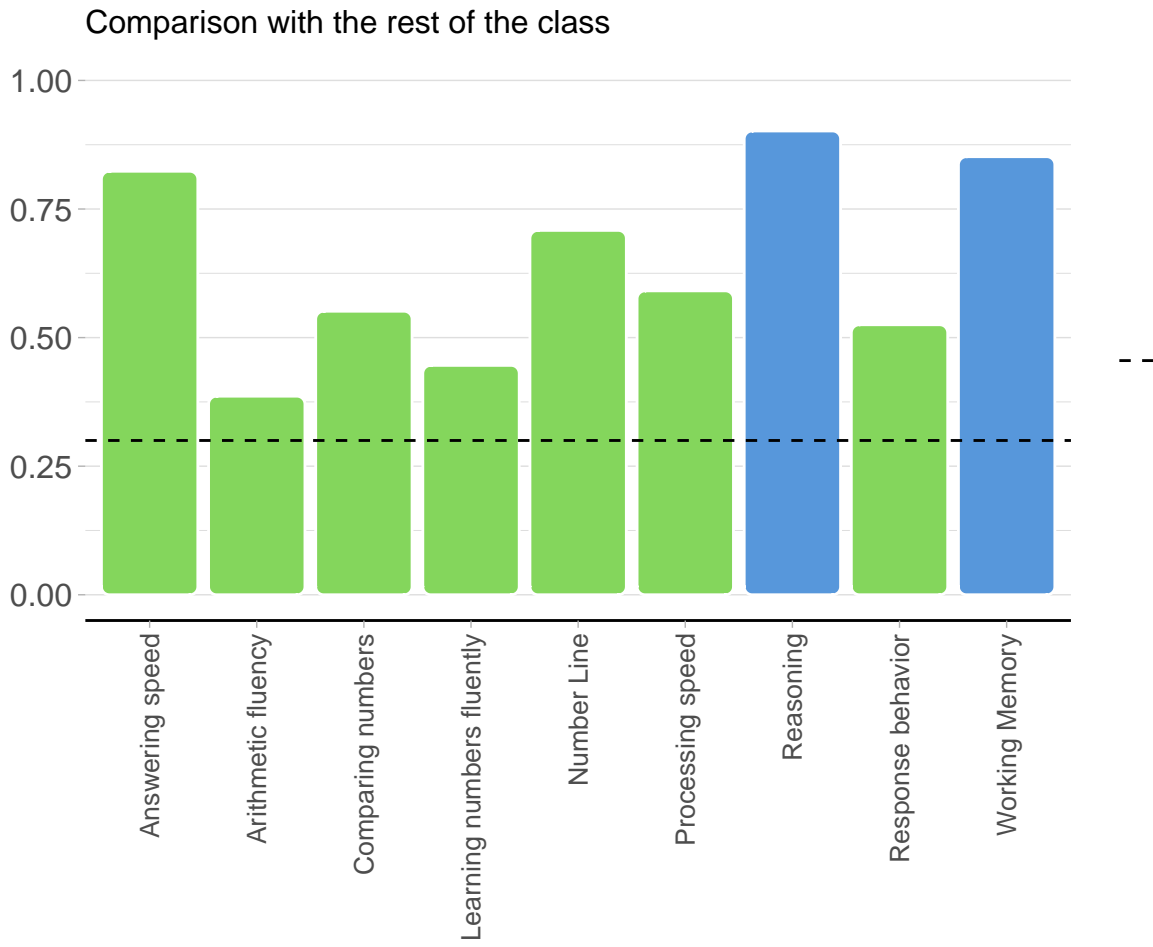
Student 05



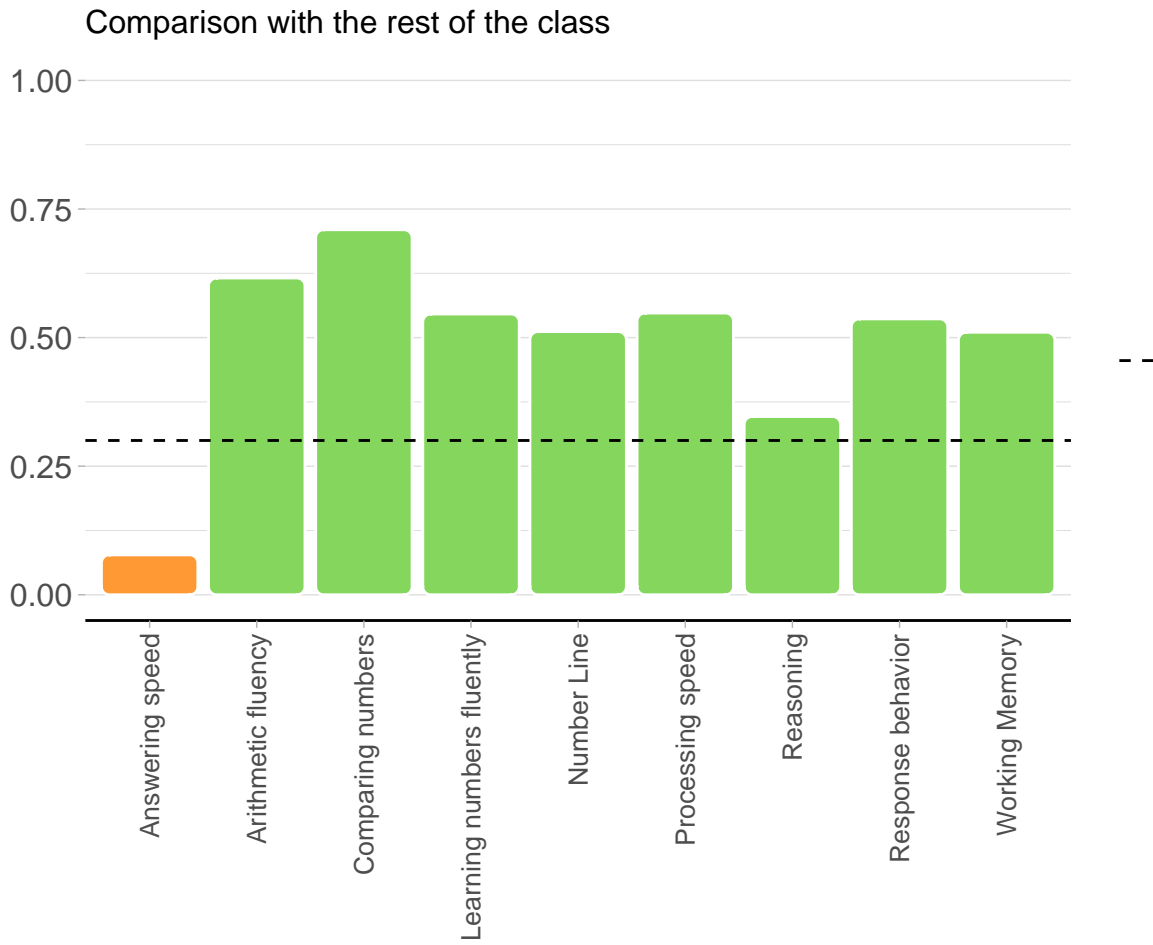
Student 06



Student 07

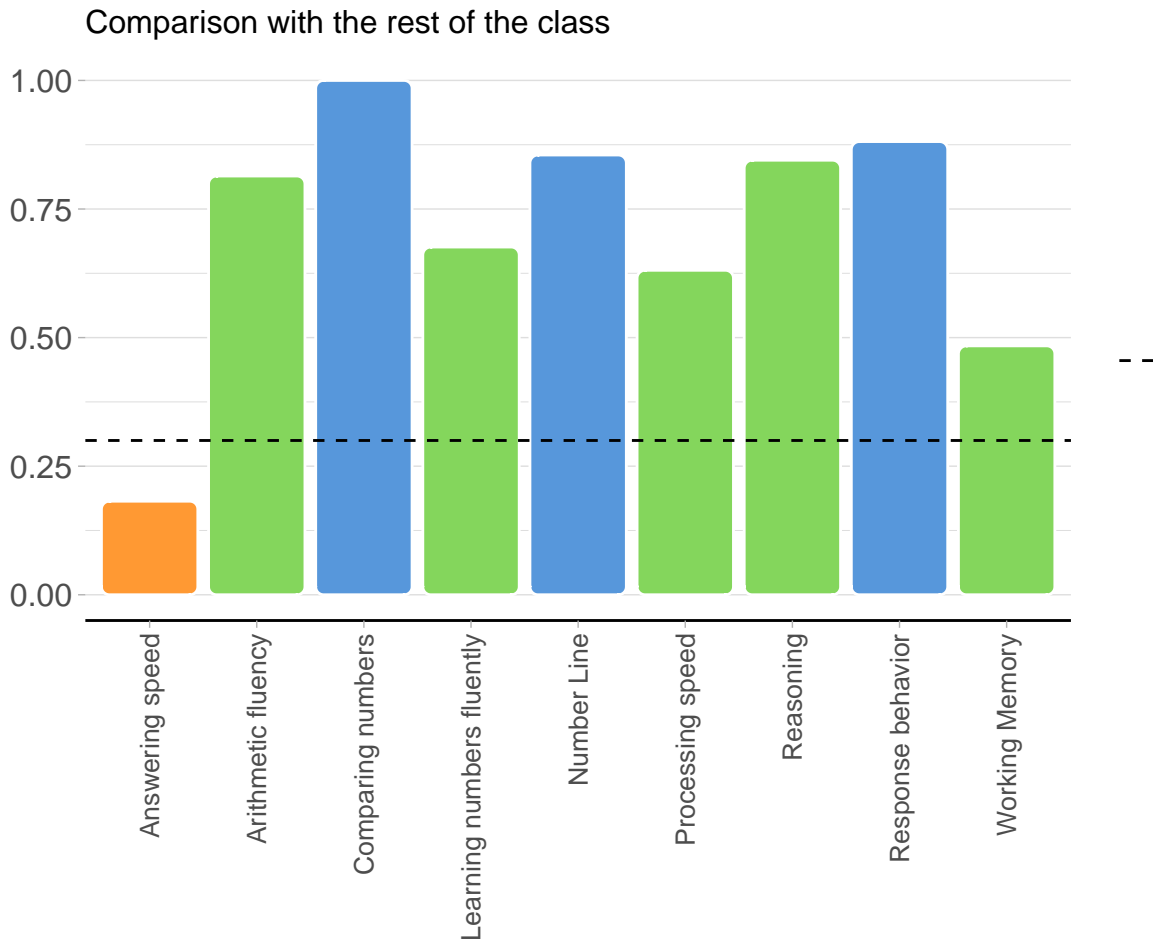


Student 08

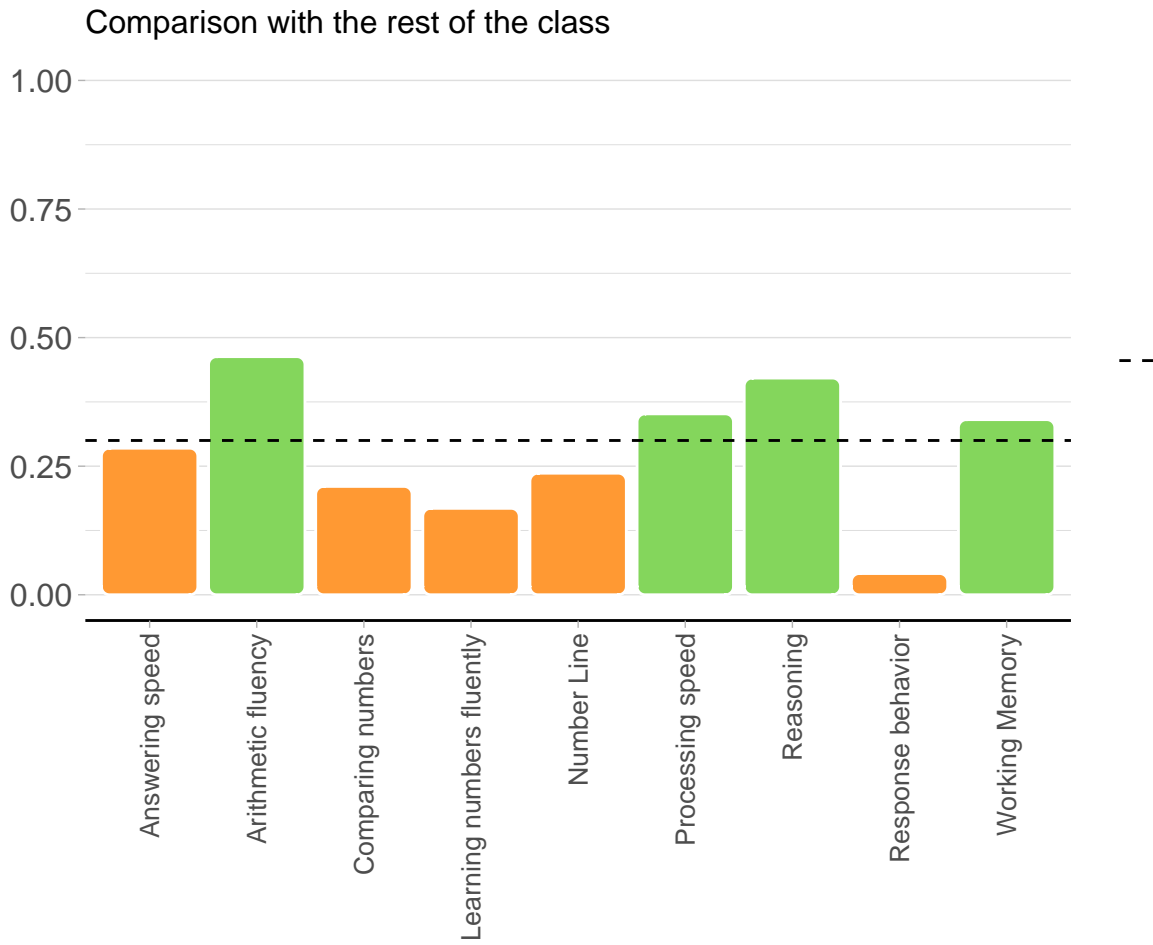


This student should take part in the Catch-up.

Student 09



Student 10



This student should take part in the Catch-up.