Computer-Adaptive Testing (CAT)

FAQs on aimswebPlus

1. What is computer-adaptive testing (CAT)?

Computer-adaptive testing (CAT) is a different method of test administration than linear fixed forms. Instead of giving every student in a grade the exact same items, CAT forms give different items within the same grade level of difficulty. The CAT engine evaluates each student answer in real-time and adjusts to find the "just right" difficulty for each student. In that sense, the administration "adapts" to the student and results in a tighter and more accurate result.

2. What is the value of computer-adaptive testing (CAT)?

CAT improves tests that will be given to many different students with varying abilities, such as in the context of universal screening. This means that with each question a student answers, the next question delivered will be more appropriate for evaluating the student's individual ability level.

3. Do "universal screening" and CAT work together?

Yes. The purpose of universal screening is to evaluate all students to find who is at risk. The assumption, then, is that something will be done for those at risk. Using the CAT method allows you to screen everyone *and* have a clearer picture of student ability levels for instruction and resource planning.

4. Do I have to use CAT?

No, but we recommend it. The choice between the CAT form and fixed form is made at the account level before (not during) a season of testing. CAT forms are available in all seasons (fall, winter, spring, and summer). All aimswebPlus™ accounts default to CAT, but a quick call to our tech support **before** testing begins in a new season can switch you to the fixed form method.

5. Is every measure in aimswebPlus now using CAT?

No. Only two measures in aimswebPlus use CAT forms currently and both remain available as fixed form if opting out of CAT. On the Reading side, the Reading Comprehension (RC) CAT forms are available for all Benchmark forms for Grades 2 and up. On the Math side, the Concepts & Applications (CA) CAT forms are available for all Benchmark forms for Grades 2 and up. Every other measure in aimswebPlus remains as fixed form.

6. What are the limitations of CAT?

When each student's test is different, item analysis can only be reviewed at the individual student level. Group analysis of CAT forms provides score information but not item level information due to differences in item presentation.

CAT results in each student having a unique set of test questions within the assessment. While this is beneficial for each student, this limits the system's ability to provide group level reporting that is focused upon item analysis. For example, the Math Skills Analysis report will not report group skills data for CA because students had different items. Refer to each student's Individual Math Skills Analysis data for this information.

7. Is CAT reliable and valid?

Yes. CAT has been used around the world for decades. It is not a new measurement methodology; it is, however, new to aimswebPlus.

8. Does CAT still offer growth scores?

Yes. Both CAT and fixed methods result in scores that can show growth over time. The vertical (or growth) scale score is aligned to both methods and will continue to show growth for students over time on this single scale.

9. Does CAT have national norms?

Yes. The normative basis is the same for both CAT and fixed forms. RC and CA national norms are based on vertical scale scores. RC and CA CAT measures use the same vertical scale as the RC and CA fixed forms. Therefore, vertical scale scores from CAT and fixed forms can indicate the student's performance relative to the national norms.

10. What are the CAT field test items?

CAT forms are based on a large item bank where every item is ranked on a level of difficulty. Over time, new items are needed to expand the item bank and retire old items. Field test items are new items being studied that may or may not be included in the item bank in the future—it depends on results of the data analyses. Students are not scored on field test items.

11. How can I compare student performance if each student's test is unique?

Use the vertical scale scores (also known as the growth scale). Even though each student's test is unique, all CAT versions of RC and CA Benchmark measures share a common test blueprint based on the design of the existing fixed forms. The blueprints define how many questions on each form assess a distinct skill. Therefore, the overall score for each student reflects the same summary of their performance with the same underlying RC or CA skills. Students can be compared to each other within one time period as well as compared to their own scores across a school year, all on the same scale.

12. Will my student scores look better with CAT?

A CAT test does not introduce scoring bias to inflate scores artificially. However, the student experience of a CAT test is designed to be less frustrating and more motivating than a fixed form because the administration adjusts to a student's success/lack of success. If students do well, the items get harder to match the top of their skill set. If they start to miss items, the CAT form will adjust to find a more appropriate difficulty where they have a better chance of success. In theory, a CAT engine more "in-tune" with any given student will result in a closer estimate of their true abilities and a "just right" experience.

13. Will testing time be longer with CAT?

Not necessarily. In theory, testing goes faster with items that more closely match a student's skill level. That said, CAT forms are designed to give each student the same number of items for each administration. The CAT engine calculates a derived score on the same vertical scale for each administration, even if the items are different. However, assessment may take longer for some students who engage more deeply with the questions and not just click quickly to get through them. This is equally true for fixed forms.

14. CAT versus fixed forms: What's the difference in the testing experience?

Almost all aspects of the testing experience will be the same—that is, students log in to TestNav and take the test on the computer just as they normally would. The difference lies in the composition of the items a student sees. Students taking the linear fixed forms will see the exact same test as their peers regardless of their own personal ability, where items start out easy and gradually increase in difficulty. Students taking the CAT forms will start with a relatively easy item, then proceed into a section of the test where difficulty may vary a lot as the computer identifies the student's performance level, and with each response, the next question should be at the "just right" level.

15. How can I tell if a particular administration was completed via CAT?

Prior to assessment, the measure name in TestNav will be labeled "adaptive." After students have been assessed, the next step is to examine the results. If a student took the RC or CA measures in CAT, you would see results labeled as "Student Ability Scale" scores within student's Skills Plan (Reading and Math) and the Individual Math Skills Analysis reports.

16. Why did my student see an item that looks a grade level too high or too low and doesn't fit the grade-level standards? Why might this happen?

The answer could fall within one or more of three reasons: item bank make-up, curriculum choices, or differing state standards.

Every grade-level item bank has very easy and very difficult items for any given grade level. For students who are receiving items at the top (or bottom) level of difficulty due to their performance, they may see some "ceiling" (or "floor") items that stretch beyond curricular goals for a given grade. In addition, there

are many nuances to different curricula around the country and some curricula may introduce content that others do not within or outside of a given grade. Finally, not all state standards are identical, and the aimswebPlus content team has used the Common Core State Standards as a general basis for a national test blueprint and norms.

17. Where do we see the reading (or math) level of the student?

We have integrated Lexile® (and Quantile® for math) scores within aimswebPlus. That is the best metric within the system for reading level. At this time, the Lexile level is based on results from the Oral Reading Fluency measure and Quantile level is based on results from either form of Math Concepts & Applications (fixed form or CAT).

18. Are the items the same between CAT and fixed form?

Yes and no. Almost all the fixed-form items are in the CAT item bank. However, the item bank also includes many new items. This is what allows the test to be adaptive and sample from a large variety of items that match the style and intention of our original items but vary across ranges of difficulty. New items will be added to the CAT banks each year to improve the test's performance and stay in sync with changing educational trends.

19. Can we select CAT for certain schools and continue to use fixed form for others?

The choice to use CAT forms is a setting at the account level. Whether an account represents multiple schools or just one school, everyone under the same account needs to have the same setting.

20. Can we select CAT for Reading Comprehension but fixed form for Math Concepts & Applications (or vice versa)?

Yes.

21. Is there a set number of questions on each CAT measure that students take?

Yes. The numbers of questions will be the same as the fixed forms for the 2022–2023 school year. The only unique case where test length is different between CAT and fixed forms is for the second grade RC. The CAT form of the test will be two questions shorter (22 questions) than the fixed forms (24 questions). By conducting additional research on the test's performance, we will explore whether we can reduce the length of the tests and maintain a robust level of validity and reliability for all grades.

22. Can we pilot the CAT form with select students?

No. The choice to use CAT or fixed forms is decided at the account level and cannot be specified differently for specific students.

23. Do we still need to use the survey level assessments (SLAs) for students falling well below grade level on CAT measures?

Yes. If a student has a well-below average score on RC or CA, you should still use SLA to establish the student's instructional level and a baseline for progress monitoring using curriculum-based measures. Remember that RC and CA are only benchmark measures, so off-grade-level forms of RC and CA are not available via SLA.

24. What is the Student Ability Scale score and where can I find it on the CAT reports?

The Student Ability Scale score applies to CAT forms only. It is a 0–100 scale that aligns with the vertical (growth) scale score. CAT scores on the Student Ability Scale should be interpreted as their level of ability in a subject or specific domain of knowledge. These scores re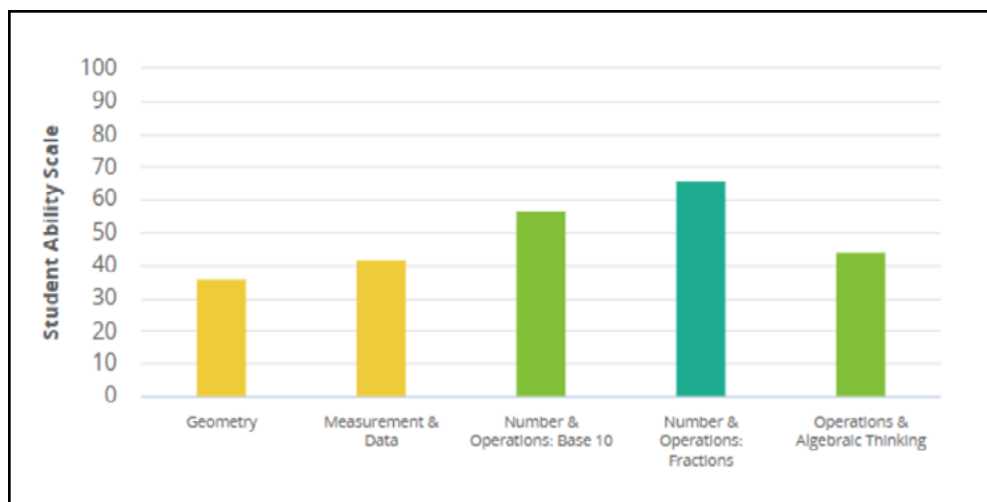flect the level of content knowledge the student has shown at various levels of difficulty. A higher score (e.g., a Student Ability Scale score of 80) means a student has likely mastered basic content and is starting to show proficiency with more advanced content within the grade level. A lower score (e.g., a Student Ability Scale score of 30) means a student is only starting to show proficiency with more basic content within the grade level. The student ability scale is used in bar charts found on CAT reports (e.g., Reading Skills Plan, Individual Math Skills Analysis) to illustrate students' relative abilities in different reading abilities (e.g., Reading Skills Plan), math domains (Math Skills Plan), or math skills (Individual Math Skills Analysis).

25. How will the aimswebPlus reports be the same or different?

On most aimswebPlus reports, test scores will be reported in the same way for CAT forms as fixed forms. CAT forms were designed to be "anchored" to the same vertical scale as the fixed forms. This means that both tests report the same vertical scaled score and use the same norms to report the student's national percentile score.

When a student takes a computer-adaptive test, the total number of questions answered correctly (or the percentage correct), such as with fixed forms, does not tell you the most important information about the student's reading or math ability. Instead, CAT reports use the student ability score which integrates the student's accuracy and the difficulty of the items.

Student Ability Scale scores will be found in the bar charts on the Skills Plan (Reading and Math) and Individual Math Skills Analysis report. The group Math Skills Analysis report does not include analysis of results as described in Q6.

Math Skills Plan Bar Chart showing domain-level skills in third grade

26. Who is allowed to make the change from CAT to fixed form?

Customer Support will need to be notified if this feature needs to be modified. An aimswebPlus Account Manager will need to contact Customer Support for this action.

27. As a CAT customer, we have a student who needs Braille or Large Print accommodation. What do I do?

Individual students who need modified forms will need to complete the fixed form versions of RC and CA. Please contact Customer or Technical Support to initiate the process. Our technical team will update the student's TestNav assignment, and our content team will provide guidance on the final steps of modifying the content to fit your student's individual needs.

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