

A CAEP RESOURCE for EPPs on STANDARD 3, COMPONENT 3.2: Cohorts with Multiple Tests

Updated April 3, 2020

The information in this resource supplements the guidelines titled [Standard 3, Component 3.2 Measures of Academic Proficiency](#). It includes the following:

- A. Guidelines for EPPs about how to determine cohort standing on CAEP 3.2 when individuals in the cohort have not all taken the same approved test, AND the tests are some combination of the ACT, SAT, *Praxis* Core, and/or GACE PAA
- B. Transformation equations and links to concordance tables
- C. Link to the CAEP 3.2 calculator tool for ACT, SAT, *Praxis* Core, and/or GACE PAA

A. CALCULATING COHORT AVERAGES WHEN MULTIPLE TESTS ARE INVOLVED

The following guidance is provided for EPPs as they compile evidence for the academic achievement criterion in Component 3.2 and undertake comparisons with the group average values that appear in Chart 1 of [Standard 3, Component 3.2 Measures of Academic Proficiency](#). Depending on the assessments that an EPP's candidates will have taken prior to admission, or will take some time before their completion of preparation, one or several of the situations described here will pertain:

1. When all candidates have domain proficiency scores from the same test (example: all candidates have ACT "Reading" scores and no reading scores on any other approved tests)
2. When some candidates have scores on more than one proficiency domain test (example: at least some candidates have both ACT "Reading" and *Praxis* Core "Reading" scores)
3. When candidates have domain proficiency scores from different tests, and when some parts of the candidate cohort averages are above, and others are below the group average values on Chart 1. (example: a group of candidates entering the EPP based on ACT "Reading" scores has an average score above 21.17, and a group of candidates entering the EPP based on *Praxis* Core "Reading" scores has an average score below 167.66).

1. When all candidates have domain proficiency scores from the same test

When an EPP compiles its evidence for Standard 3, Component 3.2, it will compare its average test scores to the values in Chart 1. The simplest case is when an EPP has access to candidate proficiency scores that are all from the same test source for any domain. Then, for each domain—reading, mathematics, and (beginning in 2021) writing:

- the EPP determines that it has test performance information for each of the candidates who has entered during a specific academic year (e.g., September 1, 2017 through August 31, 2018 for academic year 2017/18);

- the EPP totals the performance scores for all candidates and divides by the number of candidates to calculate the average performance for the group;
- the EPP compares that average with the group average threshold for the pertinent test on Chart 1.

2. When some candidates have scores on more than one proficiency domain test

If a candidate has scores from more than one of the approved tests in reading, or mathematics or (beginning in 2021) writing, the EPP may choose whichever score they wish, consistent with policies at their institution. For example, if an EPP uses ACT “Reading” as its Reading measure for CAEP 3.2, and a candidate provides ACT “Reading” and SAT “Evidence-Based Reading and Writing” scores, then the EPP should select the ACT “Reading” score.

3. When candidates have domain proficiency scores from different tests (“multiple tests” situation)

There are several circumstances that will result in members of a cohort of candidates with domain proficiency scores from different tests. For example, the potential for differing academic proficiency scores grows when candidates enter from more diverse and widespread geographic locales, and at different career points or when they transfer from other institutions. Also, an EPP will have academic proficiency scores from several measures when there are State-authorized exemptions (e.g., from *Praxis Core*) for candidates who have met a set level on some *other* measure such as ACT or SAT. When there is no one approved test that every candidate has taken, the EPP will need to evaluate evidence for 3.2 across multiple tests.

The EPP can do so by:

- grouping each of its candidates admitted during an academic year by test,
- calculating averages separately for each grouping, and then
- comparing those averages to the published CAEP 3.2 cut-off values for the corresponding tests.

(When an EPP groups candidates by test, and a candidate has taken more than one approved test, the EPP may assign that candidate to any group, consistent with the guidelines above under the heading **When some candidates have scores on more than one proficiency domain test**. To avoid “double-counting” the candidate, the EPP should assign the candidate to one test only.)

If all averages are at or above their corresponding cuts on Chart 1, then the EPP has MET the CAEP 3.2 criterion for that cohort and domain.

If all averages are below their corresponding cuts, then the EPP has NOT MET the CAEP 3.2 cut for that cohort and domain.

However, when some of the candidate cohort averages are above, and others are below the group average value for the pertinent test on Chart 1, the EPP needs to conduct a more detailed examination of the data. This is known as the “multiple tests mixed results” situation.

If one of the partitioned groups (the ACT “Reading” group, the SAT “Evidence-Based Reading and Writing” group, or the *Praxis Core* “Reading” group, for example) falls below the Chart value, then there is a question as to whether the combined group of candidates for the academic year meets the

Component 3.2 requirement or not. The EPP may be able to show that it has met the CAEP 3.2 criterion. The following steps outline how to proceed in this situation.

Procedures for determining standing on CAEP 3.2 when one or more groups of test takers have met the standard, and one or more have not met the standard

Step 1. The EPP should select the assessment (or one of the assessments) taken by members of a group that has met the CAEP 3.2 criterion. For example, suppose that an EPP uses three tests for Reading: ACT “Reading”, SAT “Evidence-Based Reading and Writing”, and *Praxis* Core “Reading”. Suppose that after grouping students by test, computing an average by test, and comparing those averages to the Chart 1 values, the EPP determines that the ACT group and the SAT group have met the standard, but that the *Praxis* Core group had not. The EPP may select either the ACT or the SAT in this step. For illustration, suppose the EPP selects the ACT.

Step 2. The EPP should transform the computed average of each group not meeting the standard, to an average on the test selected in Step 1. Continuing the example above, the EPP has only one group not meeting the standard – the *Praxis* Core group. Thus, the EPP needs to make just one transformation – namely from the average of the *Praxis* Core “Reading” group into an ACT “Reading” average.

Step 3. The EPP will then produce a weighted average, combining the transformed average or averages of Step 2, with that of the original group for the test selected in Step 1. In the scenario above, the new ACT “Reading” average for the *Praxis* Core “Reading” group needs to be combined with the ACT “Reading” average of the (original) ACT “Reading” group. The weights used in combining the averages should be (number of candidates in the original ACT “Reading” group / Total for the two groups) and (number of candidates in the *Praxis* Core “Reading” group / Total for the two groups).

Step 4. The new average is then compared to the tabulated Chart 1 value. If it is at or above the value, then the EPP has met the CAEP 3.2 criterion. If not, then the EPP should proceed to Step 1 and repeat this process with a different available test (in our example, the EPP can try the SAT) until all score groups are either above or below the standards tabulated. If all possible transformations of group averages have been made and any group remains scoring below the CAEP 3.2 criterion, then the EPP has not met 3.2 for that domain and cohort.

B. TRANSFORMATION EQUATIONS AND LINKS TO CONCORDANCE TABLES

To do the transformations of Step 2, the EPP will need transformation equations or tables. These are provided in the table below. No transformations are available for approved tests in the writing domain.

**Table 1: Transformations of Test Score Averages Approved by CAEP
for Demonstrating Standard 3, Component 3.2***

Line	To convert scores on this assessment:	... To this assessment:	...Use this procedure**:
			<p><i>* These transformations are approved only to be used as described in the section on procedures for determining standing on CAEP 3.2 when one or more groups is performing below the standard, and one or more is performing above.</i></p> <p><i>** When a score is transformed from test A to test B, each score should be checked to make sure that it does not fall below the lowest possible score of test B or above the highest possible score of test B. If it does, it will need to be replaced with the lowest (highest) possible score of test B</i></p>
1	ACT Reading	SAT Evidence-Based Reading and Writing	<ul style="list-style-type: none"> • Double each individual ACT Reading score. • Transform each doubled ACT Reading score using Table C2 of Guide to the 2018 ACT®/SAT® Concordance.
2	ACT Math	SAT Math	<ul style="list-style-type: none"> • Transform each ACT Math score using Table B2 of Guide to the 2018 ACT®/SAT® Concordance.
3	ACT Reading	<i>Praxis Core Reading</i> 5712, 5713	<ul style="list-style-type: none"> • Multiply each ACT Reading score by $\left(\frac{1}{0.20111}\right)$ and then add $\left(\frac{12.54785}{0.20111}\right)$.
4	ACT Math	<i>Praxis Core Mathematics</i> 5732	<ul style="list-style-type: none"> • Multiply each ACT Math score by $\left(\frac{1}{0.14386}\right)$ and then add $\left(\frac{2.07551}{0.14386}\right)$.
5	SAT Evidence-Based Reading and Writing	ACT Reading	<ul style="list-style-type: none"> • Transform each SAT Evidence-Based Reading and Writing score using Table C1 of Guide to the 2018 ACT®/SAT® Concordance. • Divide each transformed score by two.
6	SAT Math	ACT Math	<ul style="list-style-type: none"> • Transform each SAT Math score using Table B1 of Guide to the 2018 ACT®/SAT® Concordance.

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7	SAT Evidence-Based Reading and Writing	<i>Praxis</i> Core Reading 5712, 5713	<ul style="list-style-type: none"> Follow the procedures in Line 5 to convert SAT to ACT. Follow the procedures in Line 3 to convert ACT to <i>Praxis</i> Core.
8	SAT Math	<i>Praxis</i> Core Mathematics 5732	<ul style="list-style-type: none"> Follow the procedures in Line 6 to convert SAT to ACT. Follow the procedures in Line 4 to convert ACT to <i>Praxis</i> Core.
9	<i>Praxis</i> Core Reading 5712, 5713	ACT Reading	<ul style="list-style-type: none"> Multiply each <i>Praxis</i> Core Reading score by 0.20111 and then subtract 12.54785.
10	<i>Praxis</i> Core Mathematics 5732	ACT Math	<ul style="list-style-type: none"> Multiply each <i>Praxis</i> Core Mathematics score by 0.14386 and then subtract 2.07551.
11	<i>Praxis</i> Core Reading 5712, 5713	SAT Evidence-Based Reading and Writing	<ul style="list-style-type: none"> Follow the procedures in Line 9 to convert <i>Praxis</i> Core to ACT. Follow the procedures in Line 1 to convert ACT to SAT.
12	<i>Praxis</i> Core Mathematics 5732	SAT Math	<ul style="list-style-type: none"> Follow the procedures in Line 10 to convert <i>Praxis</i> Core to ACT. Follow the procedures in Line 2 to convert ACT to SAT.
13	GACE PAA Reading 200, 210	ACT Reading	<ul style="list-style-type: none"> Transform each GACE PAA Reading score according to the following rule: <ul style="list-style-type: none"> If GACE PAA \geq 250, multiply the PAA score by 0.17698 and subtract 25.41889. If GACE PAA $<$ 250, multiply the PAA score by 0.07508 and add 0.05505.

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			<p><i>* These transformations are approved only to be used as described in the section on procedures for determining standing on CAEP 3.2 when one or more groups is performing below the standard, and one or more is performing above.</i></p> <p><i>** When a score is transformed from test A to test B, each score should be checked to make sure that it does not fall below the lowest possible score of test B or above the highest possible score of test B. If it does, it will need to be replaced with the lowest (highest) possible score of test B</i></p>
14	GACE PAA Reading 200, 210	SAT Evidence-Based Reading and Writing	<ul style="list-style-type: none"> Follow the procedures in Line 13 to convert GACE PAA to ACT. Follow the procedures in Line 1 to convert ACT to SAT.
15	GACE PAA Reading 200, 210	<i>Praxis</i> Core Reading 5712, 5732	<ul style="list-style-type: none"> Follow the procedures in Line 13 to convert GACE PAA to ACT. Follow the procedures in Line 3 to convert ACT to <i>Praxis</i> Core.
16	ACT Reading	GACE PAA Reading 200, 210	<ul style="list-style-type: none"> Transform each ACT Reading score according the following rule: <ul style="list-style-type: none"> If ACT \geq 19, multiply the ACT score by $\left(\frac{1}{0.17698}\right)$ and add $\left(\frac{25.41889}{0.17698}\right)$. If ACT $<$ 19, multiply the ACT score by $\left(\frac{1}{0.07508}\right)$ and subtract $\left(\frac{0.05505}{0.07508}\right)$.
17	SAT Evidence-Based Reading and Writing	GACE PAA Reading 200, 210	<ul style="list-style-type: none"> Follow the procedures in Line 5 to convert SAT to ACT. Follow the procedures in Line 16 to convert ACT to GACE PAA.
18	<i>Praxis</i> Core Reading 5712 5713	GACE PAA Reading 200, 210	<ul style="list-style-type: none"> Follow the procedures in Line 9 to convert <i>Praxis</i> Core to ACT. Follow the procedures in Line 16 to convert ACT to GACE PAA.
19	GACE PAA Math 201	ACT Math	<ul style="list-style-type: none"> Transform each GACE PAA Math score according to the following rule: <ul style="list-style-type: none"> If GACE PAA \geq 250, multiply the PAA score by 0.19565 and subtract 31.99839. If GACE PAA $<$ 250, multiply the PAA score by 0.03069 and add 9.24148.
20	GACE PAA Math 201	SAT Math	<ul style="list-style-type: none"> Follow the procedures in Line 19 to convert GACE PAA to ACT. Follow the procedures in Line 2 to convert ACT to SAT.

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			<p><i>* These transformations are approved only to be used as described in the section on procedures for determining standing on CAEP 3.2 when one or more groups is performing below the standard, and one or more is performing above.</i></p> <p><i>** When a score is transformed from test A to test B, each score should be checked to make sure that it does not fall below the lowest possible score of test B or above the highest possible score of test B. If it does, it will need to be replaced with the lowest (highest) possible score of test B</i></p>
21	GACE PAA Math 201	<i>Praxis</i> Core Mathematics	<ul style="list-style-type: none"> Follow the procedures in Line 19 to convert GACE PAA to ACT. Follow the procedures in Line 4 to convert ACT to SAT.
22	ACT Math	GACE PAA Math 201	<ul style="list-style-type: none"> Transform each ACT Math score according to the following rule: <ul style="list-style-type: none"> If $ACT \geq 17$, multiply the ACT score by $\left(\frac{1}{0.19565}\right)$ and add $\left(\frac{31.99839}{0.19565}\right)$. If $ACT < 17$, multiply the ACT score by $\left(\frac{1}{0.03069}\right)$ and subtract $\left(\frac{9.24148}{0.03069}\right)$.
23	SAT Math	GACE PAA Math 201	<ul style="list-style-type: none"> Follow the procedures in Line 6 to convert SAT to ACT. Follow the procedures in Line 22 to convert ACT to GACE PAA.
24	<i>Praxis</i> Core Mathematics 5732	GACE PAA Math 201	<ul style="list-style-type: none"> Follow the procedures in Line 10 to convert <i>Praxis</i> Core to ACT. Follow the procedures in Line 22 to convert ACT to GACE PAA.
25	<i>Praxis</i> Core Mathematics 5733	ACT Math	<ul style="list-style-type: none"> Multiply each PCM5733 score by 0.16042 and then subtract 6.73907.
26	<i>Praxis</i> Core Mathematics 5733	SAT Math	<ul style="list-style-type: none"> Follow the procedures in Line 25 to convert PC5733 to ACTM. Follow the procedures in Line 2 to convert ACTM to SATM.
27	<i>Praxis</i> Core Mathematics 5733	<i>Praxis</i> Core Mathematics 5732	<ul style="list-style-type: none"> Follow the procedures in Line 25 to convert PC5733 to ACTM. Follow the procedures in Line 10 to convert ACTM to PC5732.

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28	Praxis Core Mathematics 5733	GACE PAA Math 201	<ul style="list-style-type: none"> Follow the procedures in Line 25 to convert PC5733 to ACTM. Follow the procedures in Line 22 to convert ACTM to PAAM201.
29	Praxis Core Mathematics 5733	GACE PAA Math 211	<ul style="list-style-type: none"> Follow the procedures in Line 25 to convert PC5733 to ACTM. Follow the procedures in Line 39 to convert ACTM to PAAM211.
30	ACT Math	Praxis Core Mathematics 5733	<ul style="list-style-type: none"> Multiply each ACTM score by $\left(\frac{1}{0.16042}\right)$ and then add $\left(\frac{6.73907}{0.16042}\right)$.
31	SAT Math	Praxis Core Mathematics 5733	<ul style="list-style-type: none"> Follow the procedures in Line 6 to convert SATM to ACTM. Follow the procedures in Line 30 to convert ACTM to PCM5733.
32	Praxis Core Mathematics 5732	Praxis Core Mathematics 5733	<ul style="list-style-type: none"> Follow the procedures in Line 10 to convert PCM5732 to ACTM. Follow the procedures in Line 30 to convert ACTM to PCM5733.
33	GACE PAA Math 201	Praxis Core Mathematics 5733	<ul style="list-style-type: none"> Follow the procedures in Line 19 to convert PAAM201 to ACTM. Follow the procedures in Line 30 to convert ACTM to PCM5733.
34	GACE PAA Math 211	Praxis Core Mathematics 5733	<ul style="list-style-type: none"> Follow the procedures in Line 35 to convert PAAM211 to ACTM. Follow the procedures in Line 30 to convert ACTM to PCM5733.
35	GACE PAA Math 211	ACT Math	<ul style="list-style-type: none"> Transform each GACE PAAM211 score according to the following rule: <ul style="list-style-type: none"> If PAAM211 \geq 250, multiply the PAAM211 score by 0.18848 and subtract 31.19998. If PAAM211 $<$ 250, multiply the PAAM211 score by 0.04412 and add 4.89103.

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36	GACE PAA Math 211	SAT Math	<ul style="list-style-type: none"> Follow the procedures in Line 35 to convert PAAM211 to ACTM. Follow the procedures in Line 2 to convert ACTM to SATM.
37	GACE PAA Math 211	Praxis Core Mathematics 5732	<ul style="list-style-type: none"> Follow the procedures in Line 35 to convert PAAM211 to ACTM. Follow the procedures in Line 4 to convert ACTM to PCM5732.
38	GACE PAA Math 211	GACE PAA Math 201	<ul style="list-style-type: none"> Follow the procedures in Line 35 to convert PAAM211 to ACTM. Follow the procedures in Line 22 to convert ACTM to PAAM201.
39	ACT Math	GACE PAA Math 211	<ul style="list-style-type: none"> Transform each ACT Math score according to the following rule: <ul style="list-style-type: none"> If $ACT \geq 16$, multiply the ACT score by $\left(\frac{1}{0.18848}\right)$ and add $\left(\frac{31.19998}{0.18848}\right)$. If $ACT < 16$, multiply the ACT score by $\left(\frac{1}{0.04412}\right)$ and subtract $\left(\frac{4.89103}{0.04412}\right)$.
40	SAT Math	GACE PAA Math 211	<ul style="list-style-type: none"> Follow the procedures in Line 6 to convert SATM to ACTM. Follow the procedures in Line 39 to convert ACTM to PAAM211.
41	Praxis Core Mathematics 5732	GACE PAA Math 211	<ul style="list-style-type: none"> Follow the procedures in Line 10 to convert PCM5732 to ACTM. Follow the procedures in Line 39 to convert ACTM to PAAM211.
42	GACE PAA Math 201	GACE PAA Math 211	<ul style="list-style-type: none"> Follow the procedures in Line 19 to convert PAAM201 to ACTM. Follow the procedures in Line 39 to convert ACTM to PAAM211.

C. TRANSFORMATION EQUATIONS AND LINKS TO CONCORDANCE TABLES

CAEP makes available an Excel-based calculator tool that EPPs may use to determine standing on CAEP 3.2 in a “multiple tests mixed results” situation. The calculator accepts as input individual ACT, SAT, *Praxis* Core, and GACE PAA scores for the domains of reading and mathematics. EPPs may enter some or all this information.

The calculator then provides, for each domain, whether each tested group has met the CAEP 3.2 standard.

If one or more groups has met the standard and one or more groups has not met the standard (i.e., if the “multiple tests mixed results” situation holds), then the calculator combines tested groups and computes averages for all transformations to one of the tests for which the original tested group was meeting the threshold. It repeats this process for each test for which the original tested group was meeting the threshold.

Finally, the calculator indicates whether the entire cohort has met the CAEP 3.2 standard under at least one transformation scenario.

To use the calculator, EPPs are encouraged to first read the ReadMe tab of the worksheet.