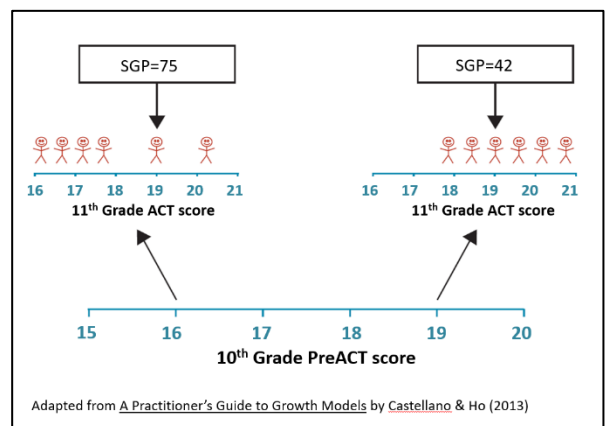


## Understanding Alabama's Academic Growth Calculations Using PreACT and ACT

Growth measures are produced for each student who took the PreACT test in 10th grade and the ACT test in 11th grade. Because the two tests measure knowledge and skills from the same content domains, PreACT and ACT test scores are used to measure academic growth in English, reading, ELA, math, and science. The growth measures for ELA and math are used to produce the **Academic Growth** indicators for Alabama's state and federal accountability systems.

For students who took both the PreACT and ACT test in the same subject, the **Student Growth Percentile (SGP)** is the percentile rank of a student's ACT score, among students from the same Alabama cohort with the same PreACT score. The SGPs range from 1 to 99, and an SGP value of 50 represents typical growth relative to other students from the same Alabama cohort. Because they are based on percentile ranks, SGPs can be calculating using test scores that are on different scales. This is important for ELA, which is based on PreACT English+Reading scores (2-72 scale) and ACT ELA scores (1-36 scale).<sup>1</sup>

To calculate SGPs, we first identify "academic peers", which are groups of students with the same prior year scores. In the diagram<sup>2</sup> there are two groups of academic peers: Six students who had a 10th grade PreACT score of 16, and another six students who had a 10th grade PreACT score of 19. In practice, we have thousands of students to consider; the diagram only shows 12 students to keep things simple. Next, we consider the 11th grade ACT scores. For each set of academic peers, we rank the students by their ACT score. Consider the arrowed student on the left. Their ACT score is higher than four students in their peer group, and lower than one student in their peer group, and their SGP is 75<sup>3</sup>. The diagram is a simplification of the procedure used to estimate SGPs. The actual procedure follows the same principles as the illustration but uses statistical methods<sup>4</sup> to estimate the SGPs.



Student growth is classified into one of four levels: **Level 1** if the SGP is less than 25, **Level 2** if the SGP is from 25 to 49, **Level 3** if the SGP is from 50 to 75, and **Level 4** if the SGP is 76 or higher. As described in the [State Accountability Technical Guide](#), the calculation of the Academic Growth indicator is based on the number of students at each growth level.

<sup>1</sup> Because the PreACT test does not include a writing test section, PreACT does not report an ELA score. For purposes of measuring growth in ELA, we use the PreACT English + Reading score as the baseline measure of ELA.

<sup>2</sup> Diagram adapted from Castellano, K.E., & Ho, A.D. (2013). *A practitioner's guide to growth models*. Washington, DC: Council of Chief State School Officers.

<sup>3</sup> The formula for the SGP is  $100 * \frac{\# \text{ Students Below Score} + 0.5 * \# \text{ Students At Score}}{\# \text{ Students in Academic Peer Group}}$

<sup>4</sup> The SGPs used for the Alabama growth calculations are estimated using the SGP R package. Betebenner, D. W., Vanlwaarden, A., Domingue, B., & Shang, Y. (2017). SGP: Student growth percentiles & percentile growth trajectories (R package version 1.7-0.0) [computer software]. Retrieved from <https://sgp.io>.