I. Terra Nova Achievement Tests

Note: Terra Nova stanine scores reported here are based on comparison with nationally representative norm samples. A student can earn one of nine possible stanine scores. A stanine score of 1, 2, or 3 means that the student performed at or below the 22nd percentile; this is considered below average. A stanine score of 4, 5, or 6 means the student scored between the 23rd and 77th percentiles, which is considered to be in the average range. A stanine score of 7, 8 or 9 is above the 77th percentile and is above average.

A. Reading (Tables 1-4, p. 36-37)

First Graders: Terra Nova Reading

- Eighty-five percent of all first graders in the Shaker Heights City School District performed in the average or above-average range on the Terra Nova reading test in 2004-05.
- When assessed by race/ethnicity, there are substantial differences in the performance of European-American first graders and African-American first graders. Close to two-thirds (65%) of the European-American first graders performed above average on the reading test, whereas African-American students (56%) most often performed at the average level.
- Based on an analysis of variance, there were gender differences: Girls outperformed boys to a statistically significant degree. Also there was a race/gender interaction: African-American girls outperformed African-American boys, a gender difference that was not evident for European-American boys and girls.¹

Third Graders: Terra Nova Reading

- Ninety-three percent of all third graders in the Shaker Heights City School District performed in the average or above-average range on the Terra Nova reading test in 2004-05.
- There are clear differences in the performance of European-American and African-American third graders. European-American third graders most often (81%) performed above average on the reading test, while African-American third graders most often (64%) performed at the average level.
- Based on analysis of variance, third-grade girls tested in April 2005 outperformed third-grade boys to a statistically significant degree. This gender difference was similar for African-American and European-American third graders.

Fifth Graders: Terra Nova Reading

- Eighty-nine percent of fifth graders performed in the average or above-average range on the Terra Nova reading test in 2004-05.
- There was a strong difference in performance by race/ethnicity. Seventy-nine percent of the European-American students performed in the above-average range on the Total Reading test; 61 percent of the African-American students performed in the average range on this test.

¹ Gender differences and race/gender interactions were analyzed using two-way analysis of variance for all Terra Novas at all grade levels.
Section 4

- Based on an analysis of variance, there were statistically significant gender differences in reading on the Terra Nova in April 2005: Fifth-grade girls outperformed boys on this test. This pattern was the same for African-American and European-American fifth graders.

**Seventh Graders: Terra Nova Reading**

- Eighty-eight percent of seventh graders performed in the average or above-average range on the Terra Nova reading test.
- While 70 percent of European-American students typically performed in the above-average range, 68 percent of African-American students performed in the average range.
- Differences in performance in reading were not statistically significant by gender.

**B. Language** (Tables 5-8, p. 38-39)

**First Graders: Terra Nova Language**

- Eighty-eight percent of the first graders performed in the average or above-average range on the Terra Nova language test.
- Differences by race/ethnicity are apparent: 60 percent of European-American first graders scored above average, and 61 percent of African-American first graders performed in the average range.
- Gender-based differences on the language test were statistically significant; girls outperformed boys. This difference was evident for African-American and European-American first graders.

**Third Graders: Terra Nova Language**

- Ninety-three percent of the third graders performed in the average or above-average range on the Terra Nova language test.
- Racial/ethnic differences were pronounced. While European-American third graders most often (70%) scored in the above-average range, African-American students most often (73%) performed in the average range on the language test.
- There were statistically significant differences in performance on the spring Terra Nova by gender; girls outperformed boys in language, a difference that was evident regardless of race/ethnicity.

**Fifth Graders: Terra Nova Language**

- Ninety-three percent of the fifth graders performed in the average or above-average range on the Terra Nova language test.
- While 88 percent of European-American fifth graders performed in the above-average range on the language test, African-American students (67%) most often performed in the average range.
- There were statistically significant differences in performance by gender, with fifth-grade girls outperforming fifth-grade boys on average. This gender difference was similar for African-American and European-American fifth graders.
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Seventh Graders: Terra Nova Language

- Ninety-one percent of the seventh graders performed in the average or above-average range on the Terra Nova language test.
- When assessed by race/ethnicity, the average range typifies the performance of African-American students (63%) and the above-average range typifies that of the European-American students (82%).
- Girls outperformed boys on the seventh grade language test to a statistically significant degree.

C. Mathematics (See Tables 9-12, pages 39-40)

First Graders: Terra Nova Mathematics

- Eighty-four percent of first graders performed in the average or above-average range on the Terra Nova mathematics test.
- The most typical European-American score (72%) was in the majority above-average range, while the average range was most typical for African-American students (57%).
- There were no statistically significant differences between first-grade boys and girls on this test. However there was an interaction. African-American girls scored higher than African-American boys on the math test. This pattern was reversed for European-American boys and girls.

Third Graders: Terra Nova Mathematics

- Third grade performance on this test was strong, with 96 percent of the students earning an average or above average score.
- A difference by racial/ethnic group was evident. Close to two-third (65%) of European-American students received an above average score; two-thirds of African-American students (66%) received an average score.
- There were no gender differences in performance on the third-grade math test.

Fifth Graders: Terra Nova Mathematics

- Seventy-seven percent of fifth-grade students scored in the average range or above on the Terra Nova Multiple Assessment in mathematics.
- The most common score range for European-American and African-American fifth graders was in the average range (54% of each group).
- Girls outperformed boys performance on the Terra Nova math test.

Seventh Graders: Terra Nova Mathematics

- Eighty-six percent of the seventh graders performed in the above average or average range on the Terra Nova test in math.
- European-American seventh graders most typically scored in the above-average range (80%) and the majority (57%) of African-American seventh graders scored in the average range.
Section 4

- Analysis of math performance by gender revealed no statistically significant differences.

D. Science (Tables 13-16, p. 40-41)

First Graders: Terra Nova Science

- Seventy-five percent of first graders performed in the average or above-average range on the first grade science test.
- The majority of European-American first graders (52%) earned scores in the average range, which was also the most common score range for African-American first graders (43%).
- When all boys and girls were compared on their science test performance, boys outperformed girls on the Terra Nova to a degree that was statistically significant. However, this pattern was reversed for African-American boys and girls.

Third Graders: Terra Nova Science

- Ninety-two percent of third graders performed in the above average or average range on the third-grade science test.
- The most common stanine for European-American third graders (71%) was in the above-average range on the science test, and that for African-American third graders (74%) was in the average range.
- There were no gender differences in performance on the third-grade science test.

Fifth Graders: Terra Nova Science

- Eighty-eight percent of fifth-grade students scored in the average or above-average range on the fifth-grade Terra Nova science test.
- The most common range for European-American fifth graders was above average (71%); the most common range for African-American fifth graders was average (68%).
- There were no statistically significant differences by gender.

Seventh Graders: Terra Nova Science

- Eighty-nine percent of the seventh graders performed in the average or above-average range on the Terra Nova in science.
- The majority of the European-American seventh graders (75%) scored in the above-average range and most African-American seventh graders (62%) scored in the average range.
- Analysis of science performance by gender revealed no statistically significant differences.

E. Social Studies (Tables 17-20, p. 42-43)

First Graders: Terra Nova Social Studies

- Eighty-three percent of first graders earned scores in the above average or average range on the Terra Nova test in social studies.
Section 4

- The majority of African Americans (60%) earned average stanine scores and close to half of European Americans (59%) earned above average stanine scores on the social studies test.
- Girls outperformed boys on the first-grade social studies test.

***Third Graders: Terra Nova Social Studies***

- Ninety-six percent of third graders performed in the average or above-average range.
- African-American third graders most often earned average scores (67%) and European-American third graders most often earned above average scores (82%) in social studies.
- There were no gender differences in performance on the third-grade social studies test.

***Fifth Graders: Terra Nova Social Studies***

- Seventy-seven percent of fifth-grade students scored in the average or above-average range on the fifth-grade social studies test.
- The most common range for both European-American and African-American fifth graders was above average (53% and 54% respectively).
- There were no statistically significant differences associated with gender on the social studies test by gender.

***Seventh Graders: Terra Nova Social Studies***

- Ninety percent of the seventh graders performed in the average or above-average range on the Terra Nova in social studies.
- While the majority of the European-American seventh graders (79%) scored in the above-average range, slightly more than half (64%) of African-American seventh graders scored in the average range.
- Analysis of social studies performance by gender revealed no statistically significant differences.

II. **K-4 Elementary School Comparisons** (Tables 21-30, p. 44-48)

This set of tables reports distributions of stanine scores on reading, mathematics, language, science and social studies first- and third-grade Terra Nova tests by each K-4 school. An analysis of variance was conducted for each test. Three of the first grade and two of the third grade test differences were statistically significant. The following differences were found:

- First grade reading: Boulevard first graders earned the highest scores on average; they were closely followed by Fernway. Onaway students earned the lowest scores, followed by Lomond.
- First grade language: Boulevard students earned the highest average scores. Onaway, Mercer and Lomond all had lower average scores.
- First grade math: Boulevard students earned the highest average scores; Lomond first graders earned the lowest average scores.
• First grade social studies: Boulevard students earned the highest average scores; Lomond and Onaway first graders earned the lowest average scores.

• Third-grade reading: Performance in reading was highest for Boulevard. Fernway, and Onaway were similar and in the middle. Lomond student performance was lowest.

• Third grade math: Boulevard, Fernway and Onaway had similar high scores. Lomond and Mercer’s had lower average scores.

• Third-grade science: Boulevard and Fernway scored high; Lomond scored lowest on average.

• Third-grade social studies: Boulevard and Fernway scored high; Lomond scored lowest.

III. Growth in Reading and Math over Time (Tables 31-32, p. 49)

Using the standard score scale\(^2\) of the Terra Nova it is possible to trace growth over time for students who take tests in the same subject from one grade level to the next.

Tables 31 and 32 report the median scores for all elementary school students who took the reading and math tests both times while they were students in the Shaker Heights City School District. The following findings are evident:

• For all cohorts, the combined group of all students exhibited growth over time. The growth from first grade to third grade is more pronounced.

• The achievement gap between African-American and European-American students in reading and math decreased from first grade to third grade. In reading, the gap declined slightly from 35 to 33 scale score points. In math, it declined from 49 to 43 scale score points.

• The achievement gap in reading and math increased from third to fifth grade. In reading this increase was slight—from a gap of 37 scale points in third grade to one of 38 scale score points in fifth grade. In math, it was more substantial, widening from a difference of 41 points to a difference of 46 points.

\(^2\) The lowest scale scores are for kindergarten children: 290 for the Terra Nova math test and 355 for the Terra Nova reading test. The highest scale scores are for high school twelfth-grade students: 866 (Total Reading) to 915 (Total Mathematics).
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TABLES

Tables 1-4. Terra Nova Reading Test Scores for Grades 1, 3, 5, and 7 Grouped by Stanine for the Shaker Heights City School District, Combined and by Race/Ethnicity 2004-05

Table 1.
Percent at Each Stanine Level: First Grade Terra Nova Reading

Table 2.
Percent at Each Stanine Level: Third Grade Terra Nova Reading

3 National Distribution in Reading, Based on National Stanines
**Section 4**

Table 3.
Percent at Each Stanine Level: Fifth Grade Terra Nova Reading

<table>
<thead>
<tr>
<th></th>
<th>Below</th>
<th>Average</th>
<th>Above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined</td>
<td>11%</td>
<td>41%</td>
<td>48%</td>
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<tr>
<td>African American</td>
<td>19%</td>
<td>20%</td>
<td>61%</td>
</tr>
<tr>
<td>European American</td>
<td>2%</td>
<td>19%</td>
<td>79%</td>
</tr>
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</table>

Table 4.
Percent at Each Stanine Level: Seventh Grade Terra Nova Reading

<table>
<thead>
<tr>
<th></th>
<th>Below</th>
<th>Average</th>
<th>Above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined</td>
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<td>68%</td>
</tr>
<tr>
<td>European American</td>
<td>2%</td>
<td>28%</td>
<td>70%</td>
</tr>
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</table>
Section 4

Tables 5-8. Terra Nova Language Test Scores for Grades 1, 3, 5, and 7 Grouped by Stanine for the Shaker Heights City School District, Combined and by Race/Ethnicity 2004-05

Table 5.
Percent at Each Stanine Level: First Grade Terra Nova Language

Table 6.
Percent at Each Stanine Level: Third Grade Terra Nova Language

Table 7.
Percent at Each Stanine Level: Fifth Grade Terra Nova Language

4 National Distribution in Language, Based on National Stanines
Section 4

Table 8.
Percent at Each Stanine Level: Seventh Grade Terra Nova Language

Tables 9-12. Terra Nova Math Test Scores for Grades 1, 3, 5, and 7 Grouped by Stanine for the Shaker Heights City School District, Combined and by Race/Ethnicity 2004-05

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Percent at Each Stanine Level: First Grade Terra Nova Math

Table 10.
Percent at Each Stanine Level: Third Grade Terra Nova Math

---

5 National Distribution in Math, Based on National Stanines

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Table 14.
Percent at Each Stanine Level: Third Grade Terra Nova Science

Table 15.
Percent at Each Stanine Level: Fifth Grade Terra Nova Science

Table 16.
Percent at Each Stanine Level: Seventh Grade Terra Nova Science
Tables 17-20. Terra Nova Social Studies Scores for Grades 1, 3, 5, and 7 Grouped by Stanine for the Shaker Heights City School District, Combined and by Race/Ethnicity 2004-05

Table 17.
Percent at Each Stanine Level: First Grade Terra Nova Social Studies

Table 18.
Percent at Each Stanine Level: Third Grade Terra Nova Social Studies

---

7 National Distribution in Social Science, Based on National Stanines
Table 19. Percent at Each Stanine Level: Fifth Grade Terra Nova Social Studies

Table 20. Percent at Each Stanine Level: Seventh Grade Terra Nova Social Studies
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Table 21.
Percent of First Graders at Each Stanine Level by School - Reading

Table 22.
Percent of Third Graders at Each Stanine Level by School - Reading
### Table 23.
Percent of First Graders at Each Stanine Level by School - Language

<table>
<thead>
<tr>
<th>School</th>
<th>Below 0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
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</thead>
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<tr>
<td>Onaway</td>
<td>18</td>
<td>53</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mercer</td>
<td>12</td>
<td>59</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Lomond</td>
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<td>30</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fernway</td>
<td>7</td>
<td>48</td>
<td>45</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boulevard</td>
<td>6</td>
<td>31</td>
<td>63</td>
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### Table 24.
Percent of Third Graders at Each Stanine Level by School - Language

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<th>30%</th>
<th>40%</th>
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<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
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<td>Onaway</td>
<td>7</td>
<td>58</td>
<td>36</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mercer</td>
<td>10</td>
<td>54</td>
<td>36</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Lomond</td>
<td>8</td>
<td>54</td>
<td>38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fernway</td>
<td>7</td>
<td>46</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Boulevard</td>
<td>3</td>
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<td>39</td>
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</tr>
</tbody>
</table>
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Table 25.
Percent of First Graders at Each Stanine Level by School - Mathematics

<table>
<thead>
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<th>School</th>
<th>Below</th>
<th>Average</th>
<th>Above</th>
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<tbody>
<tr>
<td>Onaway</td>
<td>21</td>
<td>39</td>
<td>40</td>
</tr>
<tr>
<td>Mercer</td>
<td>14</td>
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</tr>
<tr>
<td>Lomond</td>
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<td>50</td>
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<tr>
<td>Fernway</td>
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<td>42</td>
</tr>
<tr>
<td>Boulevard</td>
<td>10</td>
<td>37</td>
<td>53</td>
</tr>
</tbody>
</table>

Table 26.
Percent of Third Graders at Each Stanine Level by School - Mathematics

<table>
<thead>
<tr>
<th>School</th>
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<th>Average</th>
<th>Above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onaway</td>
<td>3</td>
<td>32</td>
<td>64</td>
</tr>
<tr>
<td>Mercer</td>
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<td>51</td>
<td>46</td>
</tr>
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<td>Lomond</td>
<td>7</td>
<td>51</td>
<td>42</td>
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<tr>
<td>Fernway</td>
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<tr>
<td>Boulevard</td>
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<td>40</td>
<td>58</td>
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</tbody>
</table>
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Table 27.
Percent of First Graders at Each Stanine Level by School - Social Studies

Table 28.
Percent of Third Graders at Each Stanine Level by School - Social Studies
Section 4

Table 29.
Percent of First Graders at Each Stanine Level by School - Science

<table>
<thead>
<tr>
<th>School</th>
<th>Below</th>
<th>Average</th>
<th>Above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onaway</td>
<td>23</td>
<td>48</td>
<td>29</td>
</tr>
<tr>
<td>Mercer</td>
<td>26</td>
<td>45</td>
<td>29</td>
</tr>
<tr>
<td>Lomond</td>
<td>33</td>
<td>45</td>
<td>22</td>
</tr>
<tr>
<td>Fernway</td>
<td>20</td>
<td>57</td>
<td>23</td>
</tr>
<tr>
<td>Boulevard</td>
<td>18</td>
<td>49</td>
<td>34</td>
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</table>

Table 30.
Percent of Third Graders at Each Stanine Level by School - Science

<table>
<thead>
<tr>
<th>School</th>
<th>Below</th>
<th>Average</th>
<th>Above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onaway</td>
<td>8</td>
<td>49</td>
<td>42</td>
</tr>
<tr>
<td>Mercer</td>
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<td>57</td>
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<td>Lomond</td>
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<td>18</td>
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<tr>
<td>Fernway</td>
<td>3</td>
<td>54</td>
<td>43</td>
</tr>
<tr>
<td>Boulevard</td>
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<td>47</td>
<td>49</td>
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</table>
Section 4

Growth in Math and Reading Over Time

Table 31.
Growth in Reading, Based on Terra Nova Scaled Scores

<table>
<thead>
<tr>
<th></th>
<th>Based on students who were 3rd graders in 2004-05</th>
<th>Based on students who were 5th graders in 2004-05</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1st Grade</td>
<td>3rd Grade</td>
</tr>
<tr>
<td>African American</td>
<td>583</td>
<td>649</td>
</tr>
<tr>
<td>European American</td>
<td>600</td>
<td>649</td>
</tr>
<tr>
<td>Total</td>
<td>618</td>
<td>665</td>
</tr>
<tr>
<td></td>
<td>3rd Grade</td>
<td>5th Grade</td>
</tr>
<tr>
<td>African American</td>
<td>583</td>
<td>649</td>
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<tr>
<td>European American</td>
<td>600</td>
<td>649</td>
</tr>
<tr>
<td>Total</td>
<td>618</td>
<td>665</td>
</tr>
</tbody>
</table>

Table 32.
Growth in Math, Based on Terra Nova Scaled Scores

<table>
<thead>
<tr>
<th></th>
<th>Based on students who were 3rd graders in 2004-05</th>
<th>Based on students who were 5th graders in 2004-05</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st Grade</td>
<td>3rd Grade</td>
</tr>
<tr>
<td>African American</td>
<td>532</td>
<td>608</td>
</tr>
<tr>
<td>European American</td>
<td>552</td>
<td>608</td>
</tr>
<tr>
<td>Total</td>
<td>581</td>
<td>630</td>
</tr>
<tr>
<td></td>
<td>3rd Grade</td>
<td>5th Grade</td>
</tr>
<tr>
<td>African American</td>
<td>532</td>
<td>608</td>
</tr>
<tr>
<td>European American</td>
<td>552</td>
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<tr>
<td>Total</td>
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