



# RESEARCH BRIEF

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### Predicting FCAT Science Scores 2006-07

Although students have been taking the FCAT Science test for a few years, the State has only recently set the achievement-level standards for the Science test. Science will be included in the school grade calculations for the first time in 2006-07. In addition, although no official guidelines exist presently, the FCAT Science scores will also be incorporated in the Adequate Yearly Progress requirements in the near future.

With the growing importance of the FCAT Science test, it becomes increasingly desirable to have some way of predicting the performance of students. In other FCAT testing areas, prediction formulas and cutoff scores for success have been developed by this office and made available to schools for several years. However, because the FCAT Science test is relatively new and because it is administered in only Grades 5, 8, and 11, prediction for this test must proceed along different lines. This paper presents the results of an analysis directed toward predicting students' Science scores based on their performance on the FCAT Mathematics test of the previous year.

#### The Prediction Formulas

Linear regression analysis was used to produce prediction formulas for performance on the FCAT Science test at each grade level based on the performance on the FCAT Mathematics test at the previous grade level administered the previous year. Data from 2005 and 2006 were used for these purposes. The resultant prediction formulas are as follows:

$$.713 \times (\text{Grade 4 Math SSS}) + 71 = \text{Predicted Grade 5 Science SSS}$$

$$.828 \times (\text{Grade 7 Math SSS}) + 31 = \text{Predicted Grade 8 Science SSS}$$

$$.878 \times (\text{Grade 10 Math SSS}) + 3 = \text{Predicted Grade 11 Science SSS}$$

## Achievement Level Standards

Standards for the FCAT Science test were provided by the State as shown below. Student scores will be reported according to these levels beginning with the spring 2006 FCAT.

Grade	Level 1	Level 2	Level 3	Level 4	Level 5
5	100-272	273-322	323-376	377-416	417-500
8	100-269	270-324	325-386	387-431	432-500
11	100-278	279-323	324-379	380-424	425-500

## Success Cutoff Scores

Conditions for Adequate Yearly Progress count the percentage of students scoring in achievement levels 3 through 5. If that same procedure is followed for the FCAT Science test, it is possible to use the score standards in the table above in conjunction with the prediction formulas to construct cutoff scores for predicting attainment of levels 3-5 for the Science test based on the previous year's mathematics test scores. The cutoff scores and prediction rules are as follows:

If Grade 4 Mathematics test is > 352, predict Grade 5 Science levels 3-5

If Grade 7 Mathematics test is > 354, predict Grade 8 Science levels 3-5

If Grade 10 Mathematics test is > 364, predict Grade 11 Science levels 3-5

## Prediction Success

As a test of the prediction efficiency, the cutoff scores as described above were applied to student data from the 2005 administration of the FCAT Mathematics test to see how successfully they would have predicted the performance level of students on the 2006 administration of the FCAT Science test. Using these cutoffs, approximately 95% of the students would have been correctly identified as scoring in levels 3-5 on the FCAT Science test. Although these results are impressive, they probably overstate the prediction success that can be hoped for in the coming year.

## Cautions

It is hoped that this prediction process can be of some assistance to teachers in targeting instruction and to students, and parents in anticipating the performance on the FCAT Science test. However, for any individual student, one should be cautious about putting too much reliance on the numerical prediction. To the extent that these predictions identify students in need of special attention, it is hoped that the students defy prediction and substantially exceed expectations.

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