

EOC (End-of-Course) Prediction Formulas

The prediction formulas for calculating the predicted EOC expected mean scores are:

$$\text{Predicted School Algebra I Mean} = b_0 + (b_{IMP} \times IMP)$$

$$\text{Predicted Biology Mean} = b_0 + (b_{IRP} \times IRP) + (b_{IMP} \times IMP) + (b_{IMP^2} \times IMP^2) + (b_{IMP^3} \times IMP^3)$$

$$\text{Predicted English I Mean} = b_0 + (b_{IRP} \times IRP)$$

$$\text{Predicted Algebra II Mean} = b_0 + (b_{IRP} \times IRP) + (b_{IAP} \times IAP)$$

$$\text{Predicted Chemistry Mean} = b_0 + (b_{IAP} \times IAP) + (b_{IBP} \times IBP) + (b_{IEP} \times IEP)$$

$$\text{Predicted Geometry Mean} = b_0 + (b_{IRP} \times IRP) + (b_{IMP} \times IMP) + (b_{IAP} \times IAP)$$

$$\text{Predicted Physical Science Mean} = b_0 + (b_{IRP} \times IRP) + (b_{IMP} \times IMP)$$

$$\text{Predicted Physics Mean Score} = b_0 + (b_{IMP} \times IMP) + (b_{IBP} \times IBP) + (b_{IEP} \times IEP)$$

where

b_0 is the state average performance

b_{IRP} is the index of reading proficiency

b_{IMP} is the index of math proficiency

b_{IMP^2} is the school's squared average math proficiency

b_{IMP^3} is the school's cubed average math proficiency

b_{IAP} is the index of Algebra I proficiency

b_{IBP} is the index of Biology proficiency

b_{IEP} is the index of English I proficiency

IRP = the average reading scale score for students in the school minus the average reading scale score (1998-99) for North Carolina schools.

IMP = the average mathematics scale score for students in the school minus the average mathematics scale score (1998-99) for North Carolina schools.

IAP = the average Algebra I scale score for students in the school minus the average Algebra I scale score (1998-99) for North Carolina schools.

IBP = the average Biology scale score for students in the school minus the average Biology scale score (1998-99) for North Carolina schools.

IEP = the average English I scale score for students in the school minus the average English I scale score (1998-99) for North Carolina schools.

Prediction Formula Constants¹

	b ₀	b _{IRP}	b _{IMP}	b _{IMP2}	b _{IMP3}	b _{IAP}	b _{IBP}	b _{IEP}
Algebra I	60.4		0.88					
Biology	55.2	0.71	0.32	-0.01	-0.001			
English I	53.3	1.01						
Algebra II	59.3	0.43				0.89		
Chemistry	56.9					0.18	0.51	0.27
Geometry	58.5	0.42	0.39			0.43		
Physical Science	53.8	0.58	0.34					
Physics	56.1		0.28				0.66	0.32

¹Constants are rounded in table and formulas shown below; full precision is used in ABC Tools.

Prediction Formulas for End-of-Course Performance

The formulas with constants and the 1998-99 North Carolina averages (centering means for the proficiency indexes) substituted are:

$$\text{Algebra I Predicted Mean Score} = 60.4 + [0.88 \times (\text{Math} - 176.1)]$$

$$\text{Biology Predicted Mean Score} = 55.2 + [0.71 \times (\text{Reading} - 161.3)] + [0.32 \times (\text{Math} - 172.0)] + [-0.01 \times (\text{Math} - 172.0)^2] + [-0.001 \times (\text{Math} - 172.0)^3]$$

$$\text{English I Predicted Mean Score} = 53.3 + [1.01 \times (\text{Reading} - 161.0)]$$

$$\text{Algebra II Predicted Mean Score} = 59.3 + [0.43 \times (\text{Reading} - 164.7)] + [0.89 \times (\text{AlgI} - 60.0)]$$

$$\text{Chemistry Predicted Mean Score} = 56.9 + [0.18 \times (\text{AlgI} - 59.9)] + [0.51 \times (\text{Bio} - 59.7)] + [0.27 \times (\text{EngI} - 58.1)]$$

$$\text{Geometry Predicted Mean Score} = 58.5 + [0.42 \times (\text{Reading} - 164.5)] + [0.39 \times (\text{Math} - 176.7)] + [0.43 \times (\text{AlgI} - 59.7)]$$

$$\text{Physical Science Predicted Mean Score} = 53.8 + [0.58 \times (\text{Reading} - 160.7)] + [0.34 \times (\text{Math} - 171.6)]$$

$$\text{Physics Predicted Mean Score} = 56.1 + [0.28 \times (\text{Math} - 182.0)] + [0.66 \times (\text{Bio} - 63.7)] + [0.32 \times (\text{EngI} - 61.6)]$$

where

Reading = EOG Reading mean for all students in the school with scores for the predicted EOC and all other EOG/EOC tests used as predictors

Math = EOG Math mean for all students in the school with scores for the predicted EOC and all other EOG/EOC tests used as predictors

AlgI = Algebra I mean for all students in the school with scores for the predicted EOC and all other EOG/EOC tests used as predictors

Bio = Biology mean for all students in the school with scores for the predicted EOC and all other EOG/EOC tests used as predictors

EngI = English I mean for all students in the school with scores for the predicted EOC and all other EOG/EOC tests used as predictors