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easyCBM® Mathematics Criterion Related Validity Evidence: Washington State Test

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Abstract

easyCBM® is an online benchmark and progress monitoring assessment system designed for use within a response to intervention (RTI) framework. Part of the purpose of easyCBM® is to help educators identify students who may be at risk for failure. Often, students deemed at-risk are those who would be predicted to not pass the state test. Previous research has shown that educators using easyCBM® may classify students as at-risk or not for passing the Oregon state test with a high degree of accuracy. In this technical report, we report on an extension of this research, examining the relation between easyCBM® and the test used for accountability in Washington state. We conduct regression and correlation analyses to examine the relationship between the measures, and use scatterplots to view this relationship with respect to cut scores.

easyCBM® Criterion-Related Validity Evidence: Washington State Test

In this technical report, we present the results of a study of the criterion validity of easyCBM® math at grades 3-8. The Measures of Student Progress (MSP), Washington's state test used for accountability purposes, was used as the criterion. The MSP was administered at the end of the school year, while easyCBM® was administered tri-annually. Thus, we examine easyCBM® for both its predictive validity, with the fall and winter measures predicting the MSP, and its concurrent validity, with the relation between the spring measure and MSP examined.

The easyCBM® Progress Monitoring Assessments

The online easyCBM® progress monitoring assessment system was launched in September 2006 as part of a Model Demonstration Center on Progress Monitoring funded by the Office of Special Education Programs (OSEP). At the time this technical report was published, 92,925 teachers had registered easyCBM® accounts, representing schools and districts spread across every state in the country. During the 2008-2009 school year, an average of 305 new accounts were registered each week, and the popularity of the system continues to grow. In the month of October 2010, alone, 11,885 new teachers registered for accounts. The online assessment system provides both universal screener assessments for fall, winter, and spring administration and multiple alternate forms of a variety of progress monitoring measures designed for use in K-8 school settings.

As part of state funding for Response to Intervention (RTI), states need technically adequate measures for monitoring progress. Given the increasing popularity of the easyCBM® online assessment system, it is imperative that a thorough analysis of the measures' technical adequacy be conducted and the results shared with research and practitioner communities. This technical report addresses that need directly, providing the results of a study examining the

predictive and concurrent validity evidence supporting the use of the easyCBM® assessments in mathematics in Washington state schools.

Methods

Setting and Subjects

One medium-sized District in Washington participated in this study. Table 1 details the demographics of the sample by grade level.

Measures

The easyCBM® mathematics tests used in this study contain 45 multiple-choice mathematics items, written specifically to address grade-level content knowledge and skills as described in the National Council of Teachers of Mathematics (NCTM) Focal Point Standards. These benchmark / screening assessments are designed to identify students at risk for failing to meet state content standards, giving educators the opportunity to provide additional instructional interventions targeted to students' needs. They are intended to be computer-administered in a group setting, with the students' classroom teachers supervising the test administration. For a full description of easyCBM® math, including its purpose and development, see Alonzo, Lai, and Tindal (2009a, 2009b, 2009c), Alonzo and Tindal (2009a, 2009b), and Lai, Alonzo, and Tindal (2009a, 2009b, 2009c).

The MSP was newly implemented for the 2009-2010 school year. Previously, Washington had administered the Washington Assessment of Student Learning, a longer test that was limited to paper pencil format. According to the Washington Department of Education, the MSP will eventually be a computer administed assessment; however, because this was the first year the assessment was administered, only about 25% of students in grades 6-8 were administered the assessment by computer. The state plans to move to a fully computer

administered test within 2-3 years. The MSP includes multiple-choice and short answer item types.

Data Analysis

To examine the predictive and concurrent validity of easyCBM®, we conducted regression and correlation analyses. Four separate regression models were tested at each grade level. First, a full model was run, which included all easyCBM® assessments administered throughout the year. This model provided an indication of the total relation between easyCBM® and the MSP. Second, individual models were run for each seasonal administration. For the seasonal models, only the students' total score for the seasonal benchmark was entered as a predictor. Correlations are reported in both the full model and the individual models. To visually represent the relation between easyCBM® and the MSP, and to examine the impact of cut scores, we also produced scatterplots for each seasonal administration. On each scatterplot, students' MSP scores are plotted along the y-axis and their easyCBM® scores are plotted along the x-axis. The vertical lines on each plot represent the 20th and 50th percentiles of normative achievement on easyCBM®, while the horizontal line represents the cut score for the *proficiency* performance level classification on the MSP.

Results

The results of the regression analyses and all scatterplots are reported by grade in pages 9-68. Overall, the full model accounted for between 59% and 75% of the variance in MSP, while the individual models accounted for between 48% and 67% of the variance in MSP.

Discussion

The results of this study suggest a strong relation between easyCBM® and the MSP. An investigation of the scatterplots indicates that, even early in the year, very few students who

scored below the 20th percentile on easyCBM® reached the *proficiency* performance level classification on the MSP. Above the 50th percentile, however, most students did reach the *proficiency* performance level classification, although overall it appears that easyCBM® is less accurate in predicting which students *will* reach proficiency than in predicting which students *will not* reach proficiency.

References

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Table 1

Demographics

Grade	*n*	% ELL	% SPED	Sex		% Ethnicity					
				% M	% F	Amer Ind	Asian/Pac Islander	Black	Hispanic	White	Multi
3	638	6.1	15.5	50.8	49.2	0.9	16.8	6.7	7.2	56.4	11.9
4	673	5.6	15.5	55.1	44.9	1.0	18.1	6.7	4.5	59.0	10.7
5	638	5.2	14.6	45.5	54.5	1.4	15.7	7.8	7.4	64.1	3.6
6	667	4.5	13.0	49.5	50.5	1.6	17.1	9.0	8.4	61.2	2.5
7	623	5.3	10.4	51.2	48.8	0.3	19.4	8.2	7.5	60.7	3.7
8	661	4.8	10.7	49.6	50.4	1.4	18.8	7.9	7.7	62.0	2.1

Grade 3

Full Model

Descriptive Statistics

	Mean	Std. Deviation	N
Washington State Assessment Scale Score	408.92	33.099	463
Fall09TotMath	31.75	6.096	463
Wint10TotMath	35.57	5.796	463
Spr10TotMath	38.02	5.306	463

Correlations

		Washington State Assessment Scale Score	Fall09TotMath	Wint10TotMath	Spr10TotMath
Pearson Correlation	Washington State Assessment Scale Score	1.000	.682	.705	.689
	Fall09TotMath	.682	1.000	.735	.682
	Wint10TotMath	.705	.735	1.000	.710
	Spr10TotMath	.689	.682	.710	1.000
Sig. (1-tailed)	Washington State Assessment Scale Score	.	.000	.000	.000
	Fall09TotMath	.000	.	.000	.000
	Wint10TotMath	.000	.000	.	.000
	Spr10TotMath	.000	.000	.000	.
N	Washington State Assessment Scale Score	463	463	463	463
	Fall09TotMath	463	463	463	463
	Wint10TotMath	463	463	463	463
	Spr10TotMath	463	463	463	463

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.771[a]	.594	.592	21.147

a. Predictors: (Constant), Spr10TotMath, Fall09TotMath, Wint10TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	300874.251	3	100291.417	224.259	.000[a]
	Residual	205270.631	459	447.213		
	Total	506144.881	462			

a. Predictors: (Constant), Spr10TotMath, Fall09TotMath, Wint10TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	232.170	7.273		31.921	.000					
	Fall09TotMath	1.374	.253	.253	5.440	.000	.682	.246	.162	.408	2.448
	Wint10TotMath	1.749	.276	.306	6.339	.000	.705	.284	.188	.378	2.643
	Spr10TotMath	1.866	.279	.299	6.676	.000	.689	.298	.198	.440	2.271

a. Dependent Variable: Washington State Assessment Scale Score

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Fall09TotMath	Wint10TotMath	Spr10TotMath
1	1	3.967	1.000	.00	.00	.00	.00
	2	.019	14.592	.57	.28	.03	.00
	3	.008	22.505	.25	.71	.52	.10
	4	.006	25.481	.18	.00	.45	.90

a. Dependent Variable: Washington State Assessment Scale Score

Fall Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.703[a]	.494	.493	23.901

a. Predictors: (Constant), Fall09TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	290178.876	1	290178.876	507.945	.000[a]
	Residual	297065.616	520	571.280		
	Total	587244.492	521			

a. Predictors: (Constant), Fall09TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	287.815	5.456		52.750	.000
	Fall09TotMath	3.793	.168	.703	22.538	.000

a. Dependent Variable: Washington State Assessment Scale Score

Winter Total

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.721[a]	.520	.519	23.474

a. Predictors: (Constant), Wint10TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	305529.164	1	305529.164	554.487	.000[a]
	Residual	282118.456	512	551.013		
	Total	587647.621	513			

a. Predictors: (Constant), Wint10TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	268.784	6.012		44.705	.000
	Wint10TotMath	3.951	.168	.721	23.548	.000

a. Dependent Variable: Washington State Assessment Scale Score

Spring Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.721[a]	.520	.519	23.546

a. Predictors: (Constant), Spr10TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	325455.759	1	325455.759	587.036	.000[a]
	Residual	300487.741	542	554.405		
	Total	625943.500	543			

a. Predictors: (Constant), Spr10TotMath

b. Dependent Variable: Washington State Assessment Scale Score

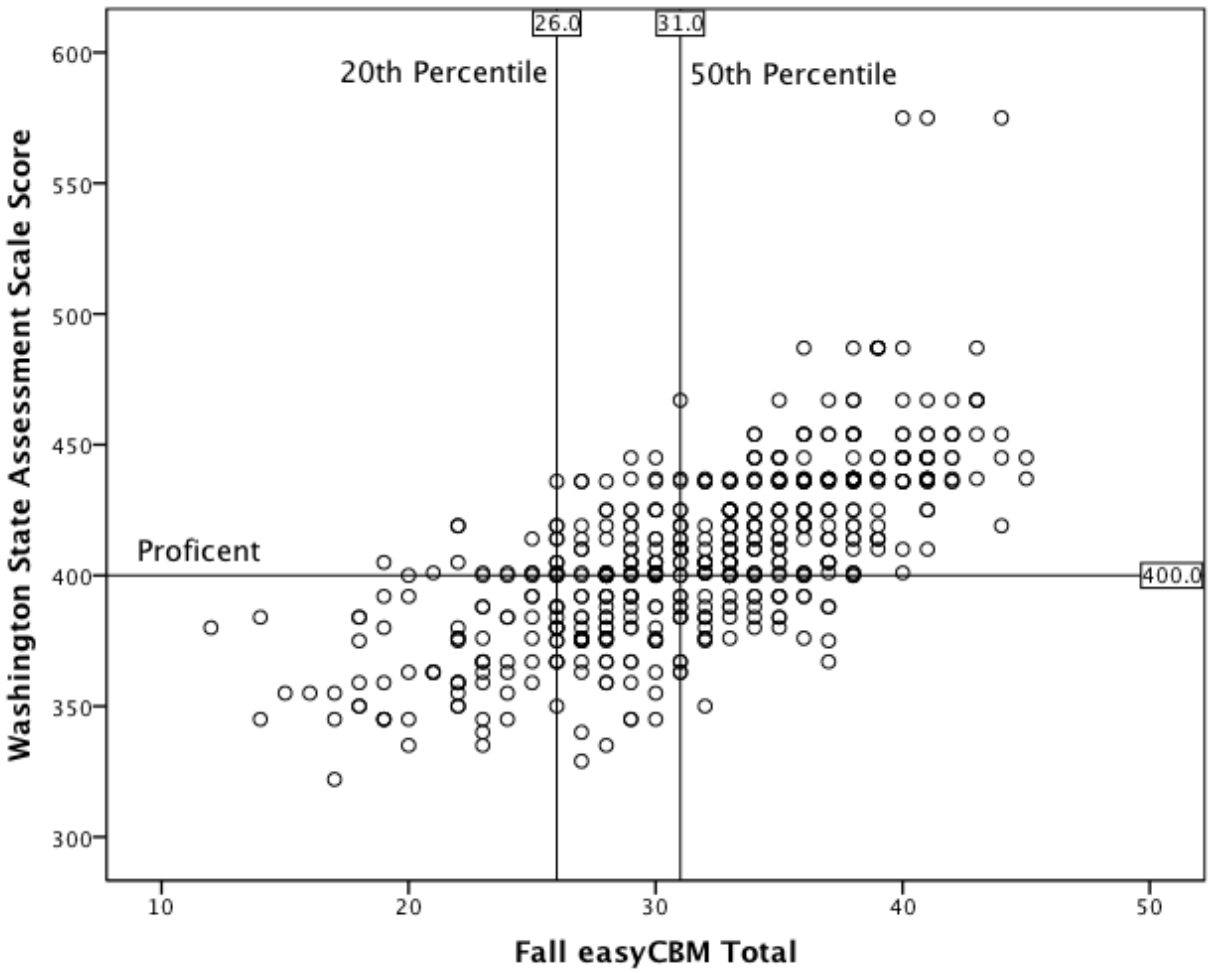
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	244.301	6.775		36.058	.000
	Spr10TotMath	4.314	.178	.721	24.229	.000

a. Dependent Variable: Washington State Assessment Scale Score

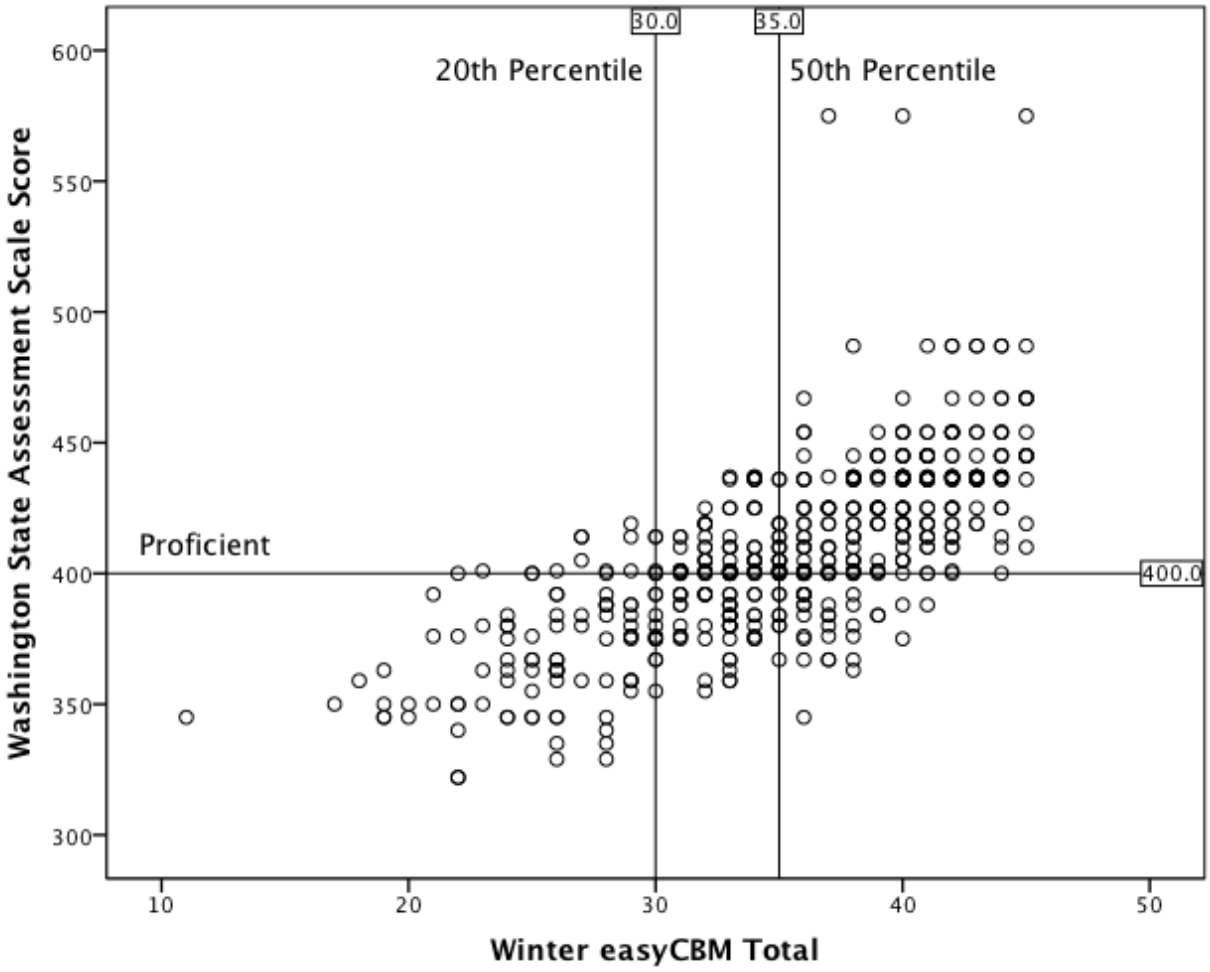
Scatterplot

Grade 3 - Fall easyCBM® and Washington State Mathematics Test



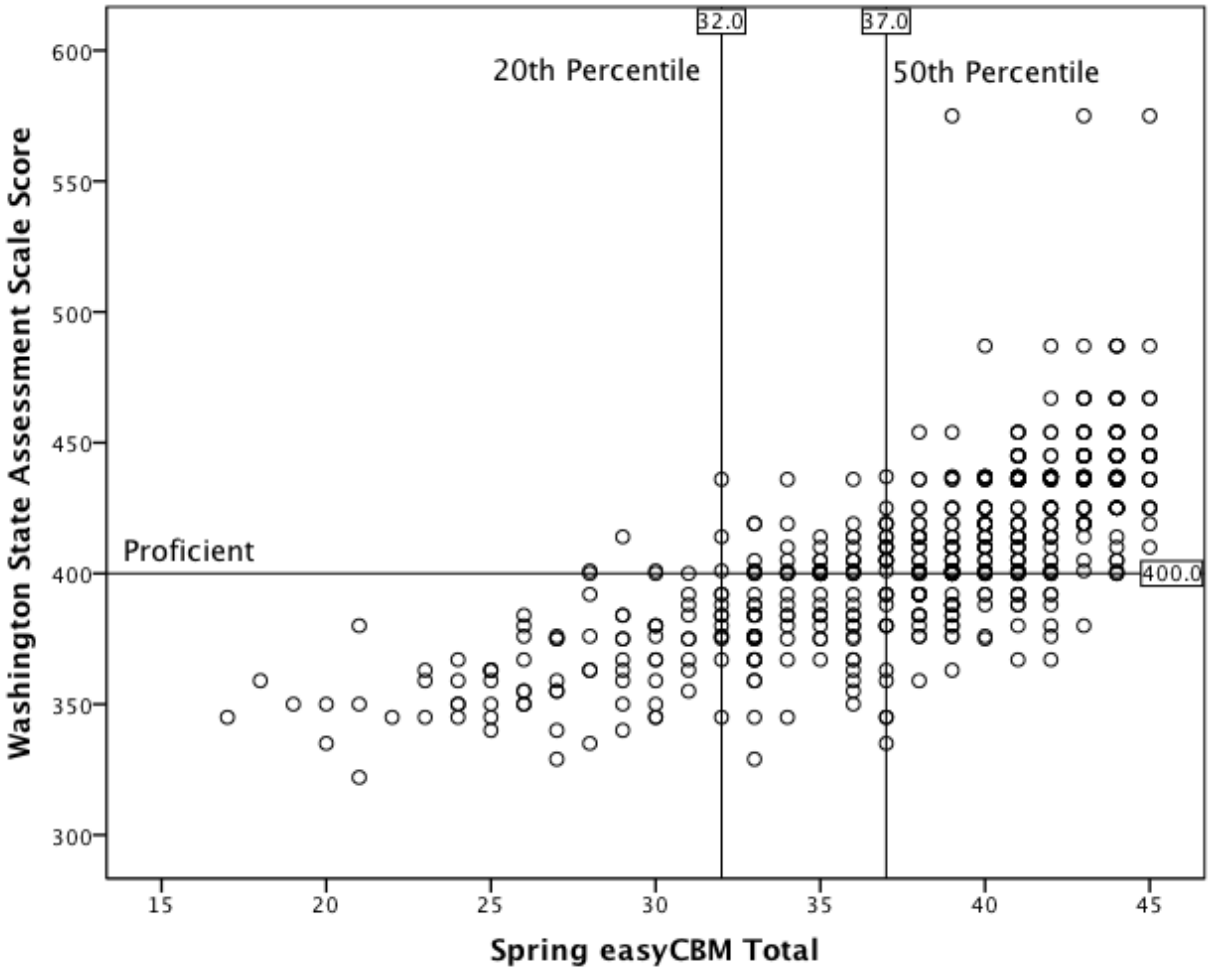
Scatterplot

Grade 3 - Winter easyCBM® and Washington State Mathematics Test



Scatterplot

Grade 3 - Spring easyCBM® and Washington State Mathematics Test



Grade 4

Descriptive Statistics

	Mean	Std. Deviation	N
Washington State Assessment Scale Score	422.62	56.878	529
Fall09TotMath	33.99	6.867	529
Wint10TotMath	35.96	6.071	529
Spr10TotMath	38.32	6.138	529

Correlations

		Washington State Assessment Scale Score	Fall09TotMath	Wint10TotMath	Spr10TotMath
Pearson Correlation	Washington State Assessment Scale Score	1.000	.771	.774	.771
	Fall09TotMath	.771	1.000	.817	.784
	Wint10TotMath	.774	.817	1.000	.777
	Spr10TotMath	.771	.784	.777	1.000
Sig. (1-tailed)	Washington State Assessment Scale Score	.	.000	.000	.000
	Fall09TotMath	.000	.	.000	.000
	Wint10TotMath	.000	.000	.	.000
	Spr10TotMath	.000	.000	.000	.
N	Washington State Assessment Scale Score	529	529	529	529
	Fall09TotMath	529	529	529	529
	Wint10TotMath	529	529	529	529
	Spr10TotMath	529	529	529	529

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.832[a]	.692	.690	31.669

a. Predictors: (Constant), Spr10TotMath, Wint10TotMath, Fall09TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1181602.606	3	393867.535	392.729	.000[a]
	Residual	526522.260	525	1002.900		
	Total	1708124.866	528			

a. Predictors: (Constant), Spr10TotMath, Wint10TotMath, Fall09TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	129.797	9.123		14.228	.000					
	Fall09TotMath	2.238	.382	.270	5.856	.000	.771	.248	.142	.276	3.625
	Wint10TotMath	2.823	.426	.301	6.630	.000	.774	.278	.161	.284	3.518
	Spr10TotMath	3.008	.391	.325	7.685	.000	.771	.318	.186	.329	3.039

a. Dependent Variable: Washington State Assessment Scale Score

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Fall09TotMath	Wint10TotMath	Spr10TotMath
1	1	3.967	1.000	.00	.00	.00	.00
	2	.021	13.662	.73	.14	.02	.00
	3	.006	25.284	.24	.56	.00	.81
	4	.006	26.490	.03	.31	.98	.18

a. Dependent Variable: Washington State Assessment Scale Score

Fall Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.780[a]	.609	.608	35.991

a. Predictors: (Constant), Fall09TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1222776.547	1	1222776.547	943.953	.000[a]
	Residual	784999.070	606	1295.378		
	Total	2007775.617	607			

a. Predictors: (Constant), Fall09TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	201.058	7.339		27.394	.000
	Fall09TotMath	6.496	.211	.780	30.724	.000

a. Dependent Variable: Washington State Assessment Scale Score

Winter Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.789[a]	.622	.621	35.830

a. Predictors: (Constant), Wint10TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1227161.018	1	1227161.018	955.880	.000[a]
	Residual	745888.848	581	1283.802		
	Total	1973049.866	582			

a. Predictors: (Constant), Wint10TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	165.393	8.393		19.705	.000
	Wint10TotMath	7.154	.231	.789	30.917	.000

a. Dependent Variable: Washington State Assessment Scale Score

Spring Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.773[a]	.597	.596	36.453

a. Predictors: (Constant), Spr10TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1203971.820	1	1203971.820	906.029	.000[a]
	Residual	813253.079	612	1328.845		
	Total	2017224.899	613			

a. Predictors: (Constant), Spr10TotMath

b. Dependent Variable: Washington State Assessment Scale Score

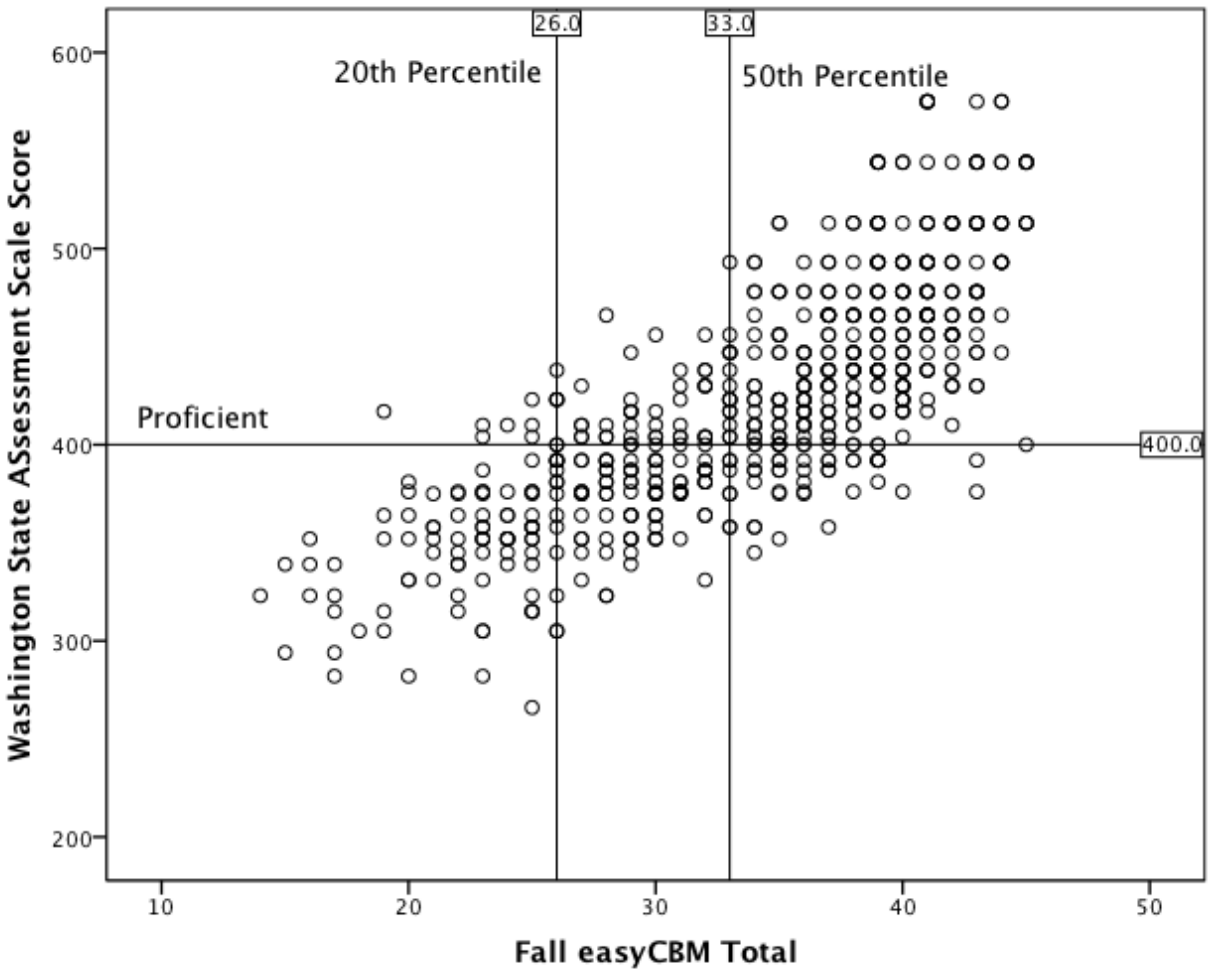
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	160.269	8.755		18.307	.000
	Spr10TotMath	6.846	.227	.773	30.100	.000

a. Dependent Variable: Washington State Assessment Scale Score

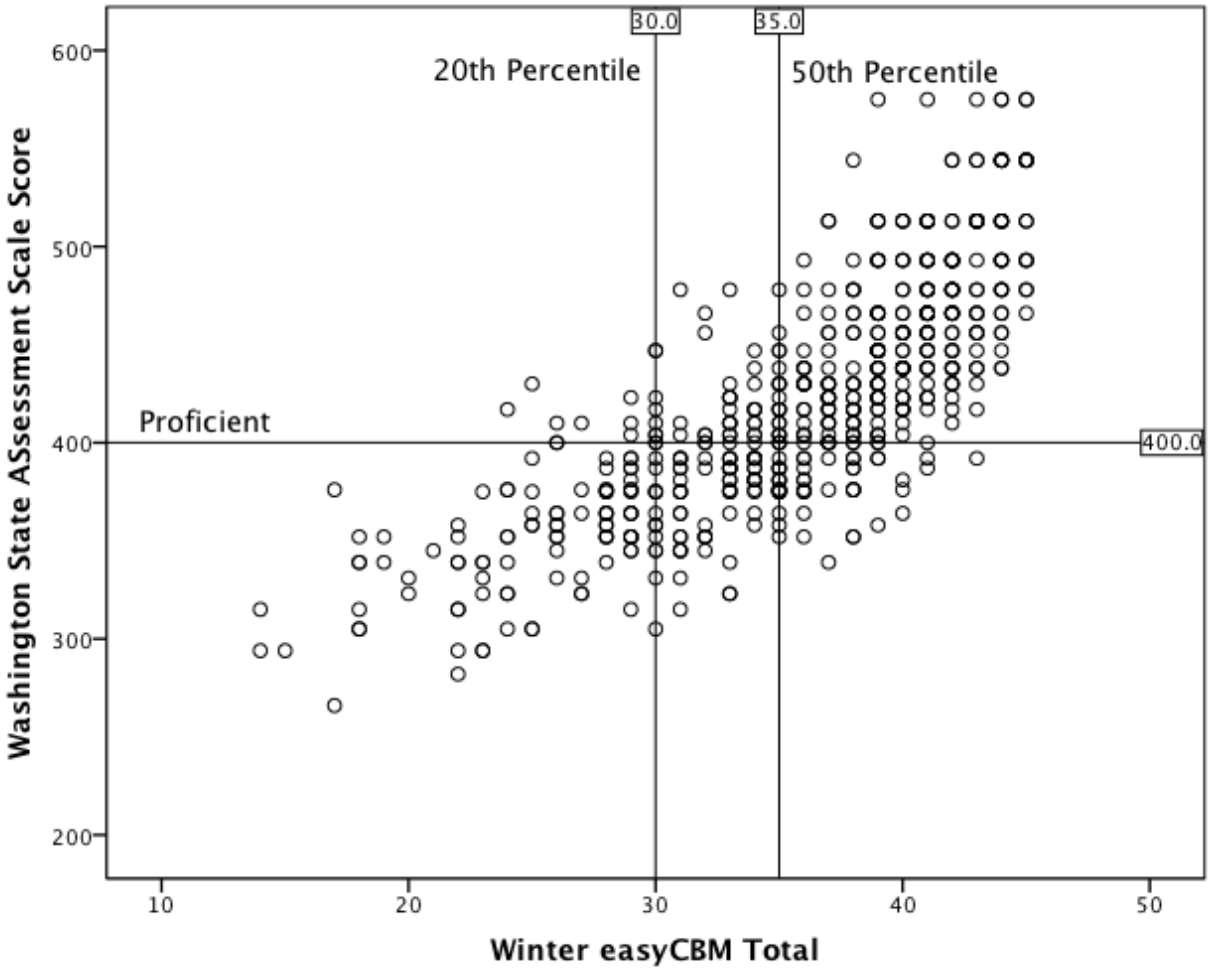
Scatterplot

Grade 4 - Fall easyCBM® and Washington State Mathematics Test



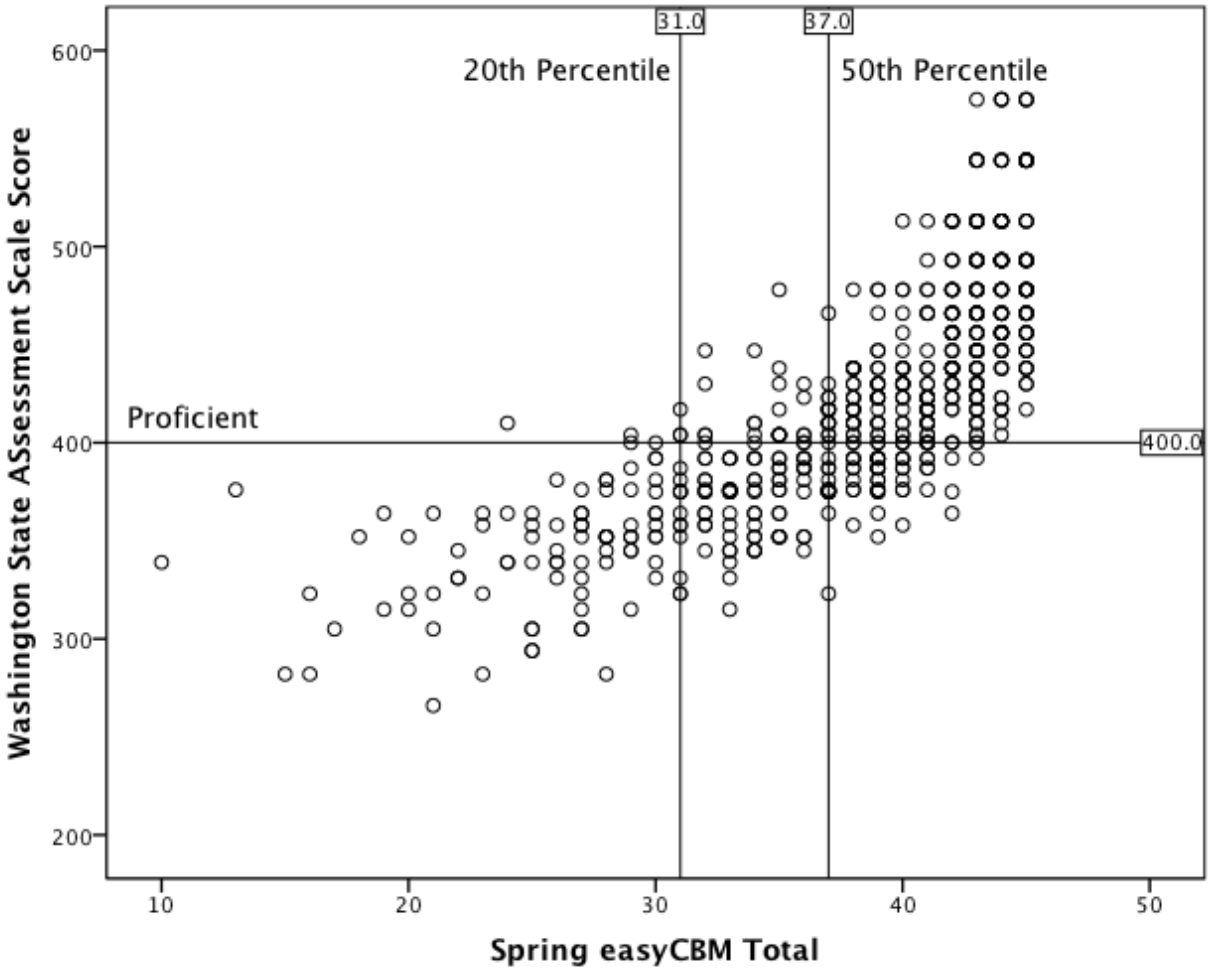
Scatterplot

Grade 4 - Winter easyCBM® and Washington State Mathematics Test



Scatterplot

Grade 4 - Spring easyCBM® and Washington State Mathematics Test



Grade 5

Full Model

Descriptive Statistics

	Mean	Std. Deviation	N
Washington State Assessment Scale Score	417.67	41.577	541
Fall09TotMath	34.06	6.840	541
Wint10TotMath	37.48	5.950	541
Spr10TotMath	40.78	5.078	541

Correlations

		Washington State Assessment Scale Score	Fall09TotMath	Wint10TotMath	Spr10TotMath
Pearson Correlation	Washington State Assessment Scale Score	1.000	.770	.763	.683
	Fall09TotMath	.770	1.000	.793	.679
	Wint10TotMath	.763	.793	1.000	.750
	Spr10TotMath	.683	.679	.750	1.000
Sig. (1-tailed)	Washington State Assessment Scale Score	.	.000	.000	.000
	Fall09TotMath	.000	.	.000	.000
	Wint10TotMath	.000	.000	.	.000
	Spr10TotMath	.000	.000	.000	.
N	Washington State Assessment Scale Score	541	541	541	541
	Fall09TotMath	541	541	541	541
	Wint10TotMath	541	541	541	541
	Spr10TotMath	541	541	541	541

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.817[a]	.668	.666	24.026

a. Predictors: (Constant), Spr10TotMath, Fall09TotMath, Wint10TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	623484.206	3	207828.069	360.046	.000[a]
	Residual	309970.538	537	577.226		
	Total	933454.743	540			

a. Predictors: (Constant), Spr10TotMath, Fall09TotMath, Wint10TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	194.061	8.455		22.953	.000					
	Fall09TotMath	2.452	.254	.403	9.661	.000	.770	.385	.240	.355	2.819
	Wint10TotMath	2.180	.324	.312	6.737	.000	.763	.279	.168	.288	3.469
	Spr10TotMath	1.431	.315	.175	4.546	.000	.683	.193	.113	.418	2.391

a. Dependent Variable: Washington State Assessment Scale Score

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Fall09TotMath	Wint10TotMath	Spr10TotMath
1	1	3.969	1.000	.00	.00	.00	.00
	2	.021	13.864	.37	.28	.02	.01
	3	.006	24.965	.43	.68	.36	.17
	4	.004	30.367	.20	.04	.62	.82

a. Dependent Variable: Washington State Assessment Scale Score

Fall Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.769[a]	.591	.590	26.642

a. Predictors: (Constant), Fall09TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	585845.216	1	585845.216	825.395	.000[a]
	Residual	405282.065	571	709.776		
	Total	991127.281	572			

a. Predictors: (Constant), Fall09TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	259.726	5.589		46.468	.000
	Fall09TotMath	4.626	.161	.769	28.730	.000

a. Dependent Variable: Washington State Assessment Scale Score

Winter Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.774[a]	.599	.598	26.909

a. Predictors: (Constant), Wint10TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	637205.802	1	637205.802	880.013	.000[a]
	Residual	426487.213	589	724.087		
	Total	1063693.015	590			

a. Predictors: (Constant), Wint10TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	221.639	6.647		33.344	.000
	Wint10TotMath	5.208	.176	.774	29.665	.000

a. Dependent Variable: Washington State Assessment Scale Score

Spring Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.693[a]	.480	.480	30.584

a. Predictors: (Constant), Spr10TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	504340.315	1	504340.315	539.175	.000[a]
	Residual	545333.975	583	935.393		
	Total	1049674.291	584			

a. Predictors: (Constant), Spr10TotMath

b. Dependent Variable: Washington State Assessment Scale Score

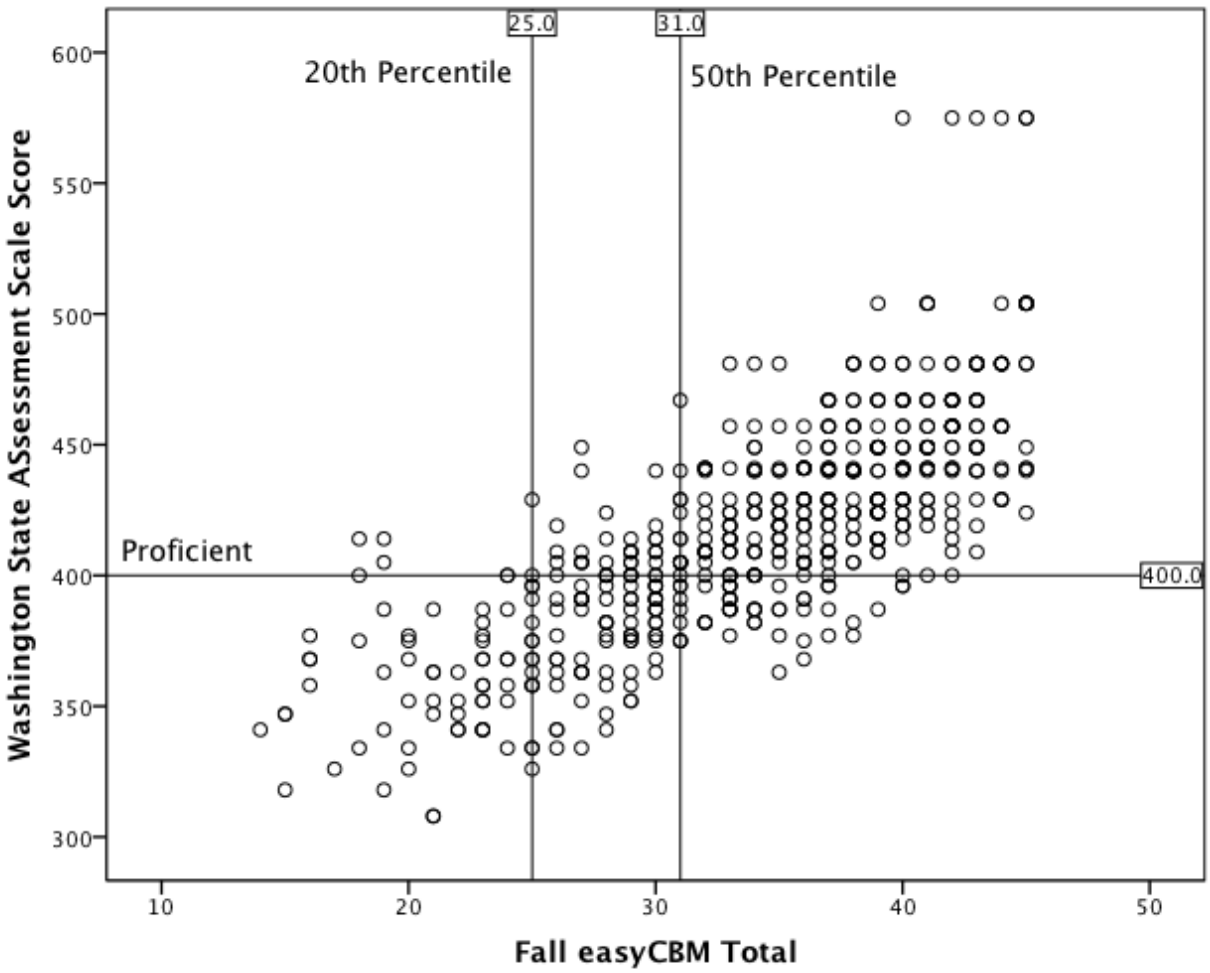
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	198.782	9.431		21.078	.000
	Spr10TotMath	5.356	.231	.693	23.220	.000

a. Dependent Variable: Washington State Assessment Scale Score

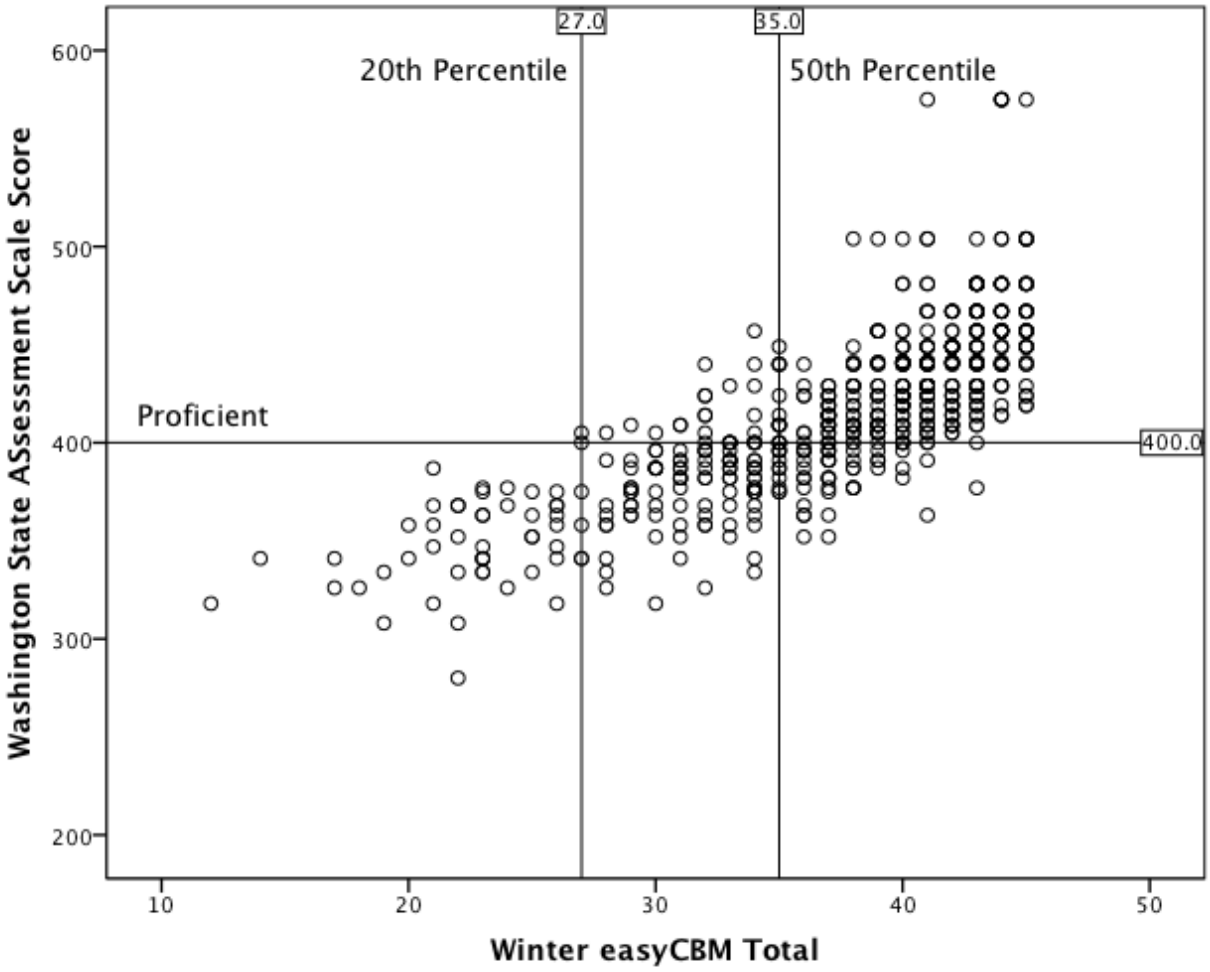
Scatterplot

Grade 5 - Fall easyCBM® and Washington State Mathematics Test



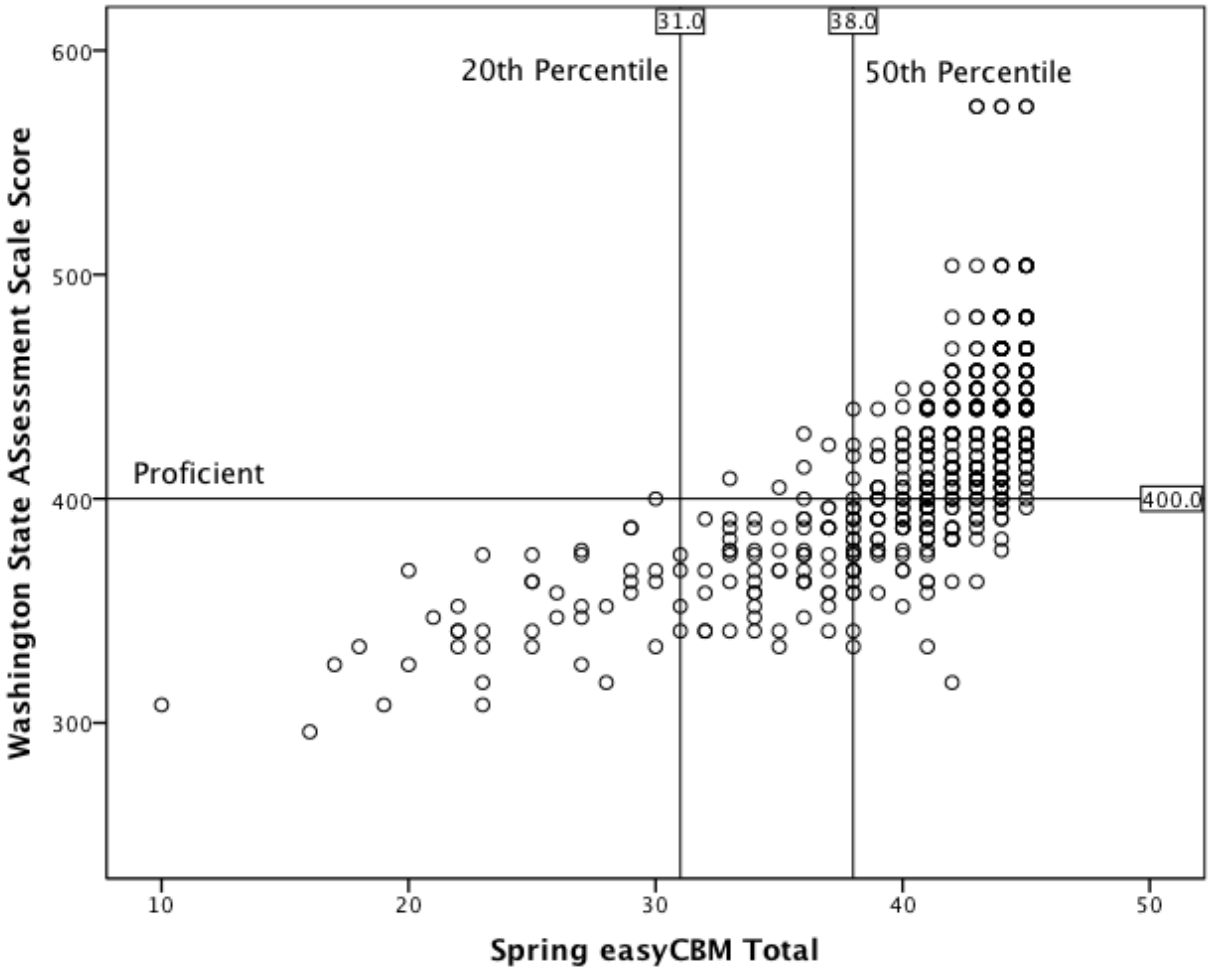
Scatterplot

Grade 5 - Winter easyCBM® and Washington State Mathematics Test



Scatterplot

Grade 5 - Spring easyCBM® and Washington State Mathematics Test



Grade 6

Full Model

Descriptive Statistics

	Mean	Std. Deviation	N
Washington State Assessment Scale Score	422.25	43.881	532
Fall09TotMath	33.42	7.119	532
Wint10TotMath	35.57	7.032	532
Spr10TotMath	38.49	6.601	532

Correlations

		Washington State Assessment Scale Score	Fall09TotMath	Wint10TotMath	Spr10TotMath
Pearson Correlation	Washington State Assessment Scale Score	1.000	.811	.804	.806
	Fall09TotMath	.811	1.000	.811	.766
	Wint10TotMath	.804	.811	1.000	.831
	Spr10TotMath	.806	.766	.831	1.000
Sig. (1-tailed)	Washington State Assessment Scale Score	.	.000	.000	.000
	Fall09TotMath	.000	.	.000	.000
	Wint10TotMath	.000	.000	.	.000
	Spr10TotMath	.000	.000	.000	.
N	Washington State Assessment Scale Score	532	532	532	532
	Fall09TotMath	532	532	532	532
	Wint10TotMath	532	532	532	532
	Spr10TotMath	532	532	532	532

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.867[a]	.752	.751	21.897

a. Predictors: (Constant), Spr10TotMath, Fall09TotMath, Wint10TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	769297.524	3	256432.508	534.825	.000[a]
	Residual	253160.226	528	479.470		
	Total	1022457.750	531			

a. Predictors: (Constant), Spr10TotMath, Fall09TotMath, Wint10TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	210.044	5.637		37.262	.000					
	Fall09TotMath	2.317	.238	.376	9.748	.000	.811	.391	.211	.315	3.171
	Wint10TotMath	1.366	.278	.219	4.907	.000	.804	.209	.106	.236	4.245
	Spr10TotMath	2.238	.270	.337	8.298	.000	.806	.340	.180	.285	3.511

a. Dependent Variable: Washington State Assessment Scale Score

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Fall09TotMath	Wint10TotMath	Spr10TotMath
1	1	3.961	1.000	.00	.00	.00	.00
	2	.025	12.594	.80	.11	.03	.00
	3	.009	21.464	.11	.87	.19	.22
	4	.005	27.296	.09	.03	.77	.78

a. Dependent Variable: Washington State Assessment Scale Score

Fall Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.817[a]	.668	.667	25.377

a. Predictors: (Constant), Fall09TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	774140.340	1	774140.340	1202.054	.000[a]
	Residual	385120.658	598	644.014		
	Total	1159260.998	599			

a. Predictors: (Constant), Fall09TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	252.626	4.928		51.262	.000
	Fall09TotMath	5.052	.146	.817	34.671	.000

a. Dependent Variable: Washington State Assessment Scale Score

Winter Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.811[a]	.657	.657	25.963

a. Predictors: (Constant), Wint10TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	764905.690	1	764905.690	1134.742	.000[a]
	Residual	399054.629	592	674.079		
	Total	1163960.318	593			

a. Predictors: (Constant), Wint10TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	242.660	5.388		45.041	.000
	Wint10TotMath	5.034	.149	.811	33.686	.000

a. Dependent Variable: Washington State Assessment Scale Score

Spring Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.819[a]	.671	.670	25.652

a. Predictors: (Constant), Spr10TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	780973.689	1	780973.689	1186.813	.000[a]
	Residual	383638.951	583	658.043		
	Total	1164612.639	584			

a. Predictors: (Constant), Spr10TotMath

b. Dependent Variable: Washington State Assessment Scale Score

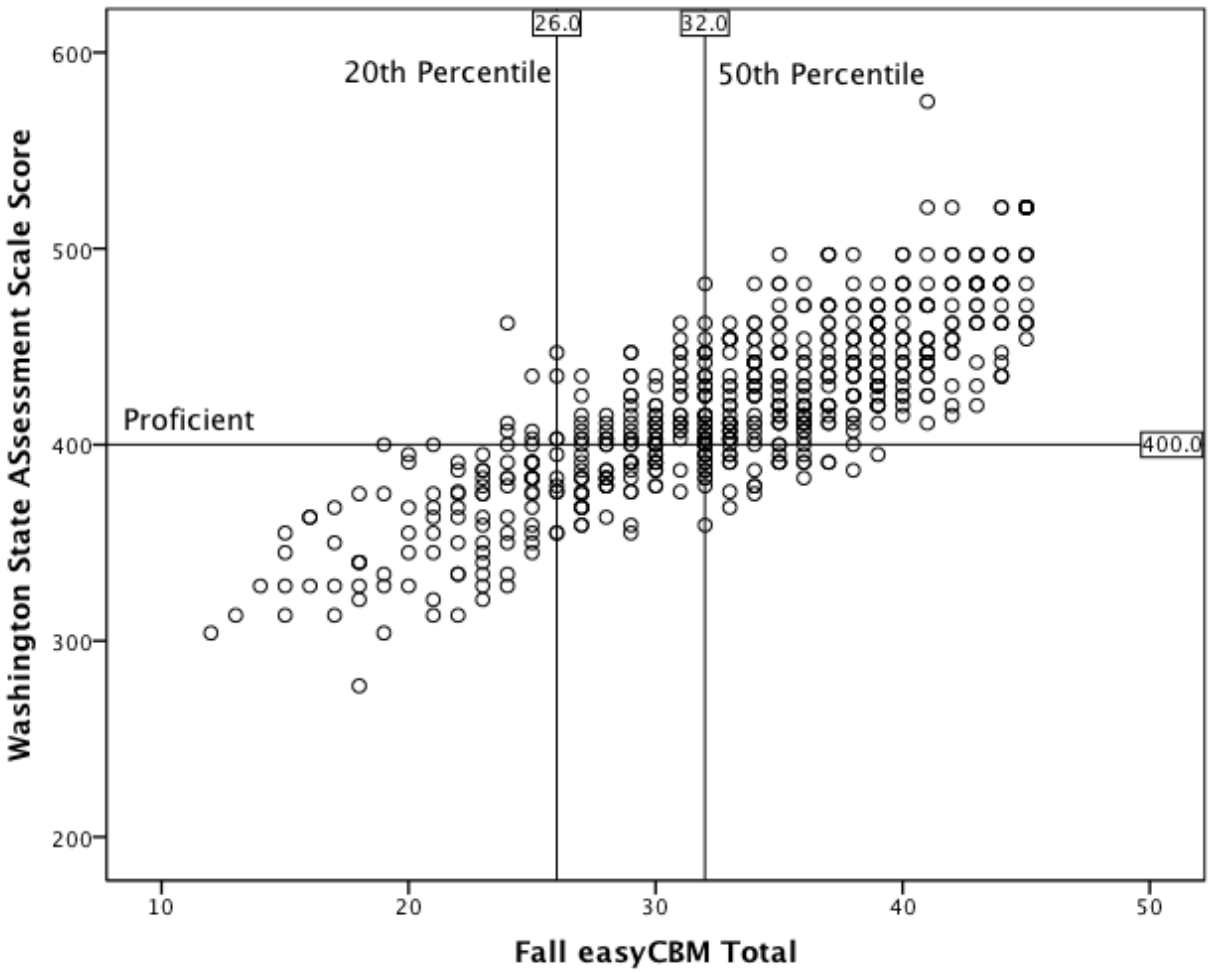
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	220.025	5.904		37.264	.000
	Spr10TotMath	5.256	.153	.819	34.450	.000

a. Dependent Variable: Washington State Assessment Scale Score

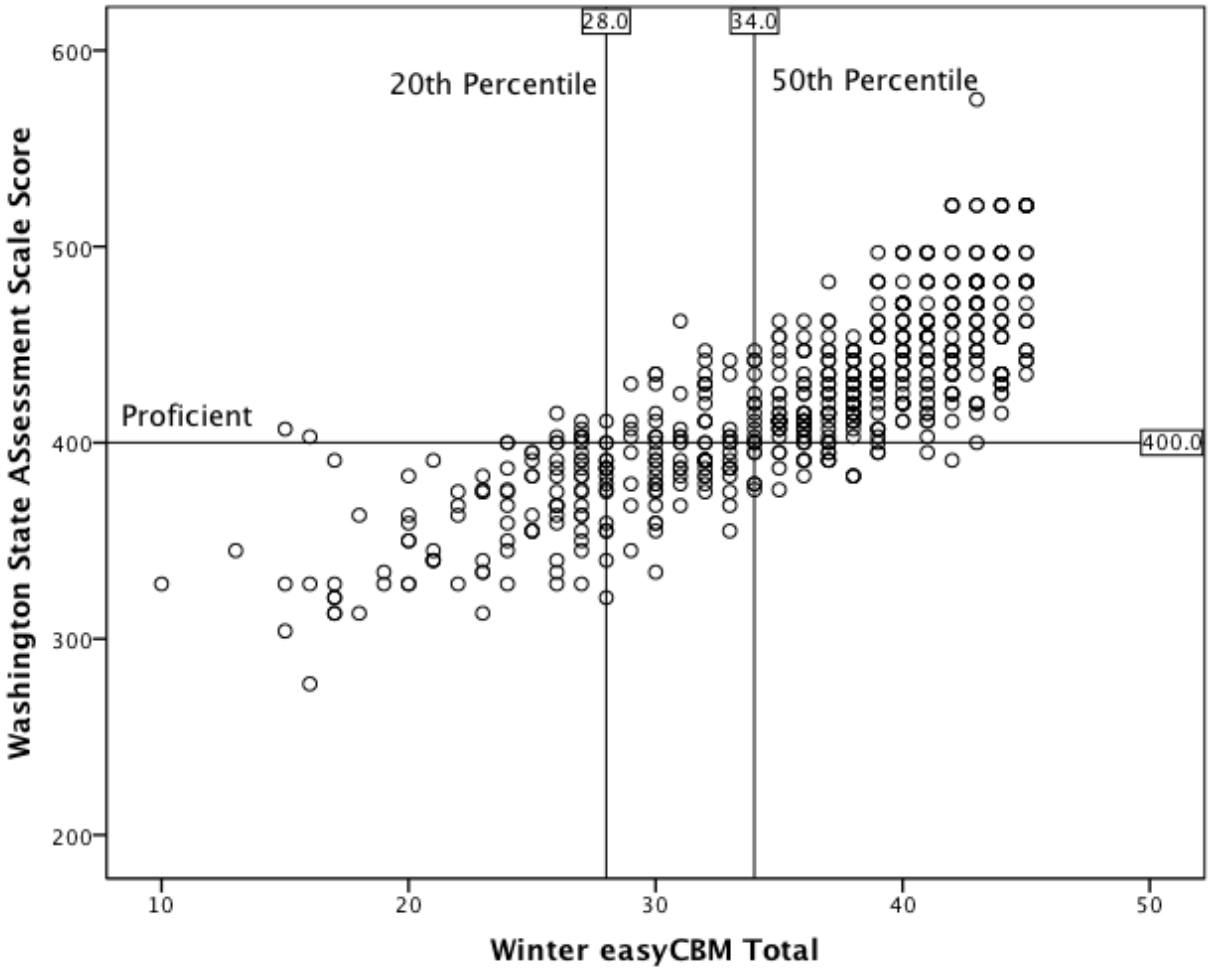
Scatterplot

Grade 6 - Fall easyCBM® and Washington State Mathematics Test



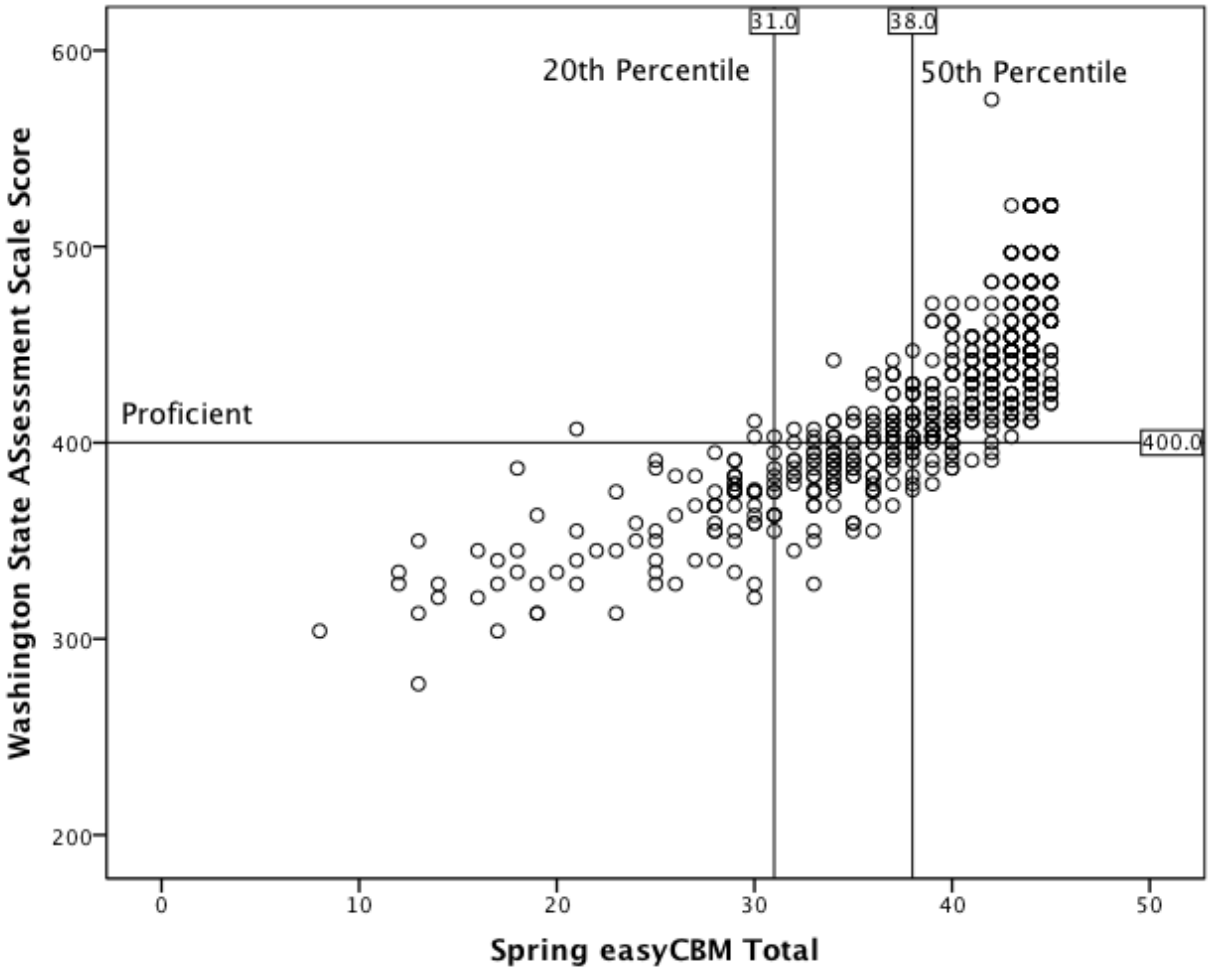
Scatterplot

Grade 6 - Winter easyCBM® and Washington State Mathematics Test



Scatterplot

Grade 6 - Spring easyCBM® and Washington State Mathematics Test



Grade 7

Descriptive Statistics

	Mean	Std. Deviation	N
Washington State Assessment Scale Score	419.89	47.342	474
Fall09TotMath	31.93	8.018	474
Wint10TotMath	32.32	8.135	474
Spr10TotMath	34.85	7.462	474

Correlations

		Washington State Assessment Scale Score	Fall09TotMath	Wint10TotMath	Spr10TotMath
Pearson Correlation	Washington State Assessment Scale Score	1.000	.803	.831	.809
	Fall09TotMath	.803	1.000	.852	.816
	Wint10TotMath	.831	.852	1.000	.839
	Spr10TotMath	.809	.816	.839	1.000
Sig. (1-tailed)	Washington State Assessment Scale Score	.	.000	.000	.000
	Fall09TotMath	.000	.	.000	.000
	Wint10TotMath	.000	.000	.	.000
	Spr10TotMath	.000	.000	.000	.
N	Washington State Assessment Scale Score	474	474	474	474
	Fall09TotMath	474	474	474	474
	Wint10TotMath	474	474	474	474
	Spr10TotMath	474	474	474	474

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.864[a]	.746	.745	23.928

a. Predictors: (Constant), Spr10TotMath, Fall09TotMath, Wint10TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	791003.457	3	263667.819	460.517	.000[a]
	Residual	269097.269	470	572.547		
	Total	1060100.726	473			

a. Predictors: (Constant), Spr10TotMath, Fall09TotMath, Wint10TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	238.118	5.265		45.222	.000					
	Fall09TotMath	1.394	.280	.236	4.979	.000	.803	.224	.116	.240	4.166
	Wint10TotMath	2.215	.294	.381	7.543	.000	.831	.329	.175	.212	4.716
	Spr10TotMath	1.884	.290	.297	6.497	.000	.809	.287	.151	.259	3.868

a. Dependent Variable: Washington State Assessment Scale Score

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Fall09TotMath	Wint10TotMath	Spr10TotMath
1	1	3.945	1.000	.00	.00	.00	.00
	2	.038	10.227	.83	.05	.05	.00
	3	.009	20.544	.05	.90	.16	.33
	4	.008	22.409	.11	.05	.79	.66

a. Dependent Variable: Washington State Assessment Scale Score

Fall Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.807[a]	.652	.651	28.349

a. Predictors: (Constant), Fall09TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	820366.553	1	820366.553	1020.785	.000[a]
	Residual	438799.482	546	803.662		
	Total	1259166.035	547			

a. Predictors: (Constant), Fall09TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	267.993	4.832		55.458	.000
	Fall09TotMath	4.753	.149	.807	31.950	.000

a. Dependent Variable: Washington State Assessment Scale Score

Winter Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.819[a]	.670	.669	27.151

a. Predictors: (Constant), Wint10TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	833922.831	1	833922.831	1131.201	.000[a]
	Residual	410621.048	557	737.201		
	Total	1244543.878	558			

a. Predictors: (Constant), Wint10TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	266.146	4.723		56.347	.000
	Wint10TotMath	4.761	.142	.819	33.633	.000

a. Dependent Variable: Washington State Assessment Scale Score

Spring Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.813[a]	.660	.660	27.674

a. Predictors: (Constant), Spr10TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	785523.638	1	785523.638	1025.683	.000[a]
	Residual	404370.882	528	765.854		
	Total	1189894.521	529			

a. Predictors: (Constant), Spr10TotMath

b. Dependent Variable: Washington State Assessment Scale Score

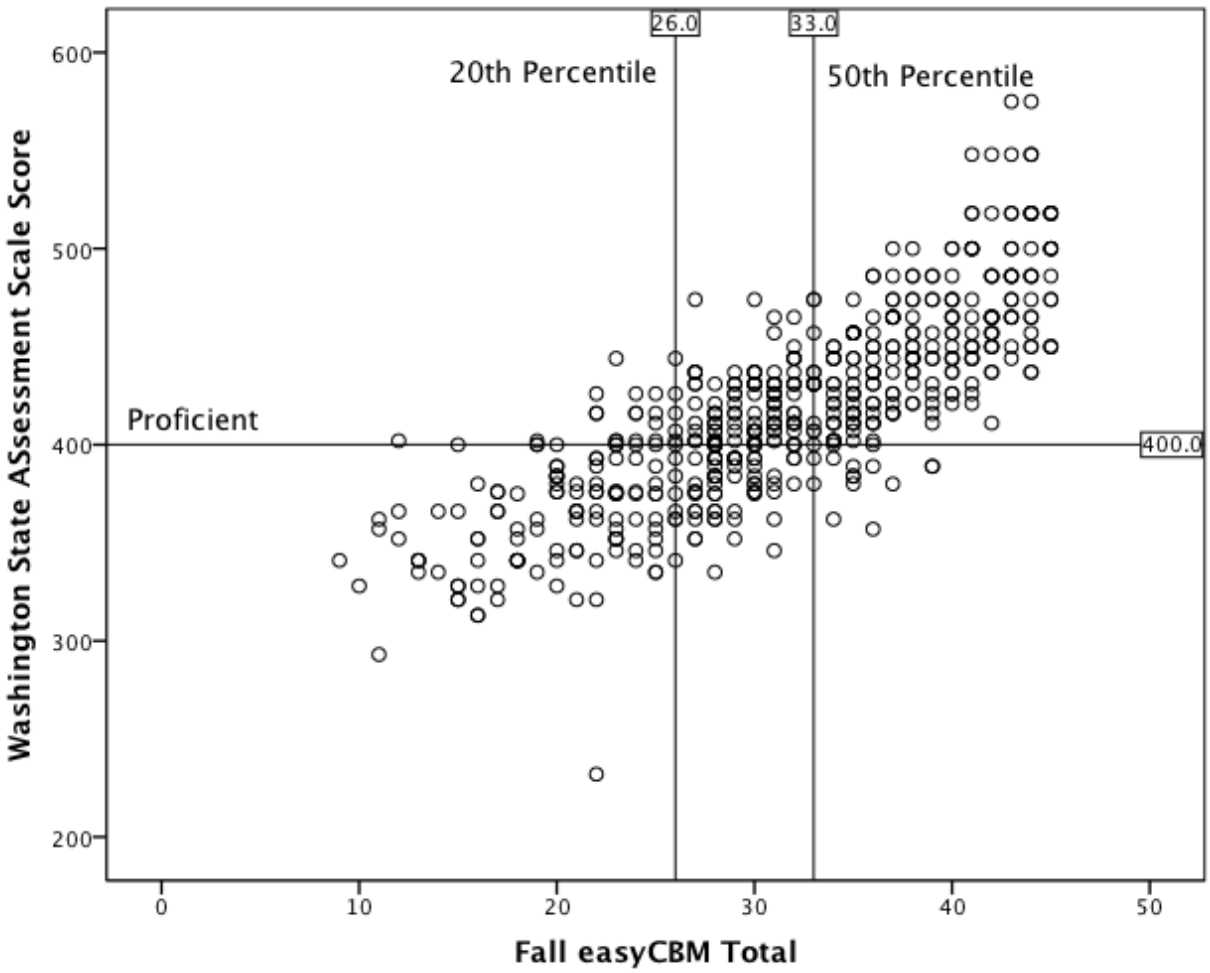
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	240.780	5.695		42.281	.000
	Spr10TotMath	5.118	.160	.813	32.026	.000

a. Dependent Variable: Washington State Assessment Scale Score

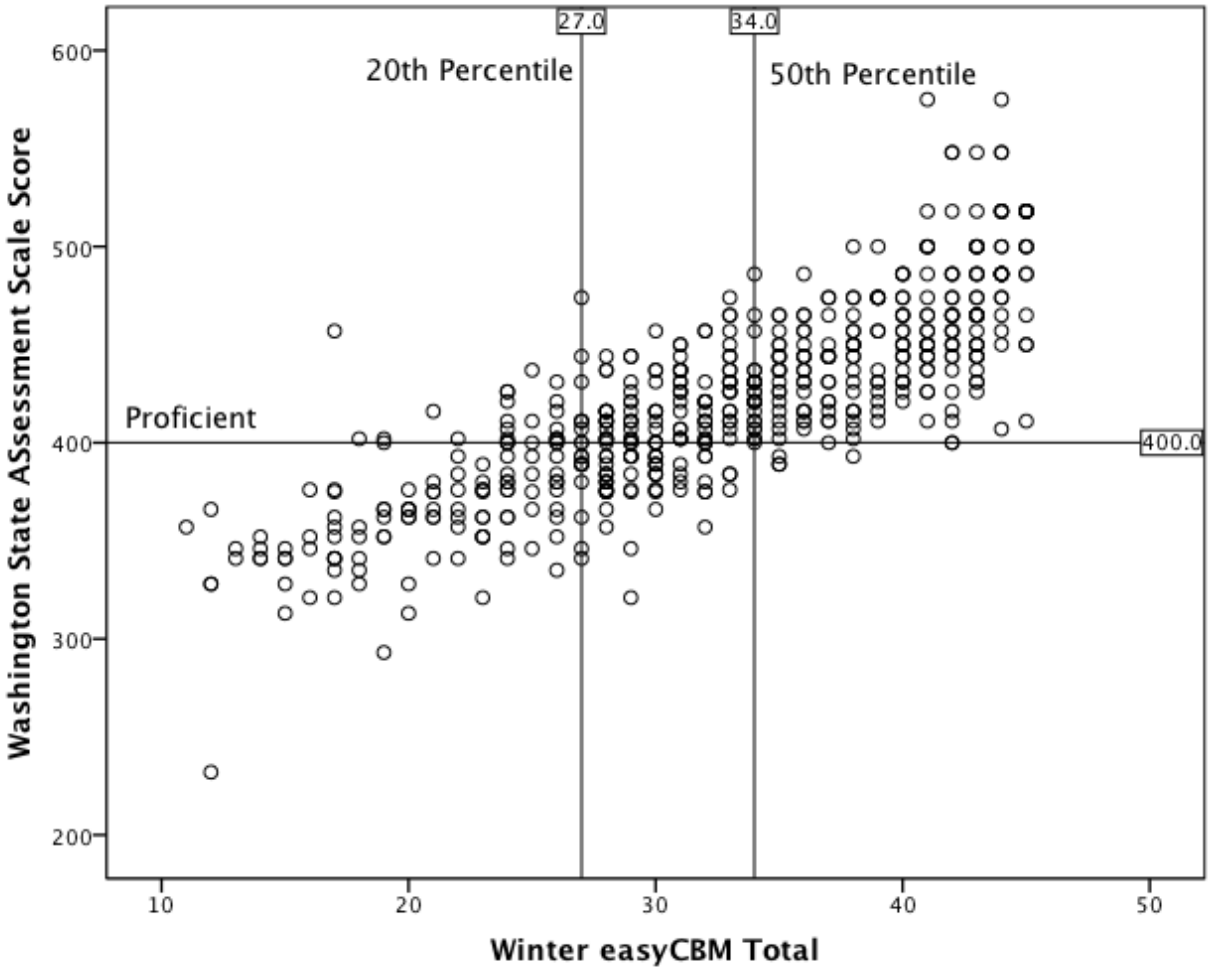
Scatterplot

Grade 7 - Fall easyCBM® and Washington State Mathematics Test



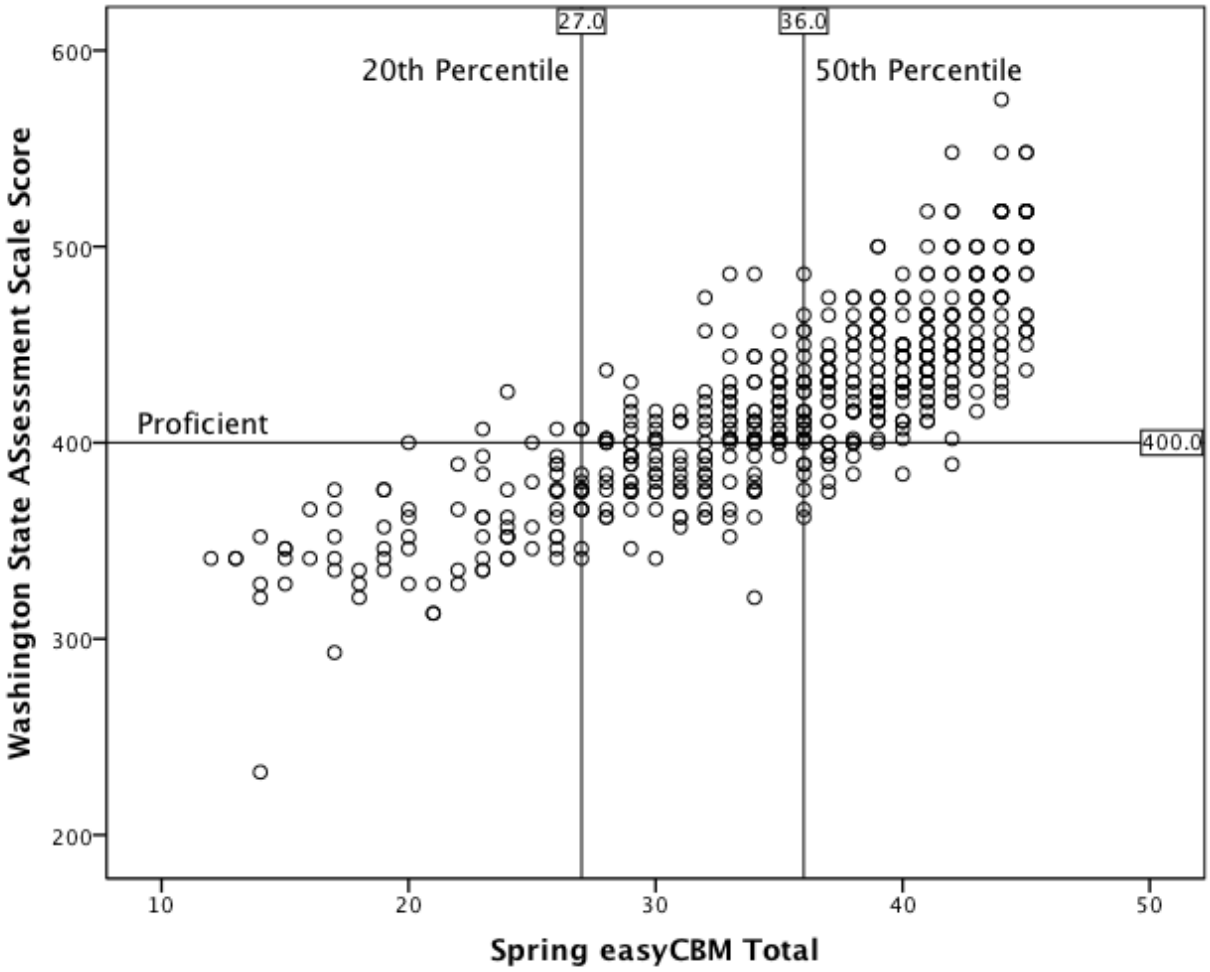
Scatterplot

Grade 7 - Winter easyCBM® and Washington State Mathematics Test



Scatterplot

Grade 7 - Spring easyCBM® and Washington State Mathematics Test



Grade 8

Full Model

Descriptive Statistics

	Mean	Std. Deviation	N
Washington State Assessment Scale Score	417.18	41.817	417
Fall09TotMath	32.91	7.869	417
Wint10TotMath	35.26	7.773	417
Spr10TotMath	34.94	7.348	417

Correlations

		Washington State Assessment Scale Score	Fall09TotMath	Wint10TotMath	Spr10TotMath
Pearson Correlation	Washington State Assessment Scale Score	1.000	.815	.790	.810
	Fall09TotMath	.815	1.000	.832	.821
	Wint10TotMath	.790	.832	1.000	.849
	Spr10TotMath	.810	.821	.849	1.000
Sig. (1-tailed)	Washington State Assessment Scale Score	.	.000	.000	.000
	Fall09TotMath	.000	.	.000	.000
	Wint10TotMath	.000	.000	.	.000
	Spr10TotMath	.000	.000	.000	.
N	Washington State Assessment Scale Score	417	417	417	417
	Fall09TotMath	417	417	417	417
	Wint10TotMath	417	417	417	417
	Spr10TotMath	417	417	417	417

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.856[a]	.732	.730	21.712

a. Predictors: (Constant), Spr10TotMath, Fall09TotMath, Wint10TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	532763.670	3	177587.890	376.708	.000[a]
	Residual	194696.479	413	471.420		
	Total	727460.149	416			

a. Predictors: (Constant), Spr10TotMath, Fall09TotMath, Wint10TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	247.875	5.270		47.036	.000					
	Fall09TotMath	2.049	.265	.386	7.727	.000	.815	.355	.197	.260	3.841
	Wint10TotMath	.955	.290	.177	3.294	.001	.790	.160	.084	.223	4.477
	Spr10TotMath	1.953	.298	.343	6.558	.000	.810	.307	.167	.237	4.225

a. Dependent Variable: Washington State Assessment Scale Score

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Fall09TotMath	Wint10TotMath	Spr10TotMath
1	1	3.952	1.000	.00	.00	.00	.00
	2	.032	11.035	.93	.07	.02	.01
	3	.009	20.971	.06	.93	.21	.23
	4	.007	24.362	.01	.00	.76	.76

a. Dependent Variable: Washington State Assessment Scale Score

Fall Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.805[a]	.648	.647	24.679

a. Predictors: (Constant), Fall09TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	572889.789	1	572889.789	940.599	.000[a]
	Residual	311234.379	511	609.069		
	Total	884124.168	512			

a. Predictors: (Constant), Fall09TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	275.280	4.725		58.254	.000
	Fall09TotMath	4.296	.140	.805	30.669	.000

a. Dependent Variable: Washington State Assessment Scale Score

Winter Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.790[a]	.624	.623	25.366

a. Predictors: (Constant), Wint10TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	577117.018	1	577117.018	896.911	.000[a]
	Residual	348106.341	541	643.450		
	Total	925223.359	542			

a. Predictors: (Constant), Wint10TotMath

b. Dependent Variable: Washington State Assessment Scale Score

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	270.616	4.963		54.529	.000
	Wint10TotMath	4.156	.139	.790	29.948	.000

a. Dependent Variable: Washington State Assessment Scale Score

Spring Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.811[a]	.658	.657	24.669

a. Predictors: (Constant), Spr10TotMath

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	623012.070	1	623012.070	1023.740	.000[a]
	Residual	324365.015	533	608.565		
	Total	947377.084	534			

a. Predictors: (Constant), Spr10TotMath

b. Dependent Variable: Washington State Assessment Scale Score

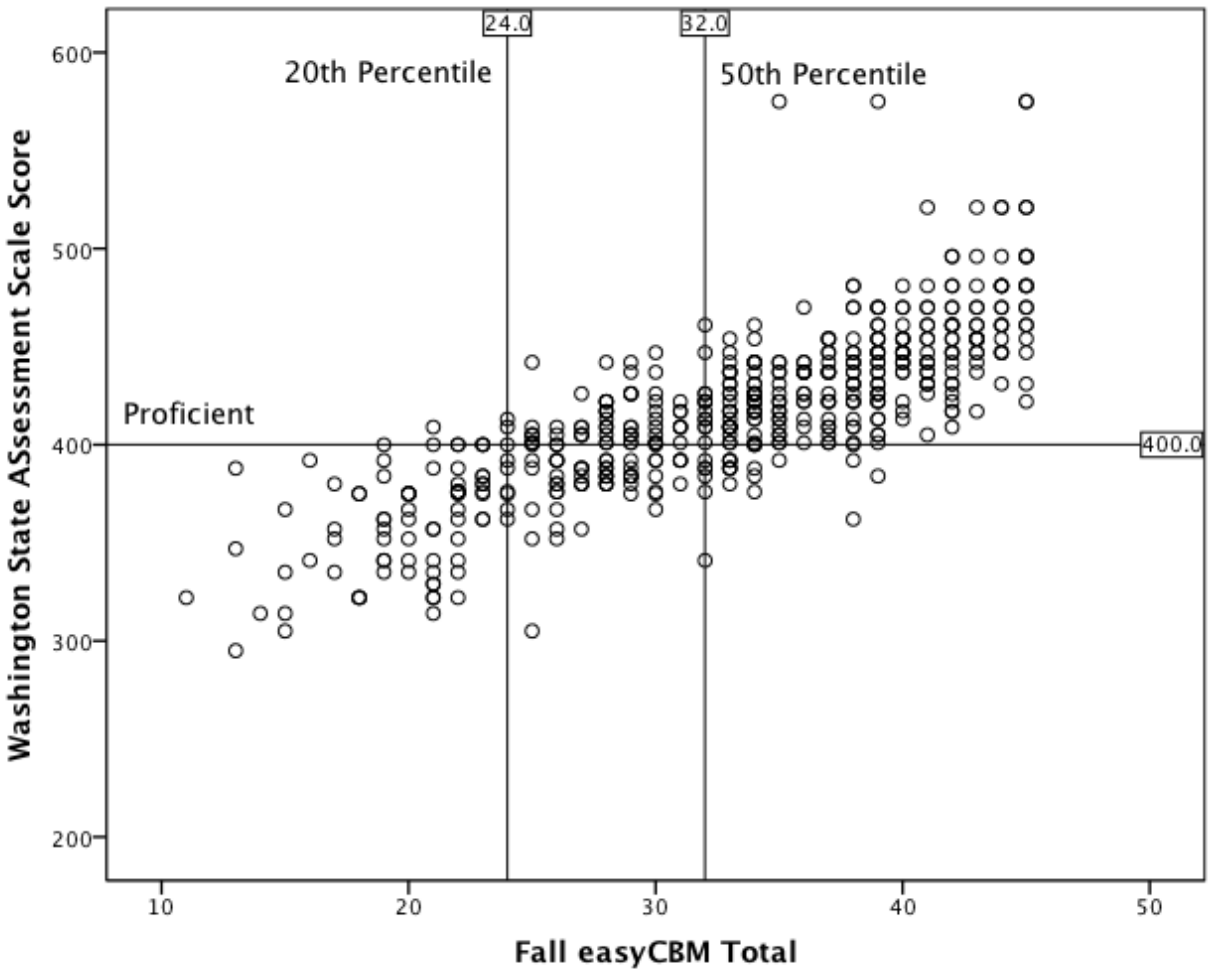
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	258.049	5.057		51.025	.000
	Spr10TotMath	4.571	.143	.811	31.996	.000

a. Dependent Variable: Washington State Assessment Scale Score

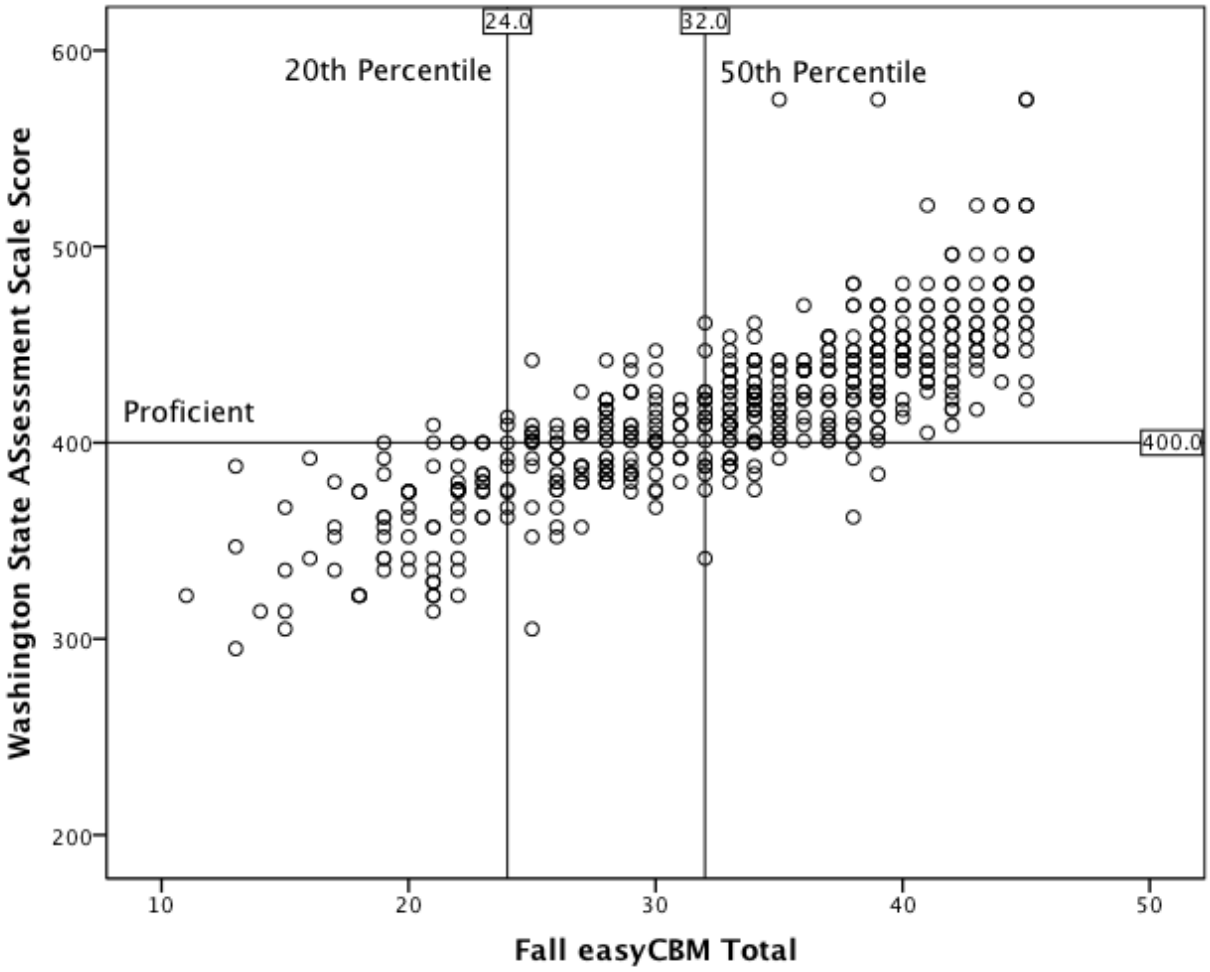
Scatterplot

Grade 8 - Fall easyCBM® and Washington State Mathematics Test



Scatterplot

Grade 8 - Winter easyCBM® and Washington State Mathematics Test



Scatterplot

Grade 8 - Spring easyCBM® and Washington State Mathematics Test