

# Secondary Education and School Improvement



## Mathematics Benchmark Assessments

### Overview & Purpose

The Mathematics Benchmark Assessments (MBAs) are standards-based interim assessments developed for K-8 mathematics and algebra 1, geometry, algebra 2, and math 1, math 2 and math 3. The MBAs are administered in fall, winter, and spring to provide ongoing information about the teaching and learning of standards. The MBAs have been implemented through the *WIIN* Center in 57 school districts serving over 150,000 students.



Provide a bridge between classroom assessments and the end-of-year summative assessments, and provide standards-based data to:

- Evaluate student learning of specific state mathematics standards.
- Analyze patterns of student need to inform changes to the mathematics curriculum and instruction.
- Synthesize student misconceptions to inform instructional strategies and interventions.

### Test Design

OSPI's school improvement staff led the development of the MBAs in summer 2009. The collaborative process involved OSPI mathematics specialists, ESD mathematics specialists, and district teachers and leaders. Intending to provide deep and meaningful information about student learning of state standards, the MBAs are designed around a set of *essential standards* at each grade level/course. The standards assessed on the MBAs address critical prerequisite skills and applications of several grade level standards. **Assessing a focused set of standards enables the MBAs to provide the detailed information necessary to make instructional and program decisions.**

**One of the most exciting parts of the process has been having members of the OSPI math assessment team working alongside us, ensuring that our math items are measuring standards in the same way as state [summative] tests .**

*Dr. Linda Elman, Research and Evaluation Director, Tukwila SD*

To ensure the MBAs are curriculum and instruction sensitive, OSPI collaborates with district instructional leaders to choose a test blueprint that closely aligns to each district's pacing and sequencing of standards. While the order of the standards and items on each assessment vary, all participating districts assess the same set of standards with the same items over the course of the school year.

### Mathematics Achievement On the Move

In districts piloting the MBAs in the 2009-2010 school year, the change in summative student results as indicated by the MSP/HSPE was better than the change for the State in 40 of 56 tested grades. In every instance of positive growth, the growth outpaced the State. The most positive one-year change as compared to the State was seen in districts and schools serving some of our most impacted communities—Title I schools and districts with the highest ELL populations. These districts and schools also took full advantage of OSPI professional development and provided strong leadership to support the MBA process. A December 2010 review of the MBA process and results by OSPI's Formative Assessment Technical Advisory Committee affirmed the importance of practices where positive growth outcomes were realized.

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### Professional Development & Technical Assistance

In the pilot of the MBAs, positive outcomes were realized in districts and schools where:

- Teachers actively engaged in understanding the purpose, test design, and standards assessed; and
- Teachers and district leaders analyzed assessment results at the school, grade/course, and classroom levels to make instructional improvements.

Based on these findings, OSPI now provides professional development and technical assistance to ensure all districts and schools are supported in the implementation and the use of the MBAs.

PD Session	Participants	Description
<b>MBA Overview</b> (1 day)	<ul style="list-style-type: none"> <li>• District/school math leadership teams</li> <li>• District Instruction &amp; Assessment Leads</li> <li>• School Principals</li> <li>• Instructional Coaches</li> <li>• Teacher Leaders</li> </ul>	Provides an overview of the purpose and test design of the MBAs, administration procedures, and the web-based student assessment system used to develop the MBAs and report student results.
<b>MBA Data Analysis &amp; Instructional Improvement</b> (3 days)		Following each benchmark administration, participants will understand how to access and analyze assessment data and use student results in an instructional decision making process. (1 day following each administration period.)

Beyond the professional development, OSPI collaborates with each district to choose a test *blueprint* to match the district's pacing and sequencing of standards. OSPI will also provide on-going **technical assistance** customized to district/school need to ensure all staff members engage in understanding the MBAs and participate in the data analysis and instructional improvement process. The OSPI district partnership ensures the MBAs reach full implementation.

### Data Analysis & Reporting

OSPI partners with Houghton-Mifflin/Riverside Publishing in the use of *DataDirector*, a web-based student assessment and data system, for developing the MBAs and reporting their results. *DataDirector* offers a flexible and efficient assessment management system that makes creating, administering, analyzing, and reporting all types of assessments easy.

Exam reports provide the opportunity for teachers and district leaders to easily analyze MBA data to identify student strengths and areas for improvement. Reports are provided at the classroom, grade/course, school, and district levels, and student performance is displayed by test, standard, and item.

Through access to banks of high-quality items aligned to Washington State reading and mathematics standards, educators can also use *DataDirector* to design formative and interim assessments, analyze results, and generate reports.

Student Name	# Points	Washington 5.5.B	Washington 5.1.C	Washington 5.1.F	Average
Total Items:		6	7	7	26
Total Points:	26	6	7	7	26
Student A	21	100%	100%	42.86%	80.77%
Student B	19	100%	71.43%	57.14%	73.08%
Student C	17	83.33%	85.71%	28.57%	65.38%
Student D	10	83.33%	14.29%	42.86%	38.46%
Student E	24	100%	100%	71.43%	92.31%
Student F	20	83.33%	85.71%	42.86%	76.92%
Student G	16	100%	85.71%	0%	61.54%
Student H	18	83.33%	71.43%	42.86%	69.23%
Student I	4	66.67%	0%	0%	15.38%
Student J	21	100%	100%	42.86%	80.77%