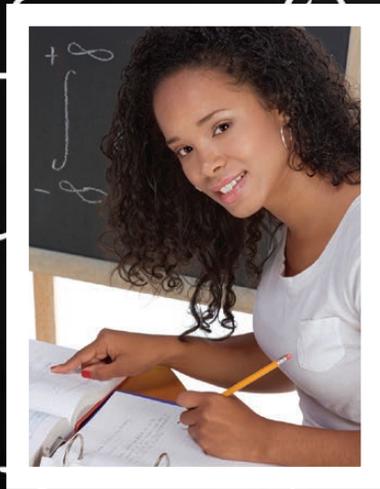


WASHINGTON STATE COMMUNITY
AND TECHNICAL COLLEGES

MATH STRATEGIC PLAN



$$x_1 = \frac{-b - \sqrt{\Delta}}{2a}$$

$$W = \left(\frac{-b}{2a} \right)$$

$$\Delta = b^2 - 4ac$$

$$[f(x) - g(x)]'$$

$$A \cap A = A$$

$$A \cap \emptyset = \emptyset$$

$$\frac{-\cos}{2}$$

$$b^3 + b^2$$

Eliminating Barriers to Success in Math

Strategic Plan for Improving Student Math Success in Washington Community and Technical Colleges

“It is not that smart people study math; it is that studying math makes people smart.”

Anonymous high school math teacher

Executive Summary

Math is a basic building block of human civilization. Everyone needs to be able to reason with mathematics to be a civically literate citizen and a discerning consumer. In the 21st century, math skills are also growing in importance as a prerequisite to high-skill, high-wage jobs and careers, and to our state’s economic growth.

Lack of math attainment is a key barrier to students’ ability to complete job training and academic degree programs. Math is a particular roadblock to academic success and higher lifetime earnings for students of color and students from low-income families — the students whose needs are most often left unmet by traditional structures and practices.

Community and technical colleges are central to solving this problem because they help recent high school graduates and older adults become college-ready; provide job training and certification for many mid-level jobs and careers; and prepare students to transfer to baccalaureate institutions. In each of these areas, math is the most common stumbling block that prevents students from achieving their academic and career goals.

This strategic plan aims to transform math from an obstacle to an engaging learning experience that opens doors of opportunity. **The goal of this plan is to help more students — especially traditionally underserved students — complete academic and professional-technical programs by eliminating barriers to success in math for all students.**

The starting point

A decade of efforts set the stage for the recommendations in this plan. Those efforts produced:

- Clear standards for college readiness, created by the Transition Math Project. This project also forged an enduring partnership between community and technical colleges and high school leaders and faculty.
- Increased efforts to reduce the percentage of recent high school graduates who need pre-college¹ math.
- Multiple measures to determine students' readiness for college-level math.
- New academic strategies to help students succeed in initial college math courses.
- An array of evidence-based reforms that help students progress through pre-college math faster with instruction tailored to their goals — the product of a three-year “Rethinking Pre-college Math” project funded by the Bill & Melinda Gates Foundation.
- Three distinct math pathways tailored to students' goals, in recognition that different careers require different suites of math skills.
- Removal of intermediate algebra as a prerequisite for some college-level math courses.
- Mathematics, Engineering and Science Achievement (MESA) programs in six community and technical colleges. MESA helps low-income and first-generation college students succeed in science, technology, engineering and math (STEM) fields.

¹ We use the term “pre-college” throughout the document to refer to all courses and programs offered at community and technical colleges that are not college-level and don't provide college credits for students.

The strategic plan

Math skills are critical for students and our society. Community and technical colleges can play a key role in improving math education, increasing student program and degree completion, reducing income inequality, and promoting economic vitality in our state. This plan aims to scale up successful work that is already underway by engaging every community and technical college in system-wide work to improve math achievement and thereby increase the percent of students who earn certificates and degrees.

Six major efforts comprise the plan:

- I. Define and promote college level math pathways tailored to students' academic majors and/or professional and technical program requirements, and align pre-college curriculum to those pathways.
- II. Improve and expand academic and career pathway advising to help students choose math pathways that support their goals, while leaving the door open to reach even higher goals.
- III. Extend math reforms to improve opportunities for students interested in a path from professional and technical programs to baccalaureate programs.
- IV. Engage faculty and staff in sustained work to bring improvements in math success to scale.
- V. Expand the MESA program.
- VI. Clearly define and use metrics for measuring progress.

How math achievement opens doors to success for all

Math is a basic building block of human civilization. In nearly every area of our lives, we weigh, count and measure. We also calculate batting averages, assess the R values of insulation, estimate our cars' gas mileage, and worry about the growth rates of pension funds.

Beyond these everyday practical applications, math is a critical field of study for the high-skill, high-wage jobs that sustain our economy. But students who want to solve the problem of climate change, advance medical research and cure disease, or spur the next generation of technological innovation are not the only ones who need great math programs. Everyone needs the ability to reason with mathematics and to become flexible mathematical thinkers so they can be civically literate citizens and discerning consumers.

The role of community and technical colleges in promoting math success

Our economy is producing more mid-level jobs and high-level professional positions that require higher levels of mathematical literacy. Math-successful community and technical college students are essential to ensure that Washington employers can hire Washington citizens for these jobs.

Washington community and technical college transfer students comprise 40 percent of all public baccalaureate graduates in Washington.² Three-fourths of these transfer graduates earned their associate degree before transferring.³ For all of these successful transfer students, completing college math at a community or technical college is an important predictor of whether they will transfer in a reasonable time and earn a bachelor's degree.

Math is also growing more important in professional-technical programs and its focus and requirements are changing. Traditionally, these programs have prioritized applied math relevant to training for immediate employment. However, recent innovations like the applied bachelor's degrees are extending pathways for professional-technical students to advance their careers beyond that initial foothold in the job market. This underscores the importance of considering how math requirements in professional-technical programs can also lay the foundation for higher levels of education and career advancement.

For both academic-transfer and professional-technical students, pre-college math in community and technical colleges is a critical point because it is by far the most common barrier to student progression and completion of degrees or vocational certificates. Traditionally, in most community and technical colleges, these pre-college math programs have relied on a uniform approach to “remediate” students who have deficiencies in math skills. Far too often, students who start at community and technical colleges in pre-college math get stuck there, unable to progress to and through college-level math.

Math is not a one-size-fits-all proposition. Students who want to be journalists, nurses, carpenters or actuaries do not need the same math skills as those who pursue science, technology, engineering and math (STEM) professions. Math course content, course sequences and instructional approaches can be tailored to the programs of study students intend to pursue in a way that makes math relevant to their careers. Ultimately, far more jobs will require advanced math skills to use new technologies, but the math skills needed in different career areas may diverge even more than they do today.

² SBCTC Research Report No. 13-5: Role of Transfer in the Attainment of Baccalaureate Degrees at Washington Public Bachelor's Degree Institutions Class of 2011. August 2013.

³ SBCTC transcript analysis of successful bachelor degree transfer students, MRTE data warehouse, 2015.



In addition to rethinking math pathways, we must change expectations, instructional strategies, course design and student support structures so that math is transformed from an obstacle to an engaging learning experience that opens doors of opportunity. Studies show students who struggle in math are far more likely to leave school before they earn the degree or certificate they need for the job they want. Helping all students succeed in math can help them succeed in life.

Math has been a particular roadblock to academic success and increased lifetime earnings for students of color and students from low-income families — the students whose needs are most often left unmet by traditional structures and practices. These students are disproportionately represented in pre-college math programs and have historically lower rates of completing math courses. Thus, these students leave school before earning a degree or certificate at a higher rate than their peers.

The community and technical college system's commitment: increasing math success for all

This strategic plan represents the community and technical colleges system's commitment to improving all students' success in math, academic careers and professional lives.

The plan begins with the significant work already underway to improve math outcomes. This includes innovative collaboration with high school and university partners, and the work colleges are already doing as they re-examine and improve their own math instruction and college advising to meet the needs of a diverse student body.

This plan also includes metrics to measure progress and success for all students. These metrics highlight the critical importance of improving math for Hispanic, African American and Native American students, who currently have lower success rates than others. Success in college math is a critical component for equity in college success.

Our goal is to help more students — especially traditionally underserved students — complete academic and professional-technical programs by eliminating barriers to success in math for all students.

The starting point: work in progress

In the past decade, community and technical colleges have engaged in several major efforts to identify emerging best practices that accelerate student learning and success in math.

Setting clear standards for college readiness

Beginning in 2004, the Transition Math Project brought together K-12 and post-secondary educators and created clear, uniform standards for what constitutes college readiness in math in Washington state. It also created lasting partnerships that link high school and college leaders and faculty to ensure that instruction and testing is aligned with the new standards.

This work was the starting point for addressing the large percentage of recent high school graduates who need remedial, pre-college math classes when they begin their post-secondary education.

Reducing the share of recent high school graduates who need pre-college math

The Washington K-12 system recently adopted the Common Core State Standards for college and career readiness as the state learning standards for mathematics and English Language Arts. These standards, more rigorous than previous standards in these areas, are being assessed formally in Washington beginning in spring 2015 using the Smarter Balanced assessment system, one of two multistate assessment consortia aligned with the new standards. To help motivate students to achieve these new higher standards, Washington higher education institutions created an agreement for the use of the high school (11th grade) assessments. Starting this spring, high school students scoring at level 3 or 4 on the high school assessments (math and/or English) will be guaranteed a college-level course option when entering in fall 2016 at any Washington public postsecondary institution.

As part of this agreement, students scoring at level 2 (below college-ready) on the Smarter Balanced assessment will also have a pathway to college-readiness before entering a Washington community or technical college. A senior-year transition course, *Bridge to College Mathematics*, developed through a collaborative effort between college faculty and high school teachers, was pilot-tested in 2014-15 and will be available to interested school districts starting in 2015-16. Funding comes from a multi-year grant from College Spark Washington. This class will emphasize quantitative reasoning, mathematical modeling and real world applications. Students who earn a B or better in the course will be offered the same placement agreement at all community and technical colleges as is offered to students who scored at level 3 on the Smarter Balanced assessment. In addition to the *Bridge to College Mathematics* course, colleges should work with their districts around advising, messaging and other programmatic bridges to make sure that students scoring at level 2 (or below) are actively encouraged to persist toward college and college-readiness.

Multiple measures for college readiness

Incorporating the Smarter Balanced assessment into the college placement process is part of the community and technical college system's shift in thinking about how to determine college readiness and course placement for incoming students. Traditionally, prospective students were given a placement test and colleges used specific cut scores as the sole way to decide where students should be placed in course sequences in math and English. That practice is changing across the system. Today, colleges are focusing more on providing students a variety of alternatives for placement. These include college evaluation of high school transcripts or locally-designed student assessments in addition to the high school options noted above.

Generally, colleges are offering students multiple ways for placing *into* college-level math and are working to minimize the number of students who need pre-college coursework. Other existing strategies include:

- The community and technical college system approved a placement reciprocity agreement in which colleges agree to honor a student's course placement determination regardless of where in the system that placement decision was made.
- Math refresher classes are offered at many of the colleges several times each quarter to help recent high school graduates prepare for college-level math classes before they start college.
- Students at or near the edge of college readiness in math may also get extra support to spur their success in college-level math classes. For example, colleges are creating "co-requisite" classes in which students take pre-college math simultaneously with college-level math.

Many of these strategies also help adult students who left high school years ago. These students often have jobs and families. Time is precious for them, so measures that help accelerate their progress are critical to their persistence and success.

Rethinking pre-college math

The traditional way of teaching pre-college math was to put students through a course sequence whose content was substantially the same as in high school, but that progressed at a faster pace. As Norton Grubb⁴ and others observed, for too many students, the pre-college math experience at community and technical colleges has been frustration and failure.

In Washington, six community and technical colleges and the Northwest Indian College participated in the three-year “Rethinking Pre-College Math” project (funded by the Bill & Melinda Gates Foundation, 2009-2012) to examine how these practices could be changed. They focused on how to tailor pre-college math to specific programs of study and professional or vocational goals, and how to change curriculum and teaching methods to serve diverse students with diverse aspirations.

The Rethinking Pre-College Math project helped develop both innovative strategies and faculty leadership and engagement. The project engaged both full- and part-time math faculty in studying national research, trends and best practices. Faculty analyzed which math knowledge and skills are actually needed in various fields, and redesigned coursework and pedagogy to better meet students’ needs.

National research shows that when students move through coursework faster, they are far more likely to stay in college and complete degrees. Knowing this, colleges in the project tested accelerated “fast track” courses that allowed students to complete more than one course in a quarter. Colleges also tested modular self-paced approaches with additional instructional support so that students could quickly get unstuck when they needed extra help.

Research also points to greater success with technology-based approaches that reserve class time for more personalized instruction that includes persistence, attention to detail, systematic approaches to problem-solving and other personal attributes. Colleges pursued these strategies with models like the lab “emporium” model or the “flipped” classroom.

Colleges across the Washington system, both within the Re-Thinking Pre-college Math project and on their own, are using these various approaches to improve pre-college math programs. Technology-supported models, differentiated pathways, placement reforms, accelerated courses and modularized curriculum are now available to some degree in most Washington community and technical colleges. To assess the extent of these activities, the task force surveyed colleges in late fall 2014 to determine the nature and extent of their math strategies. The following table summarizes the findings.

⁴ Basic Skills Education in Community Colleges: Inside and Outside of Classrooms, December 2012

Math strategies at Washington community and technical colleges survey results (compiled January 2015)

Source: Survey of 34 community and technical colleges, fall 2014

Strategy	Examples of strategy	Widely available to students at the college?*	Available to students on small scale or pilot basis?
Technology-supported models	“Emporium” model, offering instruction in a lab setting with students working on modules at their own pace (with faculty support); “flipped” classroom shifting skills practice to online platform	14	10
Differentiated pathways	Defining the specific math skills necessary for various academic pathways and tailoring course placement and interventions to these requirements	17	6
Placement reforms	Using multiple or alternative measures to place students, including high school transcripts, directed self-placement, testing, “brush-up” preparation	11	9
Accelerated models (varied approaches)	Allowing students to complete multiple pre-college levels in a single term, or allowing students to enroll in college-level courses while receiving additional academic support to address skill deficiencies	11	6
Modularized curriculum	Dividing the pre-college curriculum into a series of modules, often combined with an emporium lab model	8	8

* Number of colleges responding “yes”

To spread these innovations more broadly across the curriculum, colleges need to provide professional development opportunities to help full- and part-time math faculty maintain rigorous academic standards while offering a much broader array of instructional strategies. These strategies could include more student-directed learning, more grounding of math in real-world problem-solving, and closer linkages between math instruction and students’ academic and vocational pathways.

Creating math pathways linked to academic and career goals

Not all fields of study require the same math knowledge and skills. A national movement is working to create different pathways for students with different aspirations. Some students who haven't chosen a specific major or career goal have at least some idea of the direction they intend to pursue. Others require more advising and career counseling at the outset to identify both initial and long-term goals. Students need to understand how to choose career and academic pathways that leave open the opportunity for moving up a career ladder — even if their initial goal is a vocational certificate or associate degree — because this may affect the math pathway they choose.

National math reformers identified three pathways that describe what pre-college students in the university-transfer arena need:

- A statistics-intensive pathway teaches statistics along with arithmetic and algebra, and is geared for students interested in humanities or social sciences. Key examples are Statway™, co-developed by the Carnegie Foundation for the Advancement of Teaching and the University of Texas Charles A. Dana Center, and the Statistical Reasoning option in the Dana Center's own New Mathways Project.
- A quantitative reasoning course sequence focuses on quantitative literacy that prepares students to take transferable, college-level math that will prepare them for their professional, civic and personal lives. Students majoring in academic areas (e.g. humanities programs) not requiring statistics would be well served by this pathway. The Dana Center's Quantitative Reasoning option and the Carnegie Foundation's Quantway™ are examples of this pathway.
- For students interested in science, technology, engineering or other math-intensive fields, an algebra-intensive path prepares students for introductory calculus. This pathway — for example, the Dana Center's Reasoning with Functions (I and II) — most closely resembles the traditional default mathematics pathway.



Math transfer policy between community and technical colleges and baccalaureate institutions

Building on earlier work on Major-Related Program (MRP) pathways, colleges are rethinking math requirements and sequences. The Direct Transfer Agreement between community and technical colleges and public baccalaureate institutions long required that all students pass a traditional intermediate algebra course. This pre-college course was designed and intended to prepare students for college pre-calculus (required for a STEM pathway). However, the intermediate algebra content does not fully prepare students for other math pathways, such as statistics or quantitative reasoning. A 2013 update to the Direct Transfer Agreement incorporated the concept of math pathways and removed the traditional intermediate algebra course as a prerequisite for all college-level math courses. This opens opportunities for multiple versions of intermediate algebra that support multiple pathways to college-level math achievement based on students' educational and career goals.

Expanding the Mathematics, Engineering and Science Achievement (MESA) program

Beginning in 2009, six community and technical colleges hosted MESA programs to support low-income, first-generation students enrolled in STEM majors. MESA creates a supportive learning community with academic support, advising, and a dedicated study space. MESA has been in Washington middle and high schools for 32 years. The program is nationally known for stimulating interest and success in STEM fields among students of color and low-income students with little or no family history of college attendance. MESA shows similar and welcome efficacy among community and technical college students. The program's expansion is a key strategy to close the equity gap and increase the number of STEM degrees earned in our state.

A strategic plan for increasing success in mathematics that promotes certificate and degree completion

The community and technical college system accomplished a great deal since the advent of the Transition Math Project in 2004, but more sustained effort is needed to bring proven best practices and innovations to scale. Only by redoubling math reform efforts will all students in all colleges have a chance to succeed in math, and thereby overcome the largest, most pervasive barrier to program completion, academic advancement, and lifelong success.

The community and technical colleges system proposes to:

- **Build on existing and scalable efforts to redesign math pathways — including curriculum and pedagogy aligned with students’ education and career goals — in order to smooth students’ transition into college-level math and improve their success in college level math courses.**
- **Launch a statewide initiative that engages all 34 community and technical colleges in a coordinated approach to changing placement, pathways and instruction, leading to systemic efforts to improve math achievement.**

To do this, six major efforts are required:

- I. **Define and promote college level math pathways tailored to students’ academic majors and/or professional and technical program requirements and align pre-college curriculum to those pathways.**

Colleges across the system are already implementing a variety of math pathway initiatives. These models often include differentiated and redesigned content that supports students into, and through, designated broad areas of career goals/academic programs of study. They also include acceleration approaches that involve shortened sequences, minimized content repetition, and opportunities for students to move through multiple course levels in a quarter. Innovative technology and mathematics software to support student learning are also common. Now it’s time to take these innovations further.

The system needs a coordinated approach to connect and leverage the successful work underway to help students move from pre-college math programs into gateway courses and programs of study. This approach must also maintain a clear focus on math learning outcomes critical to success in college-level math.

This pathway work should build on, and link to, existing high school, college and university partnerships aimed at improving the math college readiness of high school students while in high school.

II. Improve and expand academic and career pathway advising to help students choose math pathways that support their goals and leave the door open for opportunities to achieve even higher goals.

Recent high school graduates and older students alike are often at sea about how to connect their career goals — which are often vague — to a program of study in college. Their first college experiences can lead to achievement and rising expectations, or disappointment and failure.

Yet student advising is often limited because advising resources were eroded during the Great Recession and its serial budget reductions. Restoring, expanding and improving student advising is a crucial challenge. All the math reforms in the world can't succeed if students are not advised into the pathways and classes that set them on course for success.

Community and technical college advisors need to help students identify career goals early, acknowledging those goals may change over time. Key to student success and completion are: providing targeted advising and academic support linked to math pathways needed for higher education requirements and for long-term careers, addressing student attributes related to math learning, and helping students develop learning skills.

Diagnostic placement that includes multiple measures and improved student placement preparation and awareness is also important, as is a clear focus on screening students *into* rather than *out of* college level work. Identifying the appropriate level and kind of support needed for students to succeed is also critical.

III. Extend math reforms to improve opportunities for students interested in a path from professional and technical programs to baccalaureate programs.

Students who earn a professional-technical certificate or two-year degree must have the opportunity to build from that foundation to achieve higher levels of education and higher-wage jobs. Students may need to move beyond a certificate or associate degree to a baccalaureate degree that requires additional college-level quantitative skills. This possibility should be fully considered when planning math pathways and advising students.

IV. Engage faculty and staff in sustained work to bring improvements in math success to scale.

Most of the work to date relied on individual colleges' and faculty members' willingness to pilot new curriculum, course sequences and pedagogical changes. We propose regional meetings of math faculty and college staff to identify which innovations are working for which students, and to spread these innovations across the system. These meetings would allow participants to share results and encourage broad adoption of effective curricular pathways, math attributes, advising protocols and professional development programs. This is vital to ensuring that tailored instruction and course sequences that meet the needs of diverse students become the norm rather than the exception. In addition, there should be focused and ongoing opportunities for all pre-college and college-level math faculty to improve skills in pedagogy, especially for learners who struggle in math, and to collaborate with high school teachers and university faculty on college readiness and math requirements for bachelor's degrees.

This work must be sustained over multiple years to succeed, and it must be supported financially to be sustained. Colleges should be provided with funding for this purpose based on the depth of their level of involvement in making lasting, systemic changes, and on their success in improving student achievement and closing the opportunity gap for traditionally underserved groups.

V. Expand the MESA program.

Expanding MESA is a key strategy to close the equity gap and increase the number of STEM degrees earned in our state.

VI. Clearly define and use metrics for measuring progress.

Community and technical colleges have a well-developed system of student achievement metrics that track student progress and reward colleges for improving student success. This system is used to specifically track progress toward increasing completion of pre-college and college-level math.

Based on this work, we recommend a series of metrics for measuring our students' progress and ultimate college success (see Appendix A). The first section measures college math and degree completion for students who intend to transfer to a four-year college or university or to earn an applied baccalaureate. The measures are disaggregated by student age and race/ethnicity. The section contains separate measures for students who come directly from high school, older students and those who have to begin in pre-college math. It also includes a college math completion metric for professional-technical students. Currently, most of these metrics show a trend of small, incremental improvement. In addition, we need to assess specific math requirements of each college certificate and degree program and create a method for tracking achievement of those requirements.

Conclusions

Math skills are critical for both students and our society. Community and technical colleges can play a key role in improving math education and student success.

Math achievement is critical for degree completion. It is also essential to meet the needs of the state's economy to increase the number of graduates with strong skills in quantitative reasoning and in STEM fields.

Equally important, significant, systemic improvement in the teaching and learning of math is essential to reducing income inequality and ensuring the success of traditionally underserved student groups.

Washington's community and technical college system has the momentum, experience and partnerships with K-12 and universities to change the trajectory of math achievement for all students. This plan provides direction for moving this work forward.

Succeeding in this work will provide immeasurable benefits to our state's economic vitality in the 21st century.

Appendix A: system metrics

Increase student success: Percentage of all academic transfer students enrolled who earn a Direct Transfer Agreement degree or become transfer ready (45 credits, includes college math).

Annual % of academic transfer students who complete a transfer degree or reach the achievement milestone of 45 college credits that include college math	2012 (N=101,152)	2013 (N=97,261)	2014 (N=97,962)
Overall	17%	18%	18%
20 and under	19%	20%	18%
21 and over	16%	17%	17%
African American	11%	12%	12%
Asian/Pacific Islander	19%	21%	20%
Hispanic	14%	16%	16%
Native American	14%	15%	14%
Other	16%	17%	15%
White	18%	20%	19%

Increase college math completion for students in an academic transfer path (Direct Transfer Agreement associate degrees)
— % starting the year with no prior college math that earn 5 college math credits by end of year.

Annual % of academic transfer students who started the year with no college math and earned at least 5 credits in college math	2012 (N=78,314)	2013 (N=73,412)	2014 (N=73,645)
Overall	22%	23%	25%
20 and under	25%	26%	29%
21 and over	19%	20%	21%
African American	15%	16%	17%
Asian/Pacific Islander	27%	29%	31%
Hispanic	18%	19%	20%
Native American	17%	17%	19%
Other	22%	23%	25%
White	23%	24%	26%
Annual % of academic transfer students who started the year with no college math and earned at least 5 credits in college STEM math			
Overall	8%	8%	9%
20 and under	11%	11%	13%
21 and over	5%	6%	6%
African American	4%	4%	5%
Asian/Pacific Islander	12%	13%	16%
Hispanic	6%	5%	7%
Native American	5%	5%	6%
Other	8%	8%	8%
White	8%	8%	8%

Increase college math completion for academic transfer students starting in pre-college — percent (%) of current or prior pre-college math students starting with no college math that earn 5 college math credits.

	2012 (N=39,374)	2013 (N=37,327)	2014 (N=35,213)
Annual % of all academic transfer students with no college math who are current or prior pre-college math students	50%	51%	48%
Annual % of all current or prior pre-college math students that earn 5 college math credits	22%	23%	24%

Increase college math completion for high school graduates enrolling directly in college for academic transfer.

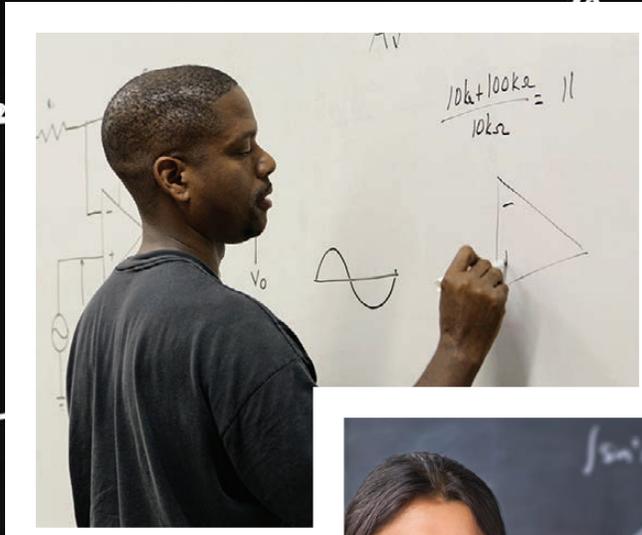
	2012 (N=12,097)	2013 (N=11,287)	2014 (N=11,122)
Annual % of prior year high school graduates who complete 5 credits in college math in their first quarter of college	10%	10%	10%

Increase college math completion for professional technical students.

Annual % of professional-technical students who started the year with no college math and earned at least 5 credits in college math	2012 (N=74,538)	2013 (N=69,489)	2014 (N=65,913)
Overall	17%	17%	18%
20 and under	17%	18%	19%
21 and over	17%	17%	18%
African American	10%	10%	13%
Asian/Pacific Islander	17%	18%	18%
Hispanic	13%	15%	16%
Native American	15%	14%	15%
Other	17%	14%	18%
White	18%	19%	20%

Appendix B: Math Task Force Members

<i>State Board Members</i>	<i>Campus</i>
Wayne Martin, Chair Elizabeth Chen, Vice Chair	
<i>Trustees</i>	
Dan Altmayer Vicki Orrico	Highline Bellevue
<i>Presidents</i>	
Steve Hanson David Mitchell	Renton Olympic
<i>Instruction Commission</i>	
Gail Miulli Jeff Wagnitz Tomas Ybarra	Edmonds Highline Yakima
<i>Research Planning Commission</i>	
Wendy Hall Cherisa Yarkin	Lower Columbia Seattle Central
<i>Student Services Commission</i>	
Leslie Blackaby Ata Karim	Yakima Bellevue
<i>College Faculty</i>	
Andrea Cahan Rebecca Hartzler Bev Vredevelt	Everett Seattle Central Spokane Falls
<i>Other Participants</i>	
Gil Mendoza Tony Lee Ben Rarick Jane Sherman	OSPI Community Member State Board of Education Council of Presidents
<i>SBCTC</i>	
Jon Kerr Darby Kaikkonen Bill Moore David Prince Jan Yoshiwara	SBCTC SBCTC SBCTC SBCTC SBCTC



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Washington's community and technical colleges comply with all federal and state rules and regulations and do not discriminate on the basis of race, color, creed, religion, national origin, age, sex, sexual orientation, marital status, disability, or status as a veteran or Vietnam-era veteran.

April 22, 2015