

Math Skills

DEFINITION

Math skills is the percentage of fourth-grade and eighth-grade students who scored at or above the proficiency level for math on the *New Standards Reference Exam* in 2004. The exam consists of three parts: *Skills, Concepts* and *Problem Solving*. Reported here are the overall score on the exam and data from the *Problem Solving* sub-test.

SIGNIFICANCE

The ability to understand and use mathematics is critical in life. Students must rely on math skills not only for advanced education, but also in the course of daily activities. Schools in Rhode Island typically teach mathematics every year through eighth grade and require students to take three years of mathematics and one year of mathematics related work to graduate from high school.¹

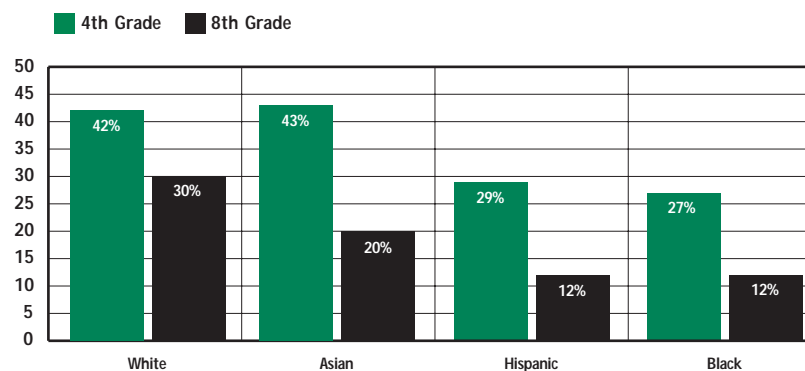
State, national and international assessments show that students may fare well when asked to perform straightforward computational procedures, but tend to have limited mathematical skills needed to solve simple problems. Performance in mathematics, while generally low, has been improving over the past decade.² Nationally, approximately one in four

elementary and middle school students are proficient in math, with gaps in performance existing between low-income children and higher-income children.³ In Rhode Island in 2004, 35% of economically disadvantaged fourth grade students were proficient in math compared to 51% of fourth grade students statewide. Nineteen percent of economically disadvantaged eighth grade students were proficient in math compared to 40% of eighth graders statewide.⁴

Family risk factors, such as poverty, language barriers and low maternal education, negatively impact achievement in mathematics.⁵ Students with a poor understanding of mathematics will have fewer opportunities to pursue higher levels of education and secure high-level employment.⁶

Frequent engagement in classroom activities such as doing math problems from a textbook, talking to others about how to solve math problems and using a calculator, are associated with higher scores on assessments.⁷ Students' achievement in math is highest when they are taught by teachers with strong backgrounds and training in math.⁸

4th and 8th Grade Math Proficiency by Race and Ethnicity, in Public Schools, Core Cities, 2003-2004



Source: RI Department of Elementary and Secondary Education, New Standards Mathematics Reference Exam at Grades 4 and 8, 2003-2004 School year.

◆ In 2004, 51% of Rhode Island fourth graders and 40% of eighth graders scored at or above proficiency in math. In the six core cities fourth and eighth grade students at all races scored below the state average. Black and Hispanic students scored lower than their White and Asian counterparts.⁹

◆ While all races experienced decreases in math proficiency between fourth and eighth grade, Hispanic, Black and Asian students experienced a decline almost twice that of White students. This decline in performance between fourth and eighth grades was consistent across economic status and presence of a disability.¹⁰

◆ In Rhode Island in 2004, 33% of fourth grade students with disabilities were proficient in math and 15% of eighth grade students with disabilities were proficient in math.¹¹

◆ Proficiency for all students requires that changes be made in curriculum, instructional materials, assessments, classroom practice, teacher preparation and professional development.¹²

Table 36.

Fourth and Eighth Grade Math Proficiency, Rhode Island 2004

SCHOOL DISTRICT	FOURTH GRADE			EIGHTH GRADE		
	NUMBER OF TEST TAKERS	% MEETING OR EXCEEDING STANDARDS FOR MATH PROFICIENCY	% MEETING OR EXCEEDING STANDARDS FOR PROBLEM SOLVING	NUMBER OF TEST TAKERS	% MEETING OR EXCEEDING STANDARDS FOR MATH PROFICIENCY	% MEETING OR EXCEEDING STANDARDS FOR PROBLEM SOLVING
Barrington	279	70%	65%	243	76%	71%
Bristol Warren	266	62%	52%	323	45%	38%
Burrillville	151	56%	35%	210	43%	34%
Central Falls	279	34%	23%	295	17%	11%
Chariho	286	64%	50%	291	58%	55%
Coventry	460	72%	67%	483	58%	58%
Cranston	861	65%	55%	924	48%	43%
Cumberland	439	56%	40%	447	48%	37%
East Greenwich	214	55%	38%	231	75%	73%
East Providence	472	54%	40%	547	32%	24%
Exeter-West Greenwich	160	50%	34%	207	56%	52%
Foster	70	65%	50%	NA	NA	NA
Foster-Glocester	NA	NA	NA	269	50%	40%
Glocester	141	53%	30%	NA	NA	NA
Jamestown	56	53%	34%	69	70%	65%
Johnston	258	63%	53%	275	45%	36%
Lincoln	275	59%	44%	320	45%	35%
Little Compton	38	80%	76%	47	49%	53%
Middletown	205	62%	55%	205	47%	40%
Narragansett	142	58%	40%	135	63%	58%
New Shoreham	5	NA	80%	19	58%	47%
Newport	200	45%	35%	198	37%	32%
North Kingstown	364	70%	60%	352	61%	54%
North Providence	242	50%	33%	314	35%	25%
North Smithfield	144	41%	18%	133	46%	41%
Pawtucket	816	39%	25%	890	21%	15%
Portsmouth	254	65%	51%	248	49%	40%
Providence	2,248	28%	17%	2,223	13%	9%
Scituate	137	69%	64%	177	66%	63%
Smithfield	222	60%	42%	230	54%	45%
South Kingstown	327	64%	49%	347	60%	54%
Tiverton	160	55%	34%	206	52%	42%
Warwick	875	64%	50%	988	45%	35%
West Warwick	322	43%	30%	292	47%	38%
Westerly	289	64%	52%	323	46%	37%
Woonsocket	545	38%	25%	517	17%	9%
Charter Schools	76	NA	13%	37	NA	11%
Core Cities	4,410	33%	22%	4,415	19%	13%
Remainder of State	7,792	62%	48%	8,563	50%	43%
Rhode Island*	12,202	51%	39%	12,978	40%	33%

*This total excludes Charter Schools because the number of students meeting or exceeding standards for math proficiency was not available.

Source of Data for Table/Methodology

All data are from the Rhode Island Department of Elementary and Secondary Education, *New Standards Mathematics Reference Exam* at Grades 4 and 8, 2003-2004 School year.

Charter Schools are Blackstone Academy, Compass Charter School, CVS Highlander School, International Charter School and the Paul Cuffee Charter School.

Core cities are Central Falls, Newport, Pawtucket, Providence, West Warwick and Woonsocket.

References for Indicator

^{1,7} U.S. Department of Education. Office of Educational Research and Improvement. National Center for Education Statistics. *The nation's report card: Mathematics 2000*, NCES 2001-517, by J.S. Braswell, A.D. Lutkus, W.S. Grigg, S.L. Santapau, B.S.-H. Tay-Lim, and M.S. Johnson, Washington, DC: 2001.

^{2,12} National Research Council. (2001). *Adding it up: Helping children learn mathematics*. J. Kilpatrick, J. Swafford, and B. Findell. (Eds.). Mathematics Learning Study Committee, Center for Education, Division of Behavioral and Social Sciences and Education. Washington, DC: National Academy Press.

^{3,8} Haycock, K. (2002). Still at risk. *Thinking K-16*, 6(1), 3. Washington, DC: The Education Trust, Inc.

^{4,9,10,11} Rhode Island Department of Elementary and Secondary Education. 2003-2004 school year.

⁵ Wirt, J., Choy, S., Rooney, P., Provasnik, S., Sen, A., and Tobin, R. (2004). *The condition of education 2004* (NCES 2004-007). U.S. Department of Education, National Center for Education Statistics. Washington, DC: Government Printing Office.

⁶ National Research Council. (2002). *Helping children learn mathematics*. J. Kilpatrick, J. Swafford, and B. Findell. (Eds.). Mathematics Learning Study Committee, Center for Education, Division of Behavioral and Social Sciences and Education. Washington, DC: National Academy Press.