

## STANDARDS MAP

### Grade Eight – Mathematics (Algebra I)

Stand. #	Standard	Publisher Comments		IMAP/CRP Meets Standard		IMAP/CRP Notes
		Primary Citations	Supporting Citations	Y	N	
	<b>ALGEBRA I</b>					
<b>1.0</b>	Students identify and use the arithmetic properties of subsets of integers and rational, irrational, and real numbers, including closure properties for the four basic arithmetic operations where applicable:	SE: pp. 19-23, 140-145, 600-605	SE: pp. 14-18, 64-69, 70-74, 75-79, 82-85, 100-103, 154-159, 620-623			
1.1	Students use properties of numbers to demonstrate whether assertions are true or false.	SE: pp. 14-18	SE: pp. 22 (Exercise 34), 57 (Exercise 50), 74 (Exercise 49) MCS: pp. 17-18			
<b>2.0</b>	Students understand and use such operations as taking the opposite, finding the reciprocal, taking a root, and raising to a fractional power. They understand and use the rules of exponents.	SE: pp. 64-69, 70-74, 154-159, 341-346, 347-351, 357-361, 362-365	SE: pp. 352-356 MCS: pp. 19-20			
<b>3.0</b>	Students solve equations and inequalities involving absolute values.	SE: pp. 128-131, 530-534	MCS: pp. 21-22			
<b>4.0</b>	Students simplify expressions before solving linear equations and inequalities in one variable, such as $3(2x-5) + 4(x-2) = 12$ .	SE: pp. 176-179, 509-513	SE: pp. 14-23, 112-116, 122-127, 160-164, 165-170, 171-175, 519-523 MCS: pp. 23-24			

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5.0	Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.	SE: pp. 165-170, 171-175, 519-523	SE: pp. 122-127, 128-131, 176-179, 188-193, 509-513 MCS: pp. 25-26			
6.0	Students graph a linear equation and compute the x- and y- intercepts (e.g., graph $2x + 6y = 4$ ). They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by $2x + 6y < 4$ ).	SE: pp. 310-315, 535-539	SE: pp. 316-321 MCS: pp. 27-28			
7.0	Students verify that a point lies on a line, given an equation of the line. Students are able to derive linear equations by using the point-slope formula.	SE: pp. 290-295, 296-301	SE: pp. 244-249 MCS: pp. 29-30			
8.0	Students understand the concepts of parallel lines and perpendicular lines and how those slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point.	SE: pp. 322-327	MCS: pp. 31-32			
9.0	Students solve a system of two linear equations in two variables algebraically and are able to interpret the answer graphically. Students are able to solve a system of two linear inequalities in two variables and to sketch the solution sets.	SE: pp. 550-553, 554-559, 560-565, 566-571, 572-577, 586-590	MCS: pp. 33-34			
10.0	Students add, subtract, multiply, and divide monomials and polynomials. Students solve multistep problems, including word problems, by using these techniques.	SE: pp. 388-393, 394-398, 399-404, 405-409, 650-655	SE: pp. 19-23, 143-145, 341-345, 656-661 MCS: pp. 35-36			
11.0	Students apply basic factoring techniques to second-and simple third-degree polynomials. These techniques include finding a common factor for all terms in a polynomial, recognizing the difference of two squares, and recognizing perfect squares of binomials.	SE: pp. 428-433, 445-449	SE: pp. 434-439, 440-444 MCS: pp. 37-38			
12.0	Students simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms.	SE: pp. 638-643	MCS: pp. 39-40			

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13.0	Students add, subtract, multiply, and divide rational expressions and functions. Students solve both computationally and conceptually challenging problems by using these techniques.	SE: pp. 644-649, 656-661, 662-667, 668-673	SE: pp. 650-655 MCS: pp. 41-42			
14.0	Students solve a quadratic equation by factoring or completing the square.	SE: pp. 478-482	SE: pp. 474-477, 483-487 MCS: pp. 43-44			
15.0	Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.	SE: pp. 204-209, 264-269, 674-675	SE: pp. 270-275, 560-565, 572-577, 668-673 MCS: pp. 45-46			
16.0	Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.	SE: pp. 256-261	SE: pp. 238-243, 244-249 MCS: pp. 47-48			
17.0	Students determine the domain of independent variables and the range of dependent variables defined by a graph, a set of ordered pairs, or a symbolic expression.	SE: pp. 238-243, 244-249	MCS: pp. 49-50			
18.0	Students determine whether a relation defined by a graph, a set of ordered pairs, or a symbolic expression is a function and justify the conclusion.	SE: pp. 256-261	MCS: pp. 51-52			
19.0	Students know the quadratic formula and are familiar with its proof by completing the square.	SE: pp. 483-487	MCS: pp. 53-54			
20.0	Students use the quadratic formula to find the roots of a second-degree polynomial and to solve quadratic equations.	SE: pp. 483-487	MCS: pp. 55-56			
21.0	Students graph quadratic functions and know that their roots are the x-intercepts.	SE: pp. 468-473	MCS: pp. 57-58			
22.0	Students use the quadratic formula or factoring techniques or both to determine whether the graph of a quadratic function will intersect the x-axis in zero, one, or two points.	SE: pp. 474-477	SE: pp. 483-487 MCS: pp. 59-60			

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23.0	Students apply quadratic equations to physical problems, such as the motion of an object under the force of gravity.	SE: pp. 468-473	SE: pp. 474-477, 478-482, 483-487 MCS: pp. 61-62			
24.0	Students use and know simple aspects of a logical argument:	SE: pp. 30-31				
24.1	Students explain the difference between inductive and deductive reasoning and identify and provide examples of each.	SE: pp. 30-31	MCS: pp. 63-64			
24.2	Students identify the hypothesis and conclusion in logical deduction.	SE: pp. 30-31	MCS: pp. 65-66			
24.3	Students use counterexamples to show that an assertion is false and recognize that a single counterexample is sufficient to refute an assertion.	SE: pp. 14-18	SE: pp. 22 (Exercise 34), 517 (Exercise 38), 603 (Exercise 2) MCS: pp. 67-68			
25.0	Students use properties of the number system to judge the validity of results, to justify each step of a procedure, and to prove or disprove statements:	SE: pp. 8-13	SE: pp. 14-18, 19-23, 341-345, 514-518			
25.1	Students use properties of numbers to construct simple, valid arguments (direct and indirect) for, or formulate counterexamples to, claimed assertions.	SE: pp. 14-18	SE: pp. 19-23, 30-31, 158 (Exercise 50), 382-387 MCS: pp. 69-70			
25.2	Students judge the validity of an argument according to whether the properties of the real number system and the order of operations have been applied correctly at each step.	SE: pp. 8-13	SE: pp. 14-18, 19-23 MCS: pp. 71-72			

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25.3	Given a specific algebraic statement involving linear, quadratic, or absolute value expressions or equations or inequalities, students determine whether the statement is true sometimes, always, or never.	SE: p. 56 (Exercise 45)	SE: pp. 143 (Exercise 1), 173 (Exercise 2), 485 (Exercise 1), 513 (Exercise 45) MCS: pp. 73-74			

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