

HPS Scope & Sequence
K-8 Grade Level Essential Skills
DRAFT
August 2009

Grade Level: 7
Subject: Math

Howell Public Schools (HPS), like many of our fellow Michigan districts, has studied the work of Dr. Robert Marzano and other educational consultants. In his book *What Works in Schools: Translating Research into Action*, Marzano points to the necessity of school districts having a “guaranteed and viable curriculum.” Marzano stresses the importance of everyone in the school community understanding what skills will be taught for mastery at each grade level, and then guaranteeing that happens. Using this research, our district is undertaking the task of creating an aligned curriculum that prepares students to successfully meet the academic rigors of Michigan’s Grade Level Content Expectations (GLCEs).






During the 2008-09 school year, small groups of teachers worked under the guidance of curriculum consultants and HPS administrators to study the core content curriculums of English, math, science and social studies. Through professional development efforts, these groups learned to identify subsets of fundamental, non-negotiable content expectations that require a higher degree of mastery than the other expectations within the content area. HPS has chosen to call these fundamental, non-negotiable content expectations for each grade level subject “Essential Skills”. Teacher groups then assigned a recommended number of lessons, per quarter, needed to successfully teach each GLCE, thus securing the curriculum as viable. Vocabulary, a researched component to uniform student achievement, was identified by quarter (nine-week sessions). Examples of formative assessments were provided for each expectation, with the creation of uniform summative assessments to follow the final approval of this document. Upon completion of draft essential skills for each subject, the teacher groups used supporting MDE documents to align their chosen skills horizontally for grades kindergarten through eight.

The essential skills found within this document will be piloted in the 2009-2010 school year. Our teaching staff will provide on-going feedback on the document during this pilot. At the conclusion of each semester the original teacher groups will re-assemble under the guidance of educational consultants and HPS administration to review the edit suggestions. These steps will culminate in revisions for a final document.

It should be noted that as a subset of Michigan’s Grade Level Content Expectations, the overall number of expectations identified as essential skills is smaller than the total articulated within the State’s course expectation documents. This is the intentional result of a process that asked teacher leaders to identify fundamental content expectations that require a higher degree of mastery than others included within the discipline. Expectations that were not considered fundamental to the success of all students are not included in this document, but may be found on the MDE web site at http://www.michigan.gov/mde/0,1607,7-140-28753_33232---,00.html

HPS Scope Sequence
 DRAFT Aug. 2009
 Grade 7
 Math/Quarterly

Quarter 1

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	Lessons or Days	Examples of Formative Assessments	Vocabulary
	Students will . . .			35		
						

Number and Numeration






N.FL.07.07	Solve problems involving operations with integers.	Students will be able to solve problems with positive or negative numbers.	1	10	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations, Games, Brochures	evaluate simplify integers expression additive inverse rational number additive and multiplicative identities additive and multiplicative inverses commutative property associative property distributive property
N.FL.07.08	Add, subtract, multiply, and divide positive and negative rational numbers fluently.	Students will be able to add, subtract, multiply, and divide positive and negative fractions, decimals, and percentages.	1	15	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations, Games, Brochures	
N.FL.07.09	Estimate results of computations with rational numbers.	Students will be able to estimate the answer of math problems with fractions, decimals, and percentages.	1	5	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations	

Algebra

A.PA.07.11	Understand and use basic properties of real numbers: additive and multiplicative identities, additive and multiplicative inverses, commutativity, associativity, and the distributive property of multiplication over addition.	Students will be able to solve problems when given specific addition and multiplication rules of math.	1	10	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations	
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HPS Scope Sequence
 DRAFT Aug. 2009
 Grade 7
 Math/Quarterly

Quarter 2

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	Lessons or Days	Examples of Formative Assessments	Vocabulary
	Students will . . .			40		
						

Number and Numeration






N.FL.07.03	Calculate rates of change including speed.	Students will be able to compare how amounts change over time. Ex: miles per hour	2	5	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations	slope rate of change unit rate scaling proportion equivalent rate ratio square root cube root perfect square radical sign dimensions parallelogram protractor compass similar corresponding congruent scale factor
N.FL.07.04	Convert ratio quantities between different systems of units, such as feet per second to miles per hour.	Students will be able to change from one unit of measure to another.	2	10	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations	
N.FL.07.05	Solve proportion problems using such methods as unit rate, scaling, finding equivalent fractions, and solving the proportion equation $a/b = c/d$; know how to see patterns about proportional situations in tables.	Students will be able to find equal amounts using 2 fractions.	2	10	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations	
N.MR.07.06	Understand the concept of square root and cube root, and estimate using calculators.	Students will be able to use a calculator to find out which number multiplied by itself 2 or 3 times equals a given number.	2	5	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations	

Geometry

G.SR.07.01	Use a ruler and other tools to draw squares, rectangles, triangles, and parallelograms with specified dimensions.	Students will be able to draw a shape using a ruler and other tools.	2	5	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations	
G.TR.07.03	Understand that in similar polygons, corresponding angles are congruent and the ratios of corresponding sides are equal; understand the concepts of similar figures and scale factor.	Students will understand that similar shapes, whether bigger or smaller, have the same angles, and their sides have an equal relationship.	2	5	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations, Graphing Activity	






HPS Scope Sequence
 DRAFT Aug. 2009
 Grade 7
 Math/Quarterly

Quarter 3

Standard or GLCE #	Standard or GLCE Language	What this means:	Q	Lessons or Days	Examples of Formative Assessments	Vocabulary
	Students will			40		
						
Geometry						
G.TR.07.04	Solve problems about similar figures and scale drawings.	Students will be able to solve problems with similar shapes.	3	10	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations, Mapping	mean median mode range IQR stem and leaf plot histograms box and whisker graphs relative frequency cumulative frequency quartile outlier extremes
G.TR.07.05	Show that two triangles are similar using the criteria: corresponding angles are congruent (AAA similarity); the ratios of two pairs of corresponding sides are equal and the included angles are congruent (SAS similarity); ratios of all pairs of corresponding sides are equal (SSS similarity); use these criteria to solve problems and to justify arguments.	Students will be able to show that two triangles are alike, when given rules of triangles.	3	5	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations	
G.TR.07.06	Understand and use the fact that when two triangles are similar with scale factor of r , their areas are related by a factor of r^2 .	Students will understand that there is a relationship between the area and sides of 2 matching triangles.	3	5	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations	
Data and Probability						
D.AN.07.01	Represent and interpret data using circle graphs, stem and leaf plots, histograms, and box-and-whisker plots, and select appropriate representation to address specific questions.	Students will be able to create and answer questions about different types of graphs.	3	10	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations, Surveys, Posters	
D.AN.07.03	Calculate and interpret relative frequencies and cumulative frequencies for given data sets.	Students will be able to figure out how often something is supposed to happen and then compare it to how often it actually does happen after doing an experiment.	3	5	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations	






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	Students will . . .			40		
						
D.AN.07.04	Find and interpret the median, quartiles, and interquartile range of a given set of data.	Students will be able to split information into quarters.	3	5	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations	

HPS Scope Sequence
 DRAFT Aug. 2009
 Grade 7
 Math/Quarterly

Quarter 4

Quarter 4						
Standard or GLCE #	Standard or GLCE Language	What this means:	Q	Lessons or Days	Examples of Formative Assessments	Vocabulary
	Students will . . .			40		
						
Algebra						
A.RP.07.02	Represent directly proportional and linear relationships using verbal descriptions, tables, graphs, and formulas, and translate among these representations.	Students will be able to create equations using data from a story problem or graph involving constant pattern.	4	5	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations	slope rise run intercept like terms unlike terms
A.PA.07.04	For directly proportional or linear situations, solve applied problems using graphs and equations, e.g., the heights and volume of a container with uniform cross-section; height of water in a tank being filled at a constant rate; degrees celsius and degrees fahrenheit; distance and time under constant speed.	Students will be able to solve problems using graphs and equations involving constant pattern.	4	5	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations	
A.PA.07.07	Represent linear functions in the form $y=x + b$, $y=mx$, and $y=mx+b$, and graph, interpreting slope and y-intercept.	Finding and graphing slope/steepness	4	20	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations, Graph Boards	
A.FO.07.12	Add, subtract and multiply simple algebraic expressions of the first degree, e.g., $(92x + 8y) - 5x + y$, or $- 2x (5x - 4)$, and justify using properties of real numbers.	Students will be able to combine like terms in problems.	4	5	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations	
A.FO.07.13	From applied situations, generate and solve linear equations of the form $ax + b = c$ and $ax + b = cx + d$, and interpret solutions.	Students will be able to create a rule and/or graph it when given a starting amount and a constant increase or decrease, and then use that to solve problems.	4	5	End of Unit Tests, Online Self Check Quizzes and Tests, Verbal Explanations	