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Michigan Standards - Sixth Grade Mathematics	**Math Word Problems**
Patterns, Relationships and Functions	
Student recognize similarities & generalized patterns, use patterns to create models & make predictions, describe the nature of patterns & relationships, & construct representations of mathematical relationships	✓
Describe analyze & generalize patterns arising in a variety of contexts & express them in general terms	✓
Represent & record patterns in a variety of ways including table, charts, and graphs, & translate between various representations	✓
Use patterns & their generalizations to make & justify inferences & predictions	
Explore & describe patterns for linear expressions & other near-linear patterns such as step & constant functions	
Use patterns & generalizations to solve problems & explore new content	✓

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Michigan Standards - Sixth Grade Mathematics	**Math Word Problems**
Variability and Change	
Students describe the relationships among variables, predict what will happen to one variable as another variable is changed, & compare patterns of change	✓
Identify & describe the nature of change; recognize change in more abstract & complex situations & introduce different kinds of change	✓
Connect an initial state to a final state & generalize a rule that describes a pattern of change	
Begin to investigate applications in bivariate data & linear relationships & explore questions of what will happen to one quantity if another variable is changed	
Represent variability or change by ordered pairs, tables, graphs, and equations	
Differentiate between types of relationships such as linear vs. not linear, direct vs. indirect, & continuous vs. noncontinuous	
Continue to explore relationships arising from interesting contexts & use variables & relationships to solve mathematical problems	✓

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Michigan Standards - Sixth Grade Mathematics	**Math Word Problems**
GEOMETRY AND MEASUREMENT	
Shapes & Shape Relationships	
Students develop spatial sense, identify characteristics & define shapes, identify properties & describe relationships among shapes	
Distinguish among shapes & differentiate between examples & non-examples of shapes based on their properties; generalize about shapes of graphs & data distributions	
Generalize the characteristics of shapes & apply their generalize-tions to classes of shapes	
Derive generalizations about shapes & apply those generalizations to develop classifications of familiar shapes	
Construct familiar shapes using coordinates, & appropriate tools, sketching and drawing 2 and 3 dimensional shapes	
Combine, dissect, & transform shapes	
Generalize about the common properties of similar, congruent, parallel, & perpendicular shapes & verify their generalizations informally	
Use concepts of shapes & their properties & relationships as studied at the elementary level to describe the physical world & to solve problems	

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Michigan Standards - Sixth Grade Mathematics	**Math Word Problems**
Position	
Students identify locations of objects, identify location relative to other objects, & describe the effects transformations on an object	
Locate & describe objects in terms of their position, including compass directions, Cartesian coordinates, latitude & longitude, & midpoints	
Locate & describe objects in terms of their orientation and relative position-coincident, collinear, parallel, perpendicular, recognize & describe examples of bilateral and rotational symmetry	
Describe translations, reflections, rotations, & dilations using the language of transformations & employ transformations to verify congruence of figures	
Accrete the position of points or objects described by two or more conditions; locate all the points that satisfy a given condition	
Use concepts of position, direction, and orientation to describe the physical world & to solve problems	

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Michigan Standards - Sixth Grade Mathematics	**Math Word Problems**
Measurement	
Students compare attributes of two objects, or of one object with a standard (unit), & analyze situations to determine what measurement(s) should be made & to what level of precision	
Measure objects using standard units in both metric & common systems, & measure angles in degrees	
Identify the attribute to be measured & select the appropriate unit of measurement for length, mass(weight), time, temperature, perimeter, area, volume, & angle	
Estimate measures with a specified degree of accuracy & decide if an estimate or a measurement is "close enough."	
Select & use appropriate tools to measure length, mass, time, temperature, perimeter, area, volume, and angle	
Interpret measurements & recognize that two objects may have the same measurement on one attribute, but not necessarily on another	
Use proportional reasoning & indirect measurements to draw inferences	
apply measurement to describe the real world & to solve problems	

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Michigan Standards - Sixth Grade Mathematics	**Math Word Problems**
DATA ANALYSIS AND STATISTICS	
Collection, Organization & Presentation of Data	
Students collect & explore data, organize data into a useful form, & develop skill in representing & reading data displayed in different formats	
Collect & explore data through observation, measurement, surveys samplings techniques and simulations	
Organize data using tables, charts, graphs box plots, tree diagram, stem-&-leaf plots, spreadsheets, and data bases	
Present data using a variety of appropriate representations & explain why one representations preferred over another or how a particular representation may bias the presentation	
Identify what data are needed to answer a particular question or solve a given problem, using tables charts graphs, box plots, tree diagrams, stem-&-leaf plots, spreadsheets, & data bases & help design & implement strategies to obtain, organize & present data	

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Michigan Standards - Sixth Grade Mathematics	**Math Word Problems**
Description & Interpretation	
Students examine data & describe characteristics of a distribution, relate data to the situation from which they arose, & use data to answer questions convincingly and persuasively	
Critically read data from tables, charts, or graphs & explain the source of the data & what the data represent	
Critically question the source of data as well as the collection, organization, & presentation of data & the inferences drawn from the data	
Describe the shape of a data distribution & identify the center, the speed, correlation, & any outliners	
Draw, explain, & justify conclusions based on data	
Recognize bias in data & critique presentations of data such as in advertisements or survey results	
Formulate questions & problems, and gather & interpret data to answer those questions	

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Michigan Standards - Sixth Grade Mathematics	**Math Word Problems**
Inference and Prediction	
Students draw defensible inferences about unknown outcomes, make predictions, & identify the degree of confidence they have in their predictions	
Make and test hypotheses	
Design experiments to model & solve problems using sampling, simulations, & controlled investigations	
Formulate & communicate arguments & conclusions based on data & evaluate their arguments & those of others	
Make predictions & decisions based on data, including interpolations & extrapolations	
Employ investigations, mathematical models, & simulations to make inferences & predictions to answer questions & solve problems	
NUMBER SENSE AND NUMERATION	
Concepts and Properties of Numbers	
Students experience counting and measuring activities to develop intuitive sense about numbers, develop understanding about properties of numbers, understand the need for & existence of different sets of numbers, & investigate properties of special numbers	✓

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Michigan Standards - Sixth Grade Mathematics	**Math Word Problems**
Develop an understanding of integers & rational numbers, & represent rational numbers in both fraction & decimal form	
Extend their understanding of numeration systems to include decimal numeration & scientific numeration	✓
Develop an understanding of the properties of the integer & rational number systems & of the properties of special numbers including 0 and 1, & the additive & multiplicative inverses	✓
apply their understanding of number systems, including integers & rational numbers to model & solve mathematical & applied problems	✓
Representation and Uses of Numbers	
Students recognize that numbers are used in different ways such as counting, measuring, ordering and estimating, understand & produce multiple representations of a number, & translate among equivalent representations	✓
give geometric representations of fractions, prime & composite numbers, triangular & spare numbers, & other number concepts; represent rational numbers & integers on the number line	✓
Recognize equivalent representations of a number, especially fractions decimals, & percents, & translate freely among representations	
Distinguish between numbers that are used for counting, numbers that are used for ordering, numbers that are used for measuring, & numbers that are used for naming	

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Michigan Standards - Sixth Grade Mathematics	**Math Word Problems**
Develop & refine strategies for estimating quantities, including fractional quantities, & evaluate the reasonableness & appropriateness of their estimates	
Select appropriate representations for numbers, including integers & rational numbers in order to simplify & solve problems	✓
Number Relationships	
Students investigate relationships such as equality, inequality, inverses, factors & multiples, & represent & compare very large & very small numbers	
Compare & order integers & rational numbers using relations of equality & inequality	
Express numerical comparisons as ratios & rates	
Distinguish between prime & composite numbers; identify factors, multiples, common factors & multiples, & relatively prime numbers; & apply divisibility tests to numbers	
Explain the meaning of power & roots of numbers & use calculators to compute powers & square roots	
Apply their understanding of number relationships in solving problems	
NUMERICAL & ALGEBRAIC OPERATIONS & ANALYTICAL THINKING	
Operations and Their Properties	
Students understand & use various types of operations to solve problems	✓
Use manipulative & diagrams to model operations & their inverses with integers & rational numbers & relate the models to their symbolic expressions	

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Michigan Standards - Sixth Grade Mathematics	**Math Word Problems**
Compute with integers, rational numbers & simple algebraic expressions using mental computation, estimation, calculators, & paper-&-pencil; explain what they are doing & how they know which operations to perform in a given situation	✓
Describe the properties of operations with rationales and integers & give examples of how they use those properties	✓
Efficiently & accurately apply operations with integers, rational numbers, & simple algebraic expressions in solving problems	✓
Algebraic and Analytic Thinking *Students analyze problems to determine an appropriate process for solution, & use algebraic notations to model or represent problems*	
Read & write algebraic expression; develop original examples expressed verbally & algebraically; simplify expressions & translate between verbal & algebraic expressions; & solve linear equations & inequalities	
Represent algebraic concepts with geometric models tables, and graphs; & write algebraic expressions to correspond to the multiple representations	
Solve linear equalities & inequalities using algebraic & geometric methods, & use the context of the problem to interpret & explain their solutions	
Analyze problems modeled by linear functions, determine strategies for solving the problems, & evaluate the adequacy of the solutions in the problems	

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Michigan Standards - Sixth Grade Mathematics	**Math Word Problems**
Explore problems that reflect the contemporary uses of mathematics in significant contexts drawn from many fields of work, study & recreation; use the power of technology & algebraic & analytic reasoning to experience the ways mathematics is used in society	
PROBABILITY AND DISCRETE MATHEMATICS	
Probability	
Students develop an understanding of the notion of certainty & of probability as a measure of the degree of likelihood that can be assigned to a given event based on the knowledge available, & make critical judgments about claims that are made in probabilistic situations	
Describe events as likely or unlikely & give qualitative & quantitative descriptions of the degree of likelihood	
Describe probability as a measure of certainty ranging from 0 to 1, & conduct activities that allow them to express probabilities of simple events in mathematical terms	
Conduct experiments & give examples to illustrate the difference between dependent & independent events	
Explain the difference between probabilities determined from experiments or chance events & probabilities derived mathematically & explain how the empirical probability changes for a large number of trials	
Conduct probability experiments & simulations to model & solve problems	

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Michigan Standards - Sixth Grade Mathematics	**Math Word Problems**
Students investigate practice situations such as scheduling, routing, sequencing, networking, organizing & classifying, and analyze ideas like recurrence relations, inductions, iteration	
Use manipulative & diagrams to explore problems involving counting & arranging objects & arranging objects	
Explore sets & set relationships by sorting & classifying objects	
Explore situations in which they model & trace paths using paths figures consisting of vertices connected by edges	
Explore, develop & invent their own algorithms to accomplish a task or solve numerical problems	
Use discrete mathematics concepts as described above to model situations & solve problems; & look for whether or not there is a solution & decide upon a best solution	