

Optimum Resource Inc.'s MiddleWare Software

California Standards - Sixth Grade Mathematics	Math Word Problems
NUMBER SENSE	
1.0 Students compare & order positive & negative fractions, decimals, & mixed numbers.	✓
Students solve problems involving fractions, ratios, proportions, & percentages	
Compare & order positive & negative fractions, decimals, & mixed numbers & place them on a number line	
Interpret & use ratios in different contexts, to show the relative sizes of two quantities, using appropriate notations	
Use proportions to solve problems. Use cross-multiplication as a method for solving such problems,	✓
understanding it as the multiplication of both sides of an equation by a multiplicative inverse	
Calculate given percentages of quantities & solve problems involving discounts at sales, interest earned, and tips	
2.0 Students calculate & solve problems involving addition, subtraction, multiplication, & division	✓
Solve problems involving addition, subtraction, multiplication, & division of positive fractions & explain why	
a particular operation was used for a given situation	
Explain the meaning of multiplication & division of positive fractions & perform the calculations	
Solve addition, subtraction, multiplication, & division problems, including, those arising in concrete situations,	✓
that use positive & negative integers & combinations of these operations	
Determine the least common multiple & the greatest common divisor of whole numbers;	
use them to solve problems with fractions	
ALGEBRA & FUNCTIONS	
1.0 Students write verbal expressions & sentences as algebraic expressions & equations;	✓
they evaluate algebraic expression, solve simple linear equations,	
& graph & interpret their results	

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Write & solve one-step linear equations in one variable	
Write & evaluate an algebraic expression for a given situation, using up to three variables	
Apply algebraic order of operations & commutative, associative, & distributive properties to evaluate expressions'	
& justify each step in the process	
Solve problems manually by using the correct order of operations or by using a scientific calculator	✓
2.0 Students know how to manipulate equations	
Know & understand that equals added to equals are equals	
Convert one unit of measurement to another	
Demonstrate an understanding that rate is a measure of one quantity per unit value of another quantity	
Solve problems involving rates, average speed, distance, and time	
3.0 Students investigate geometric patterns & describe them algebraically	
Use variables in expressions describing geometric quantities, ($p+2w+2l$, $A = 1/2 bh$, $C=2\pi r$ - the formulas for the	
perimeter of the rectangle, the area of a triangle, & the circumference of a circle, respectively)	
Express in symbolic form simple relationships arising from geometry	
MEASUREMENT AND GEOMETRY	
1.0 Students deepen their understanding of measurement of plane & solid shapes & use	
this understanding to solve problems	
Understand the concept of a constant such as pi; know the formulas for the circumference & area of a circle	
Know common estimates of pi (3.14; $22/7$) & use these values to estimate & calculate the circumference &	
the area of circles; compare with actual measurements	
Know & use the formulas for the volume of triangular prisms & cylinders (area of base x height); compare these formulas	
& explain the similarity between them & the formula for the volume of a rectangular solid	
2.0 Students use two-dimensional coordinate grids to represent points	

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& graph lines & simple figures	
Identify angles as vertical, adjacent, complementary, or supplementary & provide descriptions of these terms	
Use the properties of complementary & supplementary angles & the sum of the angles of a triangle to solve problems involving an unknown angle	
Draw quadrilaterals & triangles from given information about them (s quadrilateral having equal sides but no right angles, problems involving an unknown angle	
STATISTICS, DATA ANALYSIS, & PROBABILITY	
1.0 Students compute & analyze statistical measurements for data sets	
Compute the range, mean, median, & mode of data sets	
Understand how additional data added to data sets may affect these computations of measures of central tendency	
Understand how the inclusion or exclusion of outliers affects measures of central tendency	
Know why a specific measure of central tendency (mean, median, mode) provides the most useful information in a given context	
2.0 Students use data samples of a population & describe the characteristics & limitations of the samples	
Compare different samples of a population with the data from the entire population & identify a situation in which it makes sense to use a sample	
Identify different ways of selecting a sample (convenience sampling, responses to a survey, random sampling) & which method makes a sample more representative for a population	
Analyze data displays & explain why the way in which the question was asked might have influenced the results obtained & why the way in which the results were displayed might have influenced the conclusions reached	
Identify data that represent sampling errors & explain why the sample (and the display) might be biased	
Identify claims based on statistical data &, in simple cases, evaluate the validity of the claims	

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3.0 Students determine theoretical & experimental probabilities	
& use these to make predictions about events	
Represent all possible outcomes for compound events in an organized way (tables, frids, tree diagrams) & express	
the theoretical probability of each outcome	
Use data to estimate the probability of future events (batting averages or number of accidents per mile driven)	
Represent probabilities as ratios, proportions, decimals between 0 and 1, & percentages between 0 100	
& verify that the probabilities computed are reasonable; know that if P is the probability of an event,	
1-P is the probability of an event not occurring	
Understand that the probability of either of two disjoint events occurring is the sum of the two individual probabilities	
& that the probability of one event following another, in independent trials, is the product of the two probabilities	
Understand the difference between independent & dependent events	
MATHEMATICAL REASONING	
1.0 Students make decisions about how to approach problems	
Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, sequencing	
& prioritizing information, & observing patterns	
Determine when and how to break a problem into simpler parts	
2.0 Students use strategies, skills, & concepts in finding solutions	✓
Use estimation to verify the reasonableness of calculated results	
Apply strategies & results from simpler problems to more complex problems	
Estimate unknown quantities graphically & solve for them by using logical reasoning	
& arithmetic & algebraic techniques	
Use a variety of methods, such as words, numbers, symbols, charts, graphs tables, diagrams & models,	
to explain mathematical reasoning	

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Express the solution clearly & logically by using the appropriate mathematical notation & terms & clear language, support solutions with evidence in both verbal symbolic work	✓
Indicate the relative advantages of exact & approximate solutions to problems & give answers to a specified degree of accuracy	
Make precise calculations & check the validity of the results from the context of the problem	
3.0 Students move beyond a particular problem by generalizing to other situations	
Evaluate the reasonableness of the solution in the context of the original situation	✓
Note the method of deriving the solution & demonstrate a conceptual understanding of the derivation by solving similar problems	
Develop generalizations of the results obtained & apply them in other	