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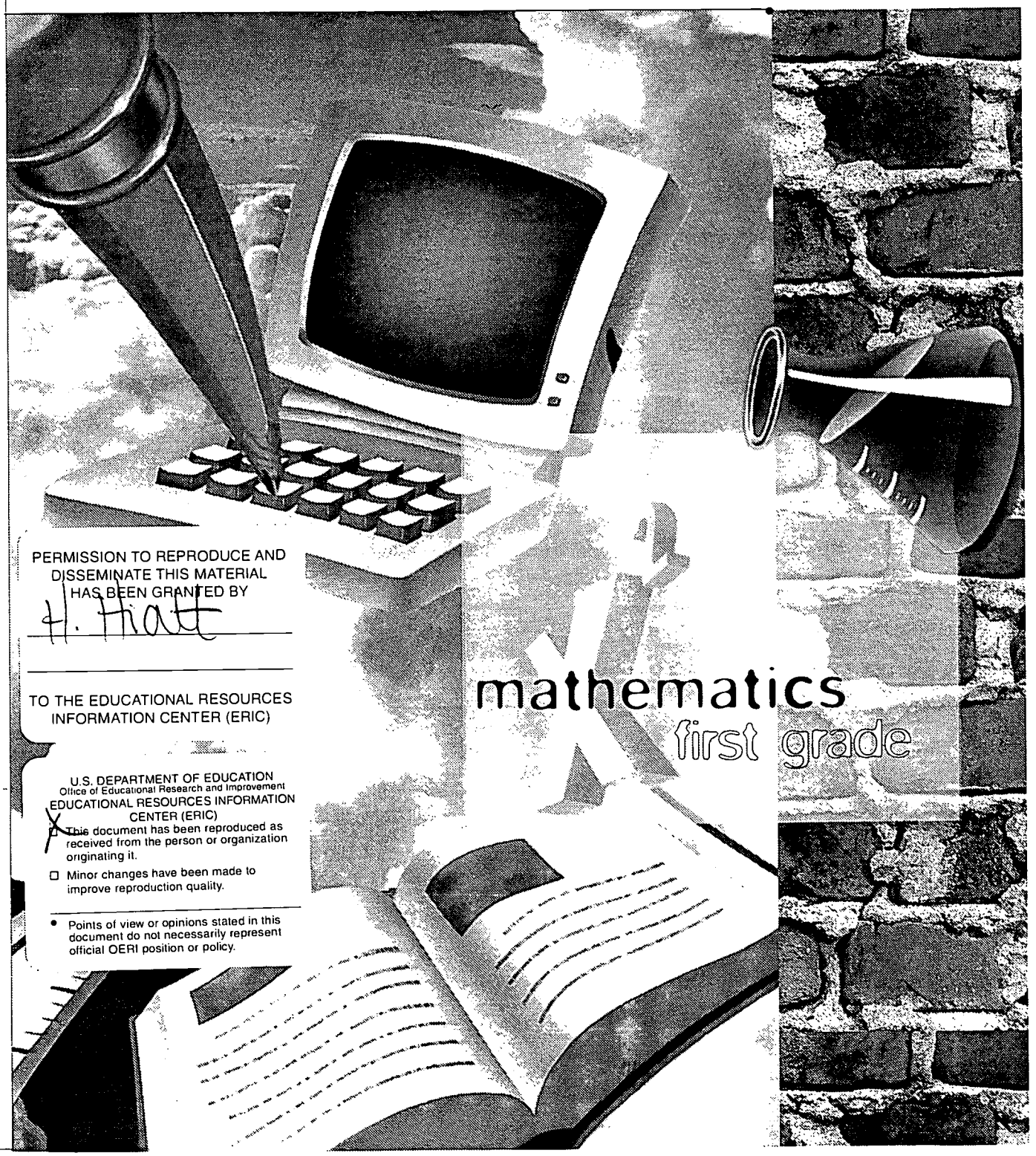
ABSTRACT

This kit contains observation matrices for on-going assessment and end of the year evaluation for grades 1 through 8. Each matrix is divided into the areas of numeration, geometry, patterns, measurement, problem solving, data, and computation. Performance indicators indicate four levels of proficiency where Level I indicates minimal performance and Level III indicates proficient performance. (JRH)

First Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation



mathematics
first grade

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Student Name _____ ID # _____ Teacher's Name _____ School _____ Year _____

first grade observation matrix

First Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

Performance Indicators	Numeration	Geometry	Patterns	Measurement	Problem Solving	Data	Computation
Level IV • consistent performance beyond grade level • works independently • understands advanced concepts • applies strategies creatively • analyzes and synthesizes • shows confidence and initiative • justifies and elaborates responses • makes critical judgements • makes applications and extensions beyond grade level • applies Level III competencies in more challenging situations	• reads, writes and counts beyond 100; reads number words beyond 10 • recognizes sets to 5 without counting • identifies original positions beyond tenth • compares, sequences numerals beyond 100 • skip counts by 2s, 3s, 5s, 10s and relates to repeated addition • can predict patterns beyond 10s and 1s	• creates models of plane and solid figures • identifies, makes figures with line symmetry • matches congruent figures • replicates 3-dimensional designs using models • groups by attributes geometric figures	• classifies by more than one attribute; describes rules in sorting • defines, extends, translates and corrects errors in patterns (numbers, words, shapes) • uses ordinal numbers in conversation • uses patterns to extend numerical sequences beyond memorized numbers and to make predictions • uses patterns as a problem-solving strategy	• weighs to nearest pound, kilogram • reads thermometer to whole degree • tells time to half-hour; uses clocks, calendar to solve problems • identifies value of sets of coins, uses money and make change • uses ruler to measure accurately to the nearest inch or centimeter • uses appropriate tools and procedures to solve problems • explores area and perimeter • estimates money needed for purchases • uses appropriate language, symbols for time-related ideas	• explores different methods of solving problems, using a variety of strategies • initiates, plans and carries out problem solving tasks, evaluating results • uses mental math and makes reasonable estimates • uses calculator as a tool • solves spatial visualization problems • describes process to solve problems • solves simple logic problems	• collects, sorts, organizes, and displays data in a variety of ways • summarizes, interprets data; makes predictions • collects, displays data over time accurately • locates positions on number lines and grids • completes simple experiments, describes results, makes predictions • takes initiative in collecting data for personal use	• uses strategies for adding, subtracting when solving problems • tells missing addends for addition facts • can model, explain 2-digit addition, subtraction • adds, subtracts 2-digit numbers using own strategies • adds, subtracts 10 mentally • models repeated addition and sharing equally • recalls almost all addition, subtraction facts • explains the process relating symbols to operations
Level III (Proficient) • exhibits consistent performance • shows conceptual understanding • applies strategies in most situations • responds with appropriate answer or procedure • completes tasks accurately • needs minimal assistance • takes appropriate risks • makes applications • exhibits fluency • shows some flexibility in thinking • works with confidence • recognizes cause and effect relationships • applies models, and explains concepts	• makes, compares, orders sets and numerals • reads, writes, represents numbers in a variety of ways; reads number words 0 to 10 • identifies ordinal positions • recognizes one more, less, before, after, between • rote counts by 1s, 10s, 5s, 2s • makes reasonable estimates of "how many" • groups objects into tens and ones; records • recognizes models; builds 2-digit numbers; writes numerals • uses counting strategies; 1-to-1 correspondence, counting on, tallying, grouping	• identifies open and closed figures • identifies, describes, models plane figures (i.e. circles, squares, rectangles, triangles, hexagons, trapezoids) • describes likenesses and differences • identifies, describes solids (i.e. cubes, cylinders, spheres, rectangular prisms) • recognizes examples of plane, solid figures in the environment • uses comparative, directional, positional words	• describes objects by their attributes; compares and orders • sorts by given attribute, by more than one attribute; explains sorting rules • sorts objects by own rule; explains sorting • copies, continues patterns; translates into different forms • creates patterns with actions, words, objects • finds and corrects errors in patterns • identifies patterns in the environment	• compares objects, uses appropriate vocabulary • uses nonstandard units to measure length, weight, capacity • identifies equal, unequal parts • uses time-related words in daily vocabulary • names, orders days of week; names months of year • uses information on a calendar • tells time to nearest hour (face, digital clock) • identifies, gives values of penny, nickel, dime • identifies coins needed to buy items; make different sets with same value	• uses calculator with situations beyond computational expectations • uses visual memory; solves spatial visualization puzzles; copies simple designs accurately • estimates, suggests reasonable solutions to problems • uses models or "act out" to solve problems • uses drawings, diagrams to solve problems • uses guess and check to solve problems	• collects data for concrete, pictorial, and symbolic graphs • organizes and displays information as a group activity • answers questions about charts, graphs • makes predictions based on experiences • participates in simple data collection activities	• models addition, subtraction (as take-away and comparison) • models combinations to 10 • creates and solves problems using addition, subtraction • relates addition, subtraction to symbolic notation, writes equations • uses counting strategies to find sums, differences • memorizes easy addition and subtraction facts to ten • models three single-digit addition; records • models 10 more, less; 2-digit operations with multiples of 10
Level II • exhibits inconsistent performance and misunderstandings at times • shows some evidence of conceptual understanding • has difficulty applying strategies in unfamiliar situations • responds with appropriate answer or procedure sometimes • completes tasks appropriately and accurately sometimes • requires teacher guidance frequently • needs additional time, opportunities • demonstrates some Level III competencies but is inconsistent	• demonstrates some understanding of more, less, before, after, between • requires guidance in skip counting • represents numbers in limited ways • uses different counting strategies but is not consistently accurate • compares and orders sets and numerals of single-digit numbers; has difficulty with some 2-digit numbers	• uses a limited number of directional, positional, comparative words • identifies some plane and solid figures but may not recognize them in the environment • creates models of plane figures with assistance	• describes objects by their attributes and compares with teacher guidance • sorts by given attributes • explains sorting rule inconsistently • copies and continues simple patterns • has difficulty creating patterns • finds errors in patterns • corrects errors in patterns with teacher assistance	• compares objects often using inappropriate vocabulary • uses nonstandard units at times inaccurately • identifies unequal parts • sequences time-related events • names days of the week • difficulty naming months • displays limited use of information from a calendar • tells time to nearest hour on digital clock only • identifies penny, nickel, dime; confuses values • matches coins to buy common items (i.e. lunch items)	• performs basic operations using the calculator • solves spatial visualization puzzles and copies simple designs with some errors • estimates are within a reasonable range when related to a specific problem • tends to use single strategy for solving problems • makes guesses to solve problems but neglects to check results	• requires teacher guidance to gather data • displays data inaccurately • displays confusion when answering questions about charts and graphs • makes inappropriate predictions based on experiences	• needs additional practice in modeling, recording combinations to 10 • demonstrates inconsistency when modeling subtraction as comparison • models three 1-digit addition with teacher assistance • shows some understanding for modeling 10 more, less • requires guidance to create and solve addition and subtraction problems • has difficulty modeling addition and subtraction with multiples of 10 • exhibits inconsistency with recall of easy addition and subtraction facts
Level I • exhibits minimal performance • shows limited evidence of conceptual understanding and use of strategies • responds with inappropriate answer and/or procedure frequently • very often displays misunderstandings • completes tasks appropriately and accurately infrequently • needs assistance, guidance and modified instruction	• uses counting strategies • identifies, creates sets with small numbers • recognizes some numerals • identifies "one more than," "one less than" but is inconsistent	• recognizes circles • identifies likeness as by color and size • models plane figures with assistance • needs additional clues to respond to directional, positional words	• demonstrates limited understanding of attributes • inconsistently sorts by given attribute • unable to state sorting rule • copies simple patterns • creates patterns with teacher guidance • unable to identify and correct patterns	• identifies equal parts inconsistently • unable to use calendar; name days of week, months • needs assistance reading clocks • identifies coins and their value inconsistently • has limited understanding of nonstandard measurement and comparison	• needs assistance in using a calculator • has difficulty copying simplest designs depicting spatial relationships • makes unreasonable estimates or inappropriate guesses to solve problems • needs assistance with models, drawings to solve problems	• demonstrates limited conceptual understanding of collecting data • needs frequent assistance to answer questions about charts and graphs	• demonstrates very limited understanding when modeling subtraction • needs modified instruction to use counting strategies • demonstrates minimal recall of easy addition and subtraction facts • shows limited evidence of understanding of 10 more, less • needs frequent assistance to create, solve problems or record equations

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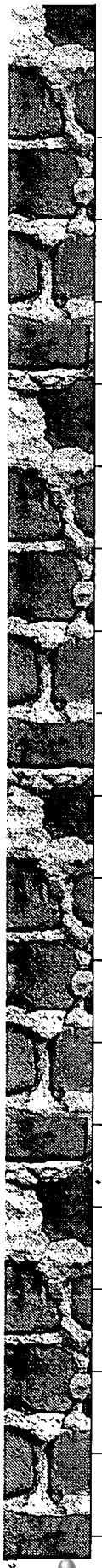
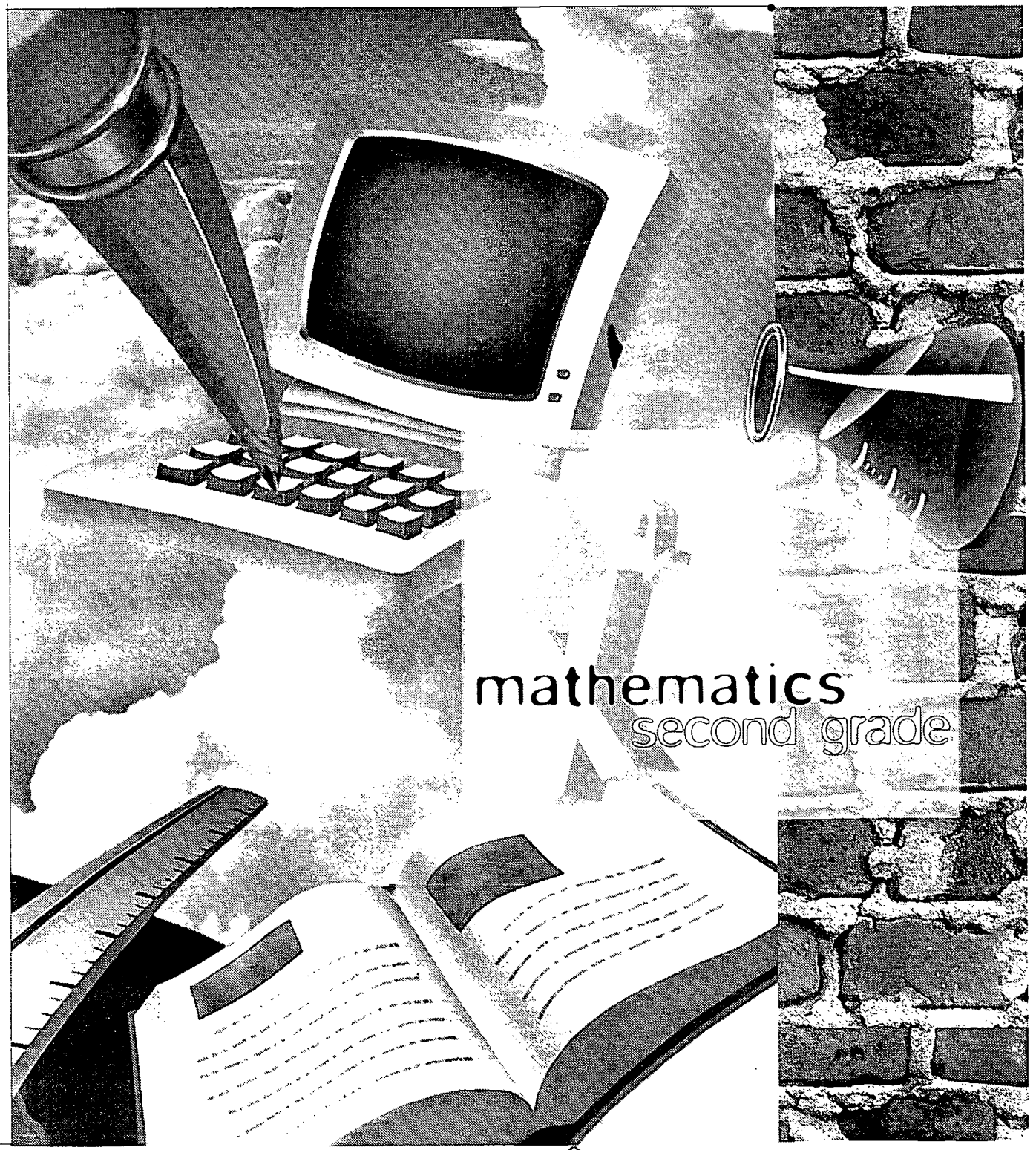


Teacher Comments

Second Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation



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Second Grade Observation Matrix

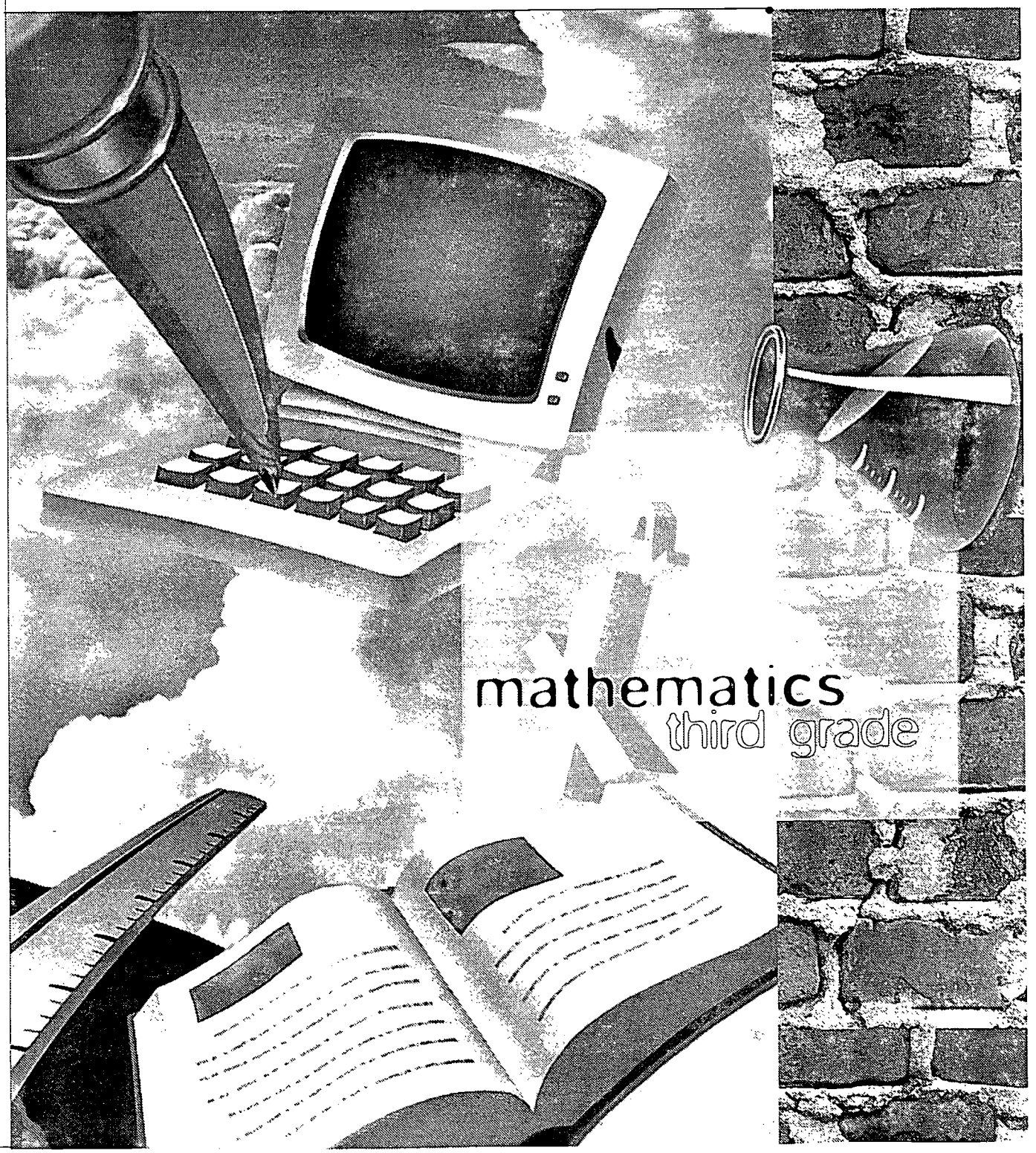
Second Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

Performance Indicators	Numeration	Geometry	Patterns	Measurement	Problem Solving	Data	Computation
Level IV • consistent performance beyond grade level • works independently • understands advanced concepts • applies strategies creatively • analyzes and synthesizes • shows confidence and initiative • justifies and elaborates responses • makes critical judgements • makes applications and extensions beyond grade level • applies level III competencies in more challenging situations	• recognizes multiple uses of numbers and classifications • models, explains and compares fractions pictorially • classifies numbers by odd and even • can predict patterns beyond ability to model • extends place value concepts to 4-digit numbers and describes patterns in the place value system	• describes and compares characteristics of 2-dimensional and 3-dimensional figures • identifies, models and explains symmetry and congruence • describes geometry in the environment • describes rules for grouping various geometric solids	• uses pattern concepts to extend and create geometrical and numerical sequences • uses patterns to make predictions and solve problems beyond grade-level expectations • uses patterns as a problem-solving strategy	• uses appropriate tools and procedures to solve real-life problems • explores, explains concepts of area and perimeter • estimates, determines amounts of money needed for purchases, makes change • tells time to minute, five minute intervals • uses appropriate language and symbols to express time-related ideas	• develops and applies new and familiar strategies including technology to solve a variety of problems • evaluates, verifies and interprets results • searches for alternative solutions • discusses process in multistep problems • initiates, plans and carries out problem solving tasks	• uses a variety of charts and graphs, surveys and experiments to draw conclusions; represents and explains data • explores coordinate graphs and timelines • takes initiative in collecting data for personal use • summarizes with great detail	• explains the processes relating symbols to operations • explores and explains multiplication and division • solves 2-digit and 3-digit addition and subtraction problems accurately with and without a calculator • uses addition and subtraction facts fluently
Level III (Proficient) • exhibits consistent performance • shows conceptual understanding • applies strategies in most situations • responds with appropriate answer or procedure • completes tasks accurately • needs minimal assistance • takes appropriate risks • makes applications and extensions • exhibits fluency • shows some flexibility in thinking • works with confidence • recognizes cause and effect relationships • can apply, model and explain concepts	• rote counts beyond 100 • uses strategies to estimate, compare and order numbers • groups 100s, 10s and 1s • identifies, uses 10 more, less • names nearest multiple of 10 • skip counts by 2s, 5s, 10s and relates to repeated addition • groups objects by 3s and 4s • divides regions and sets into halves • explains odd, even numbers using objects • models 3-digit numbers	• identifies, describes, makes plane and solid figures • identifies, makes figures with line symmetry • matches congruent figures • replicates 3-dimensional designs using models • recognizes square corners, geometric figures in the environment • recognizes plane, solid figures regardless of orientation	• classifies by more than one attribute; describes rules in sorting • defines, extends, translates and corrects errors in patterns (numbers, words, shapes) • applies ordinal numbers consistently • uses patterns to extend numerical sequences beyond memorized numbers • uses patterns to make predictions	• describes, estimates and measures length, weight, capacity, temperature using standard units correctly • estimates and informally rounds to nearest whole measurement unit • uses a ruler with confidence • covers areas with nonstandard units appropriately • tells time to nearest half hour; uses clocks and calendar to solve problems accurately • identifies coins, uses money and makes change with confidence	• uses calculator appropriately to solve problems; recognizes when mental math is more efficient • solves spatial visualization problems with ease • makes reasonable estimates • describes process to solve problems • solves simple logic problems • uses multiple strategies comfortably: makes models, "acts out," makes drawings; diagrams and organized lists, guess and check	• collects, sorts, organizes and displays data in a variety of ways • summarizes, interprets data, makes predictions individually and appropriately • collects, displays data over time • locates positions on number lines and grids • completes simple experiments, describes results, makes predictions	• uses strategies to add, subtract numbers and solve problems • names missing addends for addition facts • models, records, explains 2-digit addition, subtraction and 3 single-digit addition • adds, subtracts two-digit problems with, without renaming using manipulatives • adds, subtracts 10 mentally • models repeated addition and sharing equally; relates to multiplication, division • memorizes addition, subtraction facts
Level II • exhibits inconsistent performance and misunderstandings at times • shows some evidence of conceptual understanding • has difficulty applying strategies in unfamiliar situations • responds with appropriate answer or procedure sometimes • occasionally completes tasks appropriately and accurately • requires teacher guidance frequently • needs additional time, opportunities • demonstrates some level III competencies but is inconsistent	• demonstrates some place value understanding but has difficulty applying concepts • reads, writes and represents numbers in a few ways • gives inconsistent responses based on estimation • groups objects into 10s and 1s as well as into groups of 2s or 5s and rote counts • has difficulty modeling 3-digit numbers	• identifies and creates models of some plane, solid figures • identifies simple figures with line symmetry • usually matches congruent figures • uses geometric vocabulary when prompted	• demonstrates understanding of simple patterns • uses patterns to continue familiar numerical sequences • uses ordinal numbers less than 10, orders objects and events • sorts by single attribute; has difficulty naming rules • creates simple patterns but does not make predictions	• often lacks precision describing, estimating and measuring length, weight, capacity and temperature using standard units • identifies coins and uses money with some difficulty • needs guidance to cover area with nonstandard units • tells time to nearest half hour inconsistently; uses clock, calendar to solve very simple problems	• uses calculators to solve problems when prompted • solves spatial visualization problems with assistance • suggests reasonable solutions to problems with some teacher guidance • uses limited strategies to solve problems	• collects, organizes and displays data in simple charts, and graphs • summarizes, compares, and interprets data in group • locates points on a number line with some difficulty • make predictions based on experiences • explores positions on grid	• models, records, explains, and solves addition and subtraction facts • models with assistance repeated addition and sharing equally • models addition, subtraction of 2-digit problems with, without renaming but with some errors • knows only easier addition and subtraction facts
Level I • exhibits minimal performance • shows very limited evidence of conceptual understanding and use of strategies • responds with inappropriate answer and/or procedure frequently • very often displays misunderstandings • rarely completes task appropriately and accurately • needs assistance, guidance and modified instruction	• makes place value errors (ex. writes 32 for 23) • has difficulty reading and using numbers in context • inconsistent use of counting strategies • works with single-digit numbers but has difficulty with larger numbers	• recognizes only a few plane, solid figures • limited use of directional, positional words • describes likenesses and differences but does not attend to multiple attributes	• demonstrates limited use of attributes, sorting rules • finds, corrects simple patterns • identifies single-digit ordinal numbers • needs guidance and, or specific directions in identifying, creating, and continuing patterns	• uses nonstandard and some standard measurement but lacks accuracy • identifies penny, nickel, and dime • identifies time to hour • displays limited use of information from calendar • inconsistently names days of week and months of year	• has difficulty communicating mathematical understandings • creates or solves story problems within a group rather than individually • has difficulty completing spatial visualization problems • needs help to estimate or solve problems	• gathers and organizes data with assistance • needs assistance to display data graphically • answers simple questions about charts, graphs with guidance	• has difficulty modeling addition and subtraction • has difficulty applying addition, subtraction to problems • demonstrates minimal recall of easier addition and subtraction facts

NAME _____

Teacher Comments

Third Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation



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third grade observation matrix

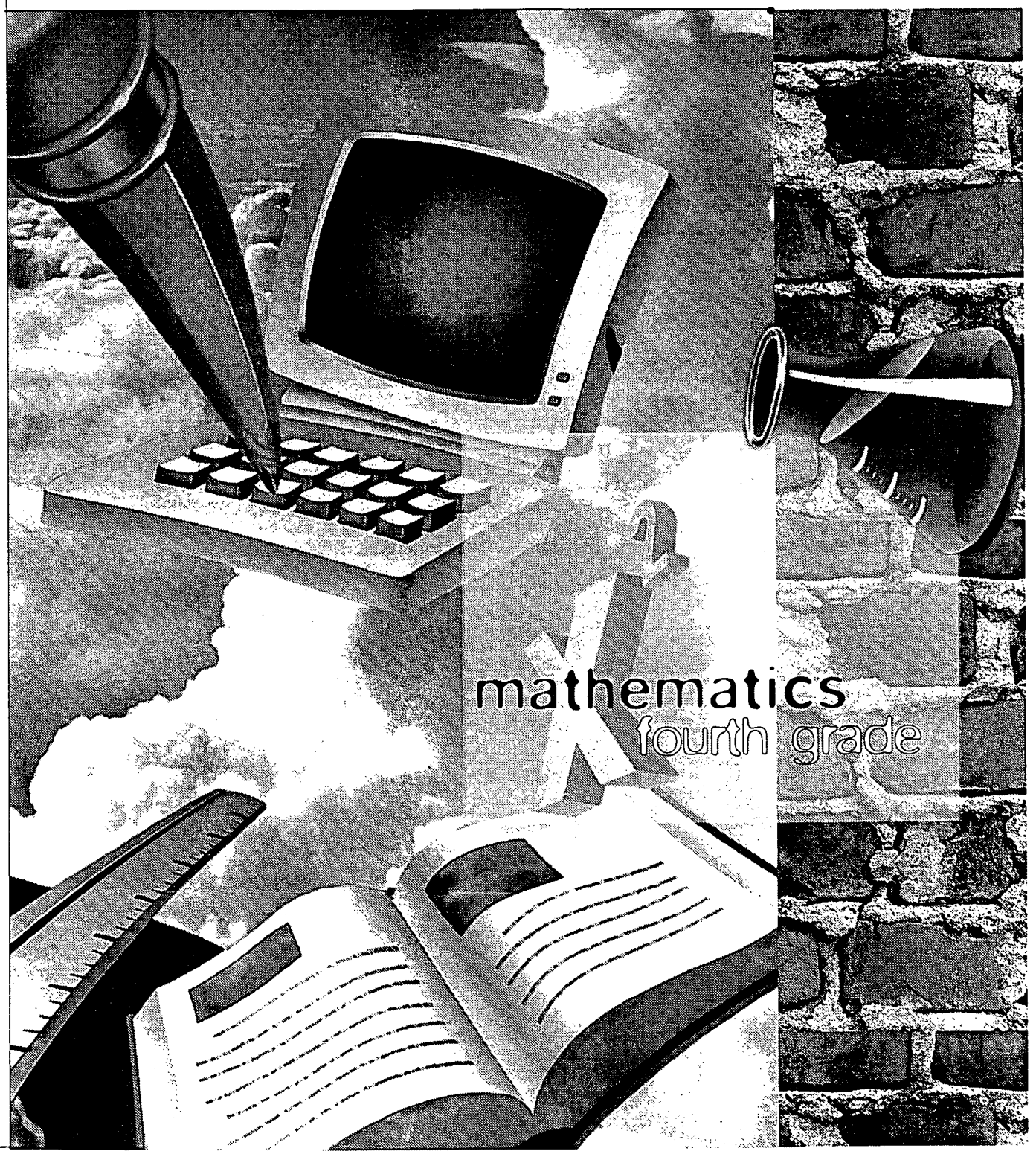
Third Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

Performance Indicators	Numeration	Geometry	Patterns/Measurement	Problem Solving	Data	Computation
Level IV • consistent performance beyond grade level • works independently • understands advanced concepts • applies strategies creatively • analyzes and synthesizes • shows confidence and initiative • justifies and elaborates responses • makes critical judgements • makes applications and extensions beyond grade level • applies level III competencies in more challenging situations	• expresses numbers in a variety of forms showing conceptual understanding of the base ten system • applies knowledge of multiples of 10s, 100s to 100s and 1000s • uses mathematical language to describe fractions in contexual situations • explores and demonstrates understanding of equivalent fractions	• create models of 3-dimensional objects • uses appropriate geometric vocabulary (sides, vertices, faces) when describing rules for grouping • explores turns, flips, and slides with plane figures • describes distinctive features of geometric figures	• generates own tables; finds patterns and extends the table • uses intuitive methods to find mathematical relationships among numbers (growing or repetitive)	• shows confidence and initiative in choosing, using appropriate tools (length, capacity, and weight) • explores elapsed time • uses appropriate language and proper notation to express money amounts	• develops an organized approach in solving problems in all strands • uses patterns and logical reasoning in solving problems • communicates an understanding of a problem through oral and written discussion • justifies a solution to a problem, clearly communicating thinking used in solving the problem	• displays data in a variety of ways including stem and leaf, and circle graphs • plans and carries out independent data investigations • uses ordered pairs in a variety of engaging situations	• relates multiplication facts to division facts • uses mental math skills to approximate answers and to solve problems • memorizes all multiplication facts/ tables to 12s • solves real-life problems (including multi-steps) using all operations
Level III (Proficient) • exhibits consistent performance • shows conceptual understanding • applies strategies in most situations • responds with appropriate answer or procedure • completes tasks accurately • needs minimal assistance • takes appropriate risks • makes applications and extensions • exhibits fluency • shows some flexibility in thinking • works with confidence • recognizes cause and effect relationships • can apply, model and explain concepts	• models 3-digit numbers; uses standard and expanded notations • reads, writes whole numbers through 1000 • estimates, compares, orders numbers through 1000 • determines odd and even numbers • models and can explain fractions and mixed numbers; relates notation to models and pictures • demonstrates confidence in using numbers • approximates multiples of 10 and 100	• classifies plane and solid figures; describes rules for grouping • constructs with cubes to match a given model or picture • describes a 3-dimensional object from different perspectives • identifies and models symmetry • identifies, investigates congruence with materials, drawings, computer graphics • describes geometry in the environment	• organizes objects or ideas into groups; describes attributes and rules for sorting • continues sequences beyond memorized, modeled numbers • extends, creates geometric and numerical sequences • describes pattern properties and gives similar examples • uses patterns for skip counting, multiplication, seriation, predictions, problems solving	• makes reasonable estimates of measurements and uses appropriate tools • measures accurately using metric and standard units for length, capacity, weight • tells, writes time to minutes • compares units within the same measurement system • evaluates coins; creates equivalent amounts; makes change less than $5; solves money problems • solves real-life problems using measurement concepts and procedures	• identifies and describes problems in given situations • develop stories to illustrate problem situations and number sentences • solves routine and non-routine problems using a variety of strategies and appropriate technology • describes processes used in finding solutions; suggested alternate strategies, methods • discusses reasonableness of solutions and completeness of answers	• gathers, organizes data from surveys, experiments; including data over time • displays data, summarizes and explains information • interprets, makes pictographs, bar graphs • uses charts, graphs as sources of information; identifies main idea, draws conclusions, makes predictions • uses letters, numbers to locate points on a coordinate grid • uses a time line	• illustrates connection between models, algorithms • models subtraction with zeros; demonstrates proficiency with 2-digit and 3-digit addition and subtraction • computes total cost of items up to $5; change from $5 • demonstrates multiplication properties • memorizes multiplication facts, tables: 2s, 5s, 1s, 10s, 9s, • models division with 1-digit divisor, sharing equally, and repeated subtraction • solves real-life problems using all operations
Level II • exhibits inconsistent performance and misunderstandings at times • shows some evidence of conceptual understanding • has difficulty applying strategies in unfamiliar situations • responds with appropriate answer or procedure sometimes • occasionally completes tasks appropriately and accurately • requires teacher guidance frequently • needs additional time, opportunities • demonstrates some level III competencies but is inconsistent	• models 3-digit numbers, but has difficulty relating standard and expanded notations • compares numbers but is inconsistent in ordering numbers to 1000 • has difficulty reading and writing 3-digit numbers • is tentative in application of numbers and concepts • can approximate multiples of 10 or 100 using models • shows limited understanding of fractions and mixed numbers	• classifies plane and solid figures with simple rules • constructs with cubes to match a given model with teacher guidance • gives limited descriptions of 3-dimensional object from different perspectives • displays limited use of geometric vocabulary	• organizes objects, ideas in limited ways; describes with simple rules • extends, creates easy geometric and numerical sequences; displays confusion describing patterns • uses patterns, seriation to make obvious predictions	• makes inconsistent estimates of measurements • shows misunderstanding in use of metric and standard units • needs additional time to calculate coins, make equivalent amounts • solves simple money problems but needs assistance making change • is inconsistent telling, writing time to the minute, 5-minute intervals	• solves problems with teacher or peers suggesting a strategy • needs help in explaining problem solving process and using alternative strategies • has difficulty developing stories to illustrate problem situations and number sentences • requires guided teacher discussion to enable student to explain reasonableness of solutions and completeness of answers	• gathers own data but needs assistance organizing • displays data, summarizes and needs assistance with analysis • sometimes interprets/makes graphs using multiple blocks • needs to be reminded of plotting x-axis first • sequences events inconsistently on a time line	• demonstrates limited conceptual understandings of the connection between models and algorithms • shows inconsistent performance modeling, explaining, computing with multi-digit numbers • demonstrates inconsistent memorization of facts • has difficulty understanding repeated subtraction to solve division problems • exhibits inconsistent application of operations for solving problems
Level I • exhibits minimal performance • shows very limited evidence of conceptual understanding and use of strategies • responds with inappropriate answer and/ or procedure frequently • very often displays misunderstandings • rarely completes tasks appropriately and accurately • needs assistance, guidance and modified instruction	• lacks understanding of standard and expanded notations • inaccurately reads, writes whole numbers to 1000 • lacks understanding of multiples of 10 and 100 • understands unit fractions such as 1/2 but has difficulty understanding other fractions • is not proficient with many of the previous years objectives	• confuses many geometric vocabulary words • needs assistance to complete geometry objectives • does not recognize geometry in the environment	• unable to organize groups, describe rules, patterns • does not apply pattern concepts • extends, creates simple geometric, numerical sequences with guidance	• does not use ruler accurately • needs modified instruction when using metric and standard units • needs frequent assistance telling, writing time to minutes, quarter hour • exhibits minimal performance evaluating coins, creating equivalent amounts • rarely makes change accurately	• unable to identify and describe problems in given situations • develops unrelated stories to illustrate problem situations and number sentences • unable to solve most problems using a variety of strategies even with assistance • unable to determine reasonableness of answers	• gathers, displays data as part of a group • answers simple, obvious questions about graphs • demonstrates lack of understanding of bar graphs, pictographs • completes graphs using multiple symbols • demonstrates difficulty sequencing events	• makes many errors in addition and subtraction of multi-digit numbers • needs concrete objects to share equally • able to skip count by 1s, 2s, 5s, and 10s but does not relate to multiplication facts • displays misunderstanding of processes when solving problems

NAME _____

Teacher Comments

Fourth Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation



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fourth grade matrix

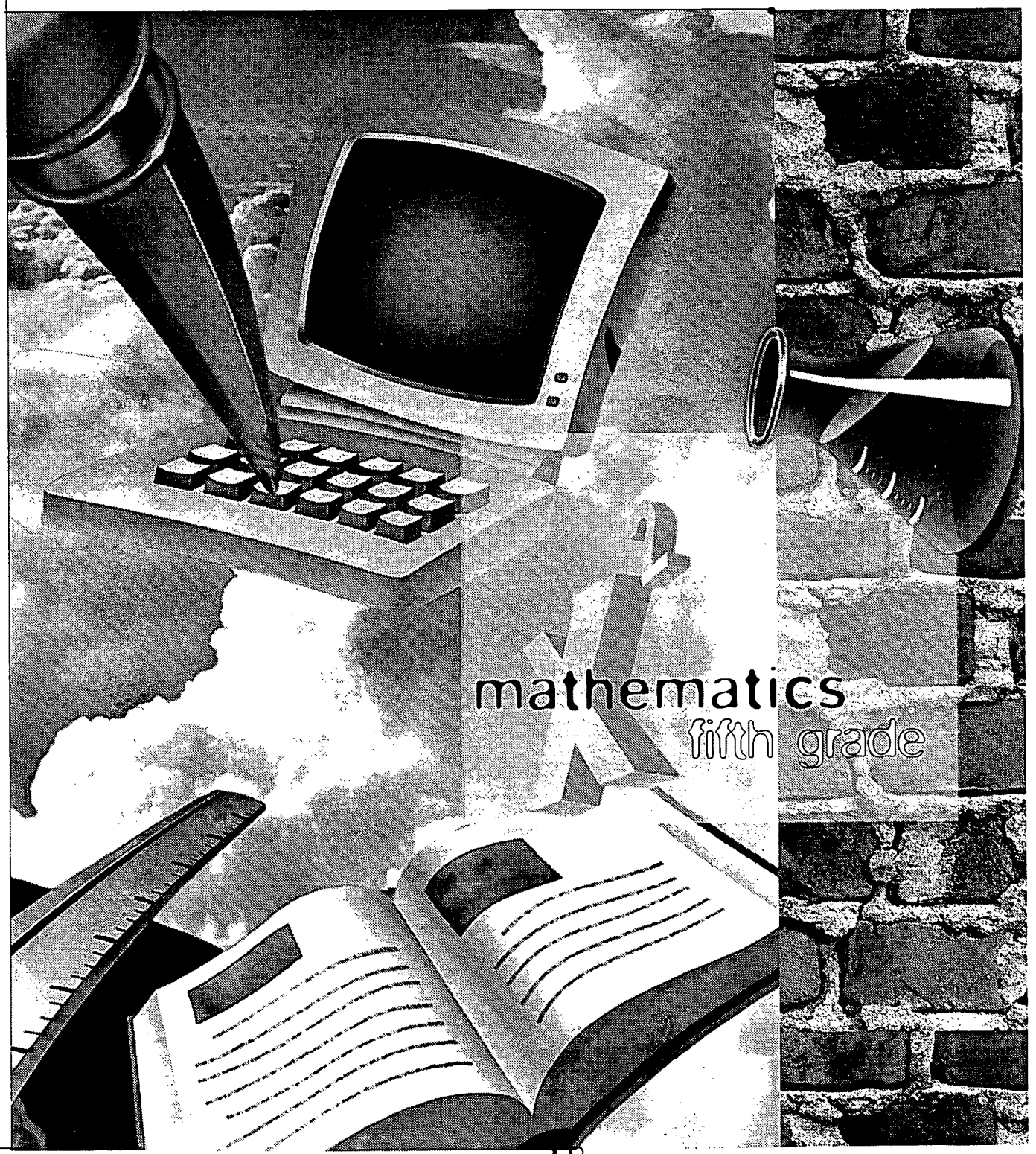
Fourth Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

Performance Indicators	Numeration	Geometry	Patterns	Measurement	Problem Solving	Data	Computation
Level IV • consistent performance beyond grade level • works independently • understands advanced concepts • applies strategies creatively • analyzes and synthesizes • shows confidence and initiative • justifies and elaborates responses • makes critical judgements • makes applications and extensions beyond grade level • applies level III competencies in more challenging situations	• extends place-value concepts beyond six digits in various forms • uses a variety of models to represent, compare fractions • creates pictures to show relationships between whole numbers, decimals, and fr ions • communicates an understanding of number relationships in everyday situations • gives realistic examples of application of fraction and decimal concepts	• models, explains rotations, reflections, and translations • uses a protractor to draw and measure acute, right, and obtuse angles • creates and explains a pictorial representation or model to illustrate geometric concepts, vocabulary, and figures	• describes and applies patterns in real world and across curriculum areas • creates, extends patterns in tables using rules • generates rules for patterns • makes generalizations from given patterns	• formulates, solves increasingly complex measurement problems involving applications of length, weight, time, money, capacity, temperature, perimeter, area • uses, makes models to demonstrate, explain formulas for area, perimeter of squares, rectangles	• analyzes situations and uses an organized approach to solve non-routine and increasingly complex problems in all strands • uses problem solving processes such as estimating, elaborating, and verifying in everyday situations and across curriculum areas • recognizes multiple ways to solve a problem and chooses efficient strategies	• chooses the best method to display data and explains reasoning • explores increasingly complex displays of data • investigates probabilities by experimenting with random outcomes (i.e. coins, number cubes, spinners) discussing probable results • creates designs on grids, lists ordered pairs • analyzes complex data using range, median, mode, outliers	• recalls, applies multiplication, division facts without hesitation • estimates products; explains and multiplies 2- and 3-digit numbers • explains, uses models to add, subtract fractions with like denominators • estimates results; adds, subtracts fractions with like denominators in the context of problem solving situations • compares whole number remainders in division to decimal remainders using calculator
Level III (Proficient) • exhibits consistent performance • shows conceptual understanding • applies strategies in most situations • responds with appropriate answer or procedure • completes tasks accurately • needs minimal assistance • takes appropriate risks • makes applications and extensions • exhibits fluency • shows some flexibility in thinking • works with confidence • recognizes cause and effect relationships • can apply, model and explain concepts	• understands base 10 system; models, compares, orders, writes expanded form to 1 million • rounds numbers appropriately in real-world situations • uses models to represent, compare proper, improper fractions, equivalent fractions, mixed numbers • uses models, pictures to demonstrate, compare decimals to hundredths • uses models to show relations between whole numbers, decimals, fractions • uses numbers to million	• identifies properties of polygons, polyhedra, 2-D and 3-D figures • demonstrates turns, flips, and slides • makes models; identifies line segments, midpoints, intersections, parallel, perpendicular lines • illustrates acute, right, obtuse angles • identifies lines, angles in pictures, examples in the environment	• identifies, describes patterns in the real world, data collection, geometry, operations, sequence • uses patterns to make predictions, solve problems • uses inverse operations math relationships to solve open sentences • makes, uses, extends tables, geometry and multiplication patterns	• uses appropriate units, tools for length, weight, capacity; estimates, compares units within same system • explores and solves elapsed time problems • formulates, solves real life measurement problems • measures on grids perimeter, area of rectangles; approximates area of irregular, regular figures • expresses, compares money amounts appropriately	• develops organized approaches in all strands • shows understanding of problems through oral and written discussion • determines if there is sufficient data to solve problems • estimates, justifies, verifies, interprets results to problems • selects appropriate strategies and technologies • discusses alternate methods for obtaining solutions • formulates problems from everyday situations	• collects, organizes, displays data from many sources in a variety of ways including line plot, stem and leaf • forms questions, interprets information orally, in writing • describes data using range, median, mode • names, plots ordered pairs • uses ordered pairs in a variety of situations • lists and explains all possible outcomes	• estimates, adds, subtracts with multi-digit numbers, including decimals • uses mental math to estimate, solve problems • models, explains the processes of multiplication and division • memorizes multiplication facts; relates to division facts • models properties of multiplication; relates to division • estimates, solves problems multiplying 1-digit by 3-digits or two 2-digit numbers (one a multiple of 10) • solves single-digit divisor problems
Level II • exhibits inconsistent performance and misunderstandings at times • shows some evidence of conceptual understanding • has difficulty applying strategies in unfamiliar situations • responds with appropriate answer or procedure sometimes • occasionally completes tasks appropriately and accurately • requires teacher guidance frequently • needs additional time, opportunities • demonstrates some level III competencies but is inconsistent	• uses and compares decimals in the context of money but has difficulty with other decimal forms • needs assistance to relating whole numbers, decimals, fractions • reads and uses numbers up to a million with errors • has difficulty with place value tasks involving zeroes • rounds to left most digit; has difficulty rounding to other places • needs assistance to model, compare unfamiliar proper, improper fractions, mixed numbers	• identifies some properties of 2-D and 3-D figures • explores turns, flips, and slides with assistance • models line segments, midpoints, intersections, parallel, perpendicular lines with assistance • illustrates angles when provided a definition • confuses parallel, perpendicular lines • estimates, justifies, checks, interprets solutions	• needs assistance to identify, describe, use patterns to solve problems, make predictions • makes, finds, extends patterns in tables inconsistently • finds solution to open sentences using properties but with errors	• needs assistance to measure accurately • solves measurement problems which follow specific models • has difficulty comparing units within the same system • needs manipulatives to solve time, money problems • has difficulty estimating area, perimeter of irregular figures on grids	• begins to develop an organized approach to problem solving with teacher assistance • tends to use a single strategy rather than a variety of methods for solving problems • solves simpler problems, estimating and explaining results; has difficulty with two-step or non-routine problems • has difficulty determining if there is sufficient data, selecting appropriate information to solve problems	• collects, organizes, displays data from various sources in a variety of ways with assistance • forms questions, interprets information orally, in writing with assistance • describes data using range, median, if definitions are provided • names, plots ordered pairs with some errors	• models the processes of multiplication, division with direction • recalls easier multiplication facts; relates to division facts but has difficulty with harder facts • estimates and solves problems multiplying 1-digit by 3-digit numbers with some difficulty • solves single digit divisor problems with assistance • estimates, solves addition and subtraction including, decimals with some errors
Level I • exhibits minimal performance • shows very limited evidence of conceptual understanding and use of strategies • responds with inappropriate answer and/or procedure frequently • very often displays misunderstandings • rarely completes tasks appropriately and accurately • needs assistance, guidance and modified instruction	• uses models to represent proper fractions; has difficulty with improper, mixed, equivalent fractions • shows limited conceptual understanding relating whole numbers, decimals, fractions • is not proficient with previous year's objectives • can model numbers with base 10 but does not apply understanding in other situations	• has limited geometric vocabulary; often confuses terminology • creates models with assistance • can name at least one property of familiar geometric figures	• uses simple patterns to solve problems with specific assistance • does not use math properties to solve open sentences • is not proficient with objectives in previous grades	• needs assistance to choose appropriate tools, measure accurately • confuses units from different measurement systems • has difficulty solving problems even with manipulatives • has not mastered objectives from previous years	• demonstrates limited written, oral understanding of problems • tends to use a single, concrete method in trying to solve problems • has difficulty verifying, interpreting results • creates inappropriate number sentences to represent everyday situations	• names and plots ordered pairs on a grids and maps with assistance • lists, explains outcomes of coins tosses, number cubes, spinners with assistance • needs assistance to collect, organize, display, use data	• has difficulty modeling addition and subtraction with renaming • needs assistance in modeling simple multiplication and division • demonstrates minimal fact recall • rarely uses mental math • has difficulty using decimals • makes frequent errors in computation

NAME _____

Teacher Comments

Fifth Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation



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Student Name _____ ID # _____ Teacher's Name _____ School _____ Year _____

Fifth Grade Observation Matrix

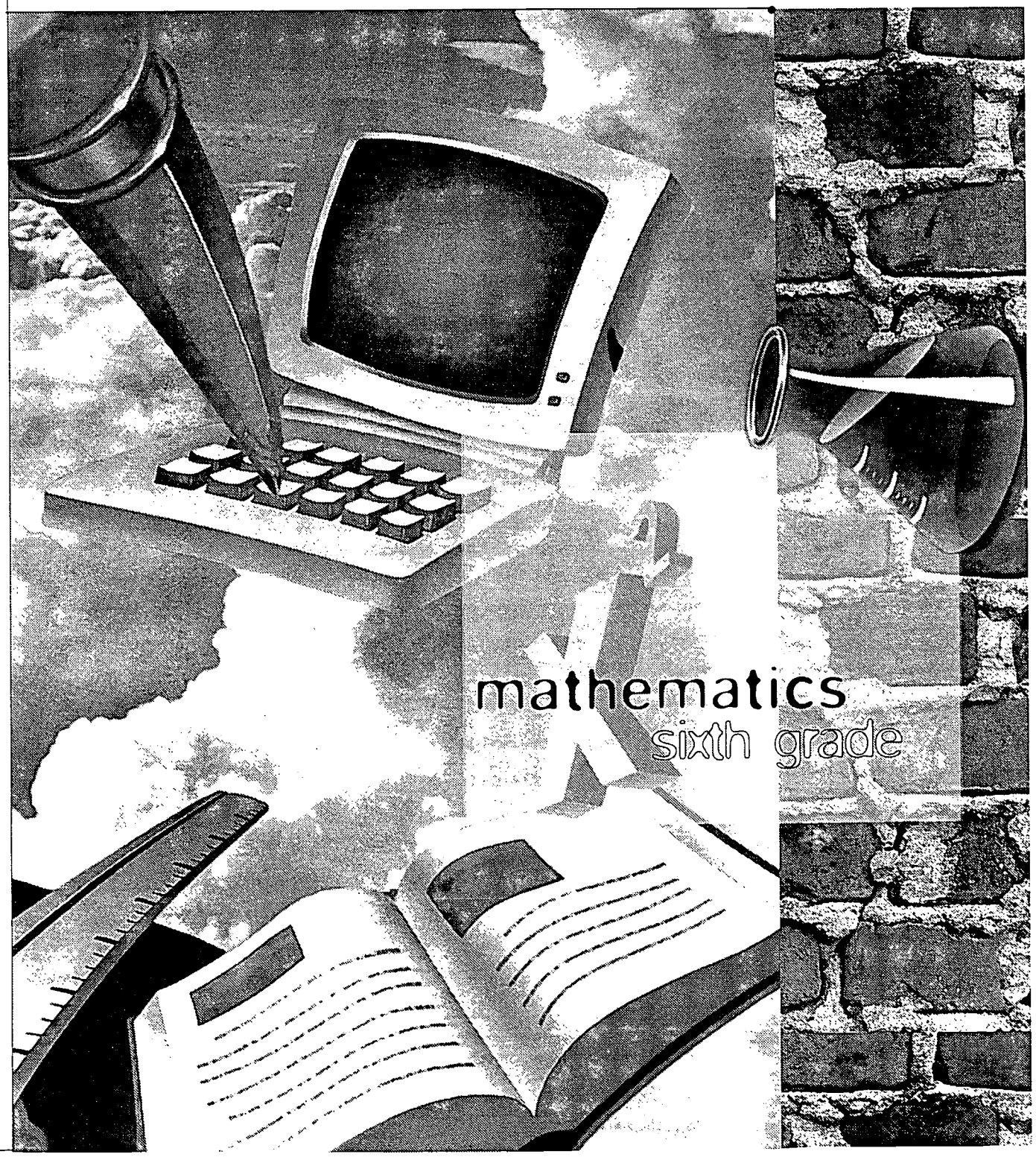
Fifth Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

Performance Indicators	Numeration	Geometry	Patterns	Measurement	Problem Solving	Data	Computation
Level IV • consistent performance beyond grade level • works independently • understands advanced concepts • applies strategies creatively • analyzes and synthesizes • shows confidence and initiative • justifies and elaborates responses • makes critical judgements • makes applications and extensions beyond grade level • applies level III competencies in more challenging situations	• applies place value skills in a variety of forms in real world situations • uses whole numbers, decimals, and fractions interchangeably, using models or other representations as appropriate to the task • recognizes the need for multiples, factors, exponential notation; applies appropriately • uses prime factorization	• connects geometric ideas with everyday situations, showing insight into underlying concepts • applies geometric principals when solving problems	• analyzes, explains, extends, applies patterns • demonstrates sophisticated understanding of use of patterns and variables	• demonstrates understanding and use of measurement formulas for area, perimeter, volume • analyzes and explains the relationship between perimeter and area, and area and volume • demonstrates advanced understanding of relationships of units within same system by solving real-life problems	• analyzes and clearly communicates an understanding of problems and their solutions • easily recognizes insufficient or extraneous data in a problem-solving situation • justifies, interprets, and elaborates on problem-solving results with alternative strategies or applications as appropriate	• designs and completes complex data investigations • uses and justifies appropriate measures of central tendency • relates proportional representations on grids to ratio • demonstrates understanding of probability by predicting, analyzing, explaining outcomes	• consistently successful with all operations involving whole numbers to 3-digits, fractions, and decimals both in isolation and in problem solving situations • estimates, solves, and justifies solutions with ease • demonstrates an understanding of the relationship among whole numbers, fractions, and decimals • explains strategies for mental math with whole numbers
Level III (Proficient) • exhibits consistent performance • shows conceptual understanding • applies strategies in most situations • responds with appropriate answer or procedure • completes tasks accurately • needs minimal assistance • takes appropriate risks • makes applications and extensions • exhibits fluency • shows some flexibility in thinking • works with confidence • recognizes cause and effect relationships • can apply, model and explain concepts	• applies place value skills through millions • relates exponential notation to repeated multiples • determines, explains prime, and composite numbers • names equivalent fractions; simplifies fractions • reads, writes, uses decimals and fractions • compares fractions using common denominators • demonstrates, explains relationships of whole numbers, decimals, fractions using various representations • shows understanding of factors, multiples;	• illustrates reflections, rotations, translations • draws circles with a compass; identifies radius, diameter, chord, center, circumference • describes relationships among radius, diameter, circumference • models, compares, classifies polygons and polyhedra • identifies, labels angles • relates geometric concepts to other curricular areas • uses a protractor to draw, measure angles	• identifies, understands, and describes patterns in various forms, including fractions and decimals • uses patterns to solve problems, make predictions • creates set of ordered pairs using a given rule; identifies rule to generate pairs given a set of pairs • uses models to explore concept of variable	• uses models to show formulas for area and perimeter of squares and rectangles • uses models to compare units of area within the same system • uses models to compare units of volume • describes relationships between perimeter and area and area and volume • identifies relationships of units within the same measuring system • solves problems using measurement applications	• solves multi-step problems from all strands in an organized way • communicates understanding of problems • determines if there is sufficient or extraneous information • uses appropriate strategies to solve problems • uses calculators and computers to solve problems • verifies and interprets results of problem solving • makes generalizations and applies them to new situations	• explains decisions in constructing graphs • uses increasingly complex data investigations • identifies range, median, mean, mode in describing data • uses grids to demonstrate proportion • plots points that represent ordered pairs • investigates probabilities; uses fractions to describe the probability of events • compares experimental, expected results for large sample sizes	• estimates products; multiplies 2-digit numbers • explains division process; estimates, solves division problems (divisors single-digit or multiples of 10) • explains what happens when zeros occur in computation • models, adds, subtracts fractions (like denominators) • computes averages in context • estimates, adds, subtracts, and multiplies decimal numbers • models and finds fractions of whole numbers • demonstrates success with whole number operations with and without a calculator
Level II • exhibits inconsistent performance and misunderstandings at times • shows some evidence of conceptual understanding • has difficulty applying strategies in unfamiliar situations • responds with appropriate answer or procedure sometimes • occasionally completes tasks appropriately and accurately • requires teacher guidance frequently • needs additional time, opportunities • demonstrates some level III competencies but is inconsistent	• demonstrates limited understanding of place value skills • demonstrates understanding of whole numbers, decimals, and fractions, but has a limited understanding of relationships among them • demonstrates inconsistent understanding of primes, composites, factors, multiples • has difficulty understanding exponential notation as a form of repeated multiplication	• has difficulty using compass, protractor shows limited knowledge of parts, relationships • needs assistance in applying geometric concepts to other areas • compares, classifies polygons, polyhedra; builds models with assistance • demonstrates some understanding of transformations	• identifies, describes, uses patterns inconsistently • has limited success in making generalizations • has difficulty creating ordered pairs given rule; • demonstrates limited understanding of variables	• shows limited ability to identify and demonstrate specific relationships of units within the same measurement system • requires some assistance to solve problems using measurement applications • has incomplete understanding of formulas for area, perimeter and relationships between perimeter area and area volume	• lacks organization in using appropriate strategies • exhibits difficulty in communicating an understanding of problems • makes limited use of calculators or computers as appropriate • has difficulty applying strategies to new problems • has difficulty in determining if information is sufficient or extraneous	• shows limited success in using and interpreting data displays • confuses measures of central tendency • requires assistance in exploring probability • uses reduction or enlargement grids to explore proportion	• demonstrates uneven success with all operations • has difficulty explaining the division process and with justifying and estimating solutions • has difficulty computing with fractions • has difficulty making appropriate estimates with whole numbers and decimals
Level I • exhibits minimal performance • shows very limited evidence of conceptual understanding and use of strategies • responds with inappropriate answer and/or procedure frequently • very often displays misunderstandings • rarely completes tasks appropriately and accurately • needs assistance, guidance and modified instruction	• has difficulty understanding place value • has limited use of whole numbers, decimals, and fractions • has considerable difficulty understanding prime and composite numbers • confuses factors and multiples • has not yet mastered many previous numeration objectives	• needs assistance to complete geometric objectives • has a limited geometric vocabulary • exhibits little knowledge of the attributes of 2-D and 3-D figures	• needs assistance in using patterns to solve problems • has difficulty, requires assistance with ordered pairs, rules that govern them • lacks understanding of variables	• requires considerable assistance in solving measurement problems • requires frequent assistance to identify, demonstrate relationship of units within same or different systems • has not mastered measurement skills	• fails to use appropriate strategies or uses them in incorrectly • demonstrates difficulty in communicating understanding of problems; does not attempt to solve a problem due to a lack of comprehension • fails to recognize if information is missing or extraneous • needs adult or peer help in applying strategies and solving most problems	• has difficulty recognizing and using reduction or enlargement grids • confuses range, median, mode, and mean • needs assistance plotting points that represent ordered pairs of data • needs assistance with data investigation	• makes frequent errors in computation with whole numbers and decimals • has difficulty selecting operations in problem solving situations • lacks conceptual understanding of fraction operations • lacks understanding of estimation strategies

NAME _____

Teacher Comments

Sixth Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation



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Sixth grade observation matrix

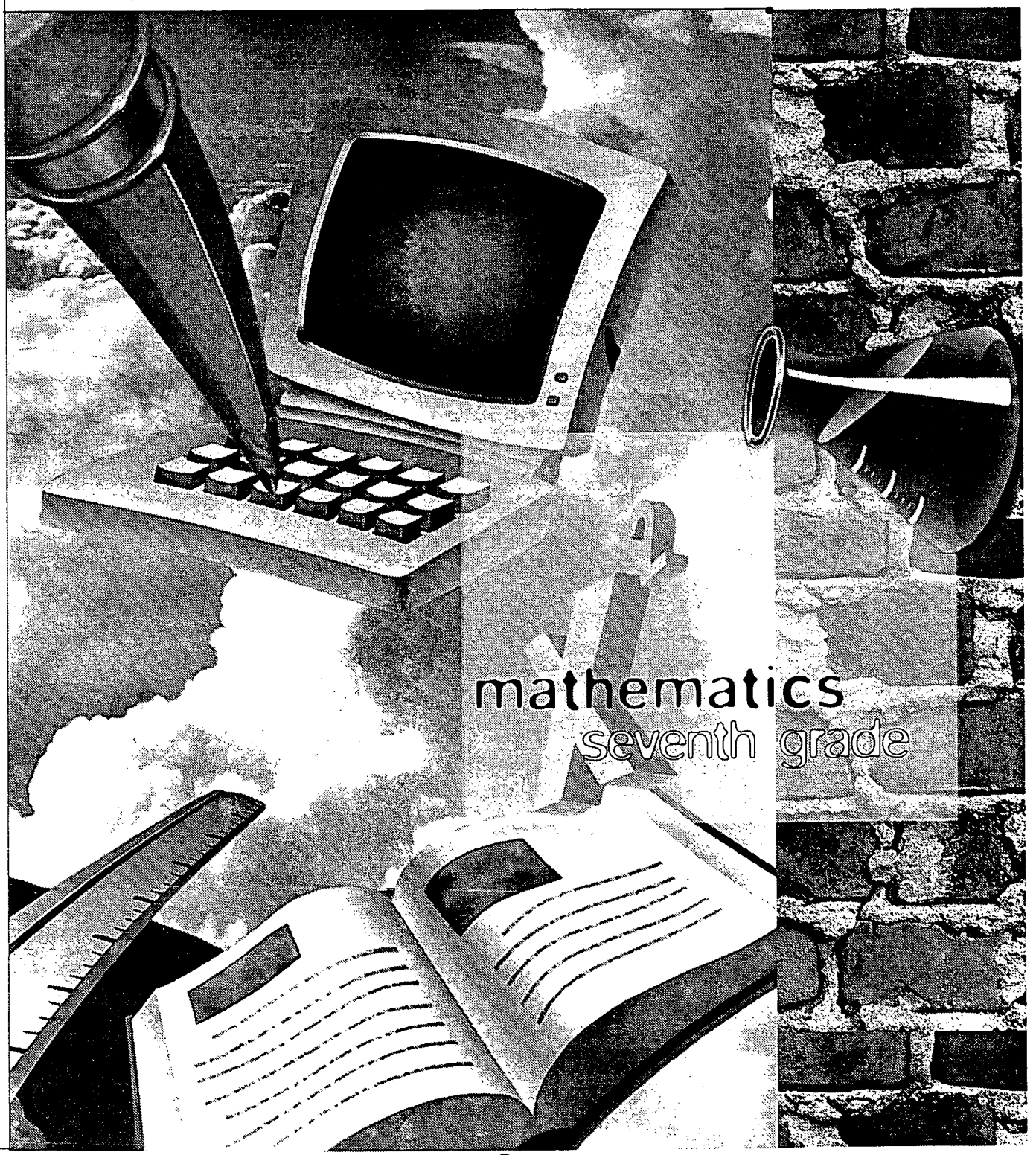
Sixth Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

Performance Indicators	Numeration	Geometry	Pre-Algebra	Measurement	Problem Solving	Data	Computation
Level IV • consistent performance beyond grade level • works independently • understands advanced concepts • applies strategies creatively • analyzes and synthesizes • shows confidence and initiative • justifies and elaborates responses • makes critical judgements • makes applications and extensions beyond grade level • applies level III competencies in more challenging situations	• explains, extends relationships of ratios, proportions, percents in real world situations • applies prime factorization to problem situations • applies exponential notation as scientific notations • explains and applies other number systems including binary numbers	• graphs transformations • compares, contrasts relationships among similar, congruent, symmetric figures • applies geometric constructions independently in extended projects • identifies/explains applications of geometry	• applies and extends number patterns in problem solving situations • explains relations of ordered pairs by formulating rules • solves simple equations • uses order of operations in more complex situations	• applies conversions of units of measure to real world situations • provides accurate measures with confidence • describes the relationship between models and formulas for areas of polygons. • explains the effect on area and perimeter of a rectangle when dimensions are changed • explores the effect on volume of rectangular solids when changing one or more dimensions	• uses independent and innovative strategies to solve non-routine and increasingly complex problems • clearly communicates an understanding of the structure of problems and is able to elaborate upon solutions • intuitively goes beyond mathematics that has been taught	• predicts outcomes from statistical data • designs, explains original experiments to test theoretical probability • makes inferences from spreadsheets • makes generalizations based on statistical evidence	• selects, justifies appropriate strategies to solve complex problems, including operations with integers, percents • uses ratios, proportions to solve a variety of problems • applies and modifies mental math strategies to operations with rational numbers
Level III (Proficient) • exhibits consistent performance • shows conceptual understanding • applies strategies in most situations • responds with appropriate answer or procedure • completes tasks accurately • needs minimal assistance • takes appropriate risks • makes applications and extensions • exhibits fluency • shows some flexibility in thinking • works with confidence • recognizes cause and effect relationships • can apply, model and explain concepts	• uses models to record, relate whole numbers, percents, fractions, decimals • reads, writes, uses numbers in various forms including fractions, decimals, percents, exponential notation • uses prime factorization to investigate common factors and multiples of numbers • identifies integers in real life situations • recognizes characteristics of other numeration systems • uses models, pictures to show relationships among ratio proportions, percents	• describes, records properties of figures • classifies angles and pairs of lines • identifies transformations; explores topology • constructs, uses congruent segments, angles, line segment bisectors • recognizes applications of geometry in the environment • names corresponding parts of similar, congruent, symmetric figures • graphs on a coordinate plane	• uses patterns to explore rules for divisibility and as a strategy to solve problems • uses graphs and tables to represent and describe relations of ordered pairs • uses examples, models to represent concepts, properties of variables, expressions, equations • uses order of operations correctly	• converts measures to other units in the same system • uses measures successfully, determining necessary precision • uses models to demonstrate formulas for area of plane figures; explores relationships of dimensions, areas of different figures • uses models to develop concept of volume for rectangular solids • estimates, solves problems related to volume	• analyzes problem situations and applies appropriate strategies for solutions • uses inductive and deductive reasoning to solve problems • selects appropriate methods for solving problems • makes conjectures and arguments, and identifies various points of view • solves non-routine, multi-step, and complex problems from all strands in an organized way	• designs, executes, evaluates, data investigations • uses measures of central tendency to describe, compare unequal sets of data • uses rational numbers to plot ordered pairs in all quadrants • designs experiments to test probability; discusses implications • explores spreadsheets • estimates likelihood of events • interprets real-life statistical statements	• translates word problems into number sentences using integers • applies the concept of adding and subtracting integers in context • uses mental math • relates common fractions to frequently used percents; estimates, calculates using percents • uses ratios and proportions to explore problems, including probability • uses operations to solve problems with, without calculators • uses estimation strategies and justifies estimates
Level II • exhibits inconsistent performance and misunderstandings at times • shows some evidence of conceptual understanding • has difficulty applying strategies in unfamiliar situations • responds with appropriate answer or procedure sometimes • occasionally completes tasks appropriately and accurately • requires teacher guidance frequently • needs additional time, opportunities • demonstrates some level III competencies but is inconsistent	• demonstrates limited understanding of relating percent to fractions and decimals, records and reads them using models • demonstrates some understanding of ratios, proportions, and percents using models • has limited use of numbers in various forms including exponential notation, prime factorization, factors, multiples, integers • lacks mastery of previous grade level objectives	• identifies congruent, symmetric, similar figures • describes, records most obvious properties of geometric figures • needs assistance with constructions • has difficulty recognizing transformations • limited recognition of the applications of geometry	• has difficulty identifying and using patterning as a strategy to solve problems • represents number patterns and expressions, uses graphs and tables, models variables, uses divisibility but, inconsistently • applies orders of operations with some errors	• has difficulty converting measures in same system, measuring precisely • needs assistance with models to demonstrate volume • is inconsistent in applying measurement, precision • needs assistance to estimate solutions and solve problems related to volume of rectangular solids • has a weak grasp of measurement terms	• has difficulty solving non-routine and complex problems with an organized approach • needs assistance analyzing problem situations • makes some appropriate selection of methods for problem solving • can make conjectures and arguments and occasionally identify various points of view with guidance • follows inductive and deductive reasoning when explained	• tests theoretical probability but has difficulty designing experiments • interprets probabilities and statistical statements with varying precision • has difficulty estimating probability • confuses x and y axes, measures of central tendency • needs assistance with spreadsheets	• inconsistently solves problems using multiplication and division • needs assistance selecting appropriate strategies to solve problems • has difficulty estimating results and applying appropriate operations • with assistance adds, subtracts, multiplies and divides fractions, mixed numbers, but confuses operations • has difficulty estimating percents, computing with integers
Level I • exhibits minimal performance • shows very limited evidence of conceptual understanding and use of strategies • responds with inappropriate answer and/or procedure frequently • very often displays misunderstandings • rarely completes tasks appropriately and accurately • needs assistance, guidance and modified instruction	• can sometimes read and record percent, fractions, and decimals but has limited knowledge of relationships among them • has little or no understanding of ratios, proportions, and percents • usually reads, writes, and uses numbers in various forms but has limited success choosing an appropriate form for a given task	• makes constructions only with assistance • has difficulty recognizing, classifying geometric figures • uses limited geometric vocabulary • has not mastered objectives at earlier grades	• uses order of operations, divisibility rules, patterns to solve problems only with specific guidance • creates simple tables; has difficulty describing rules • needs assistance exploring models of variables	• does not measure precisely • confuses volume, area, perimeter • is unable to convert units within same system	• needs step-by-step explanations and assistance to solve on-grade level problems • demonstrates few problem solving strategies • has difficulty explaining solutions	• reads and interprets some graphical representations of data • confuses measures of central tendency and range • names ordered pairs in first quadrant • explores probability through experiments	• limited use of whole number operations to solve real world applications even with calculators • continues to have difficulty with fraction, decimal concepts, operations • needs assistance with integer concepts and operations • has difficulty linking classroom models to real world applications • makes number facts errors

NAME _____

Teacher Comments

Seventh Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation



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Student Name _____ ID # _____ Teacher's Name _____ School _____ Year _____

Seventh Grade Observation Matrix

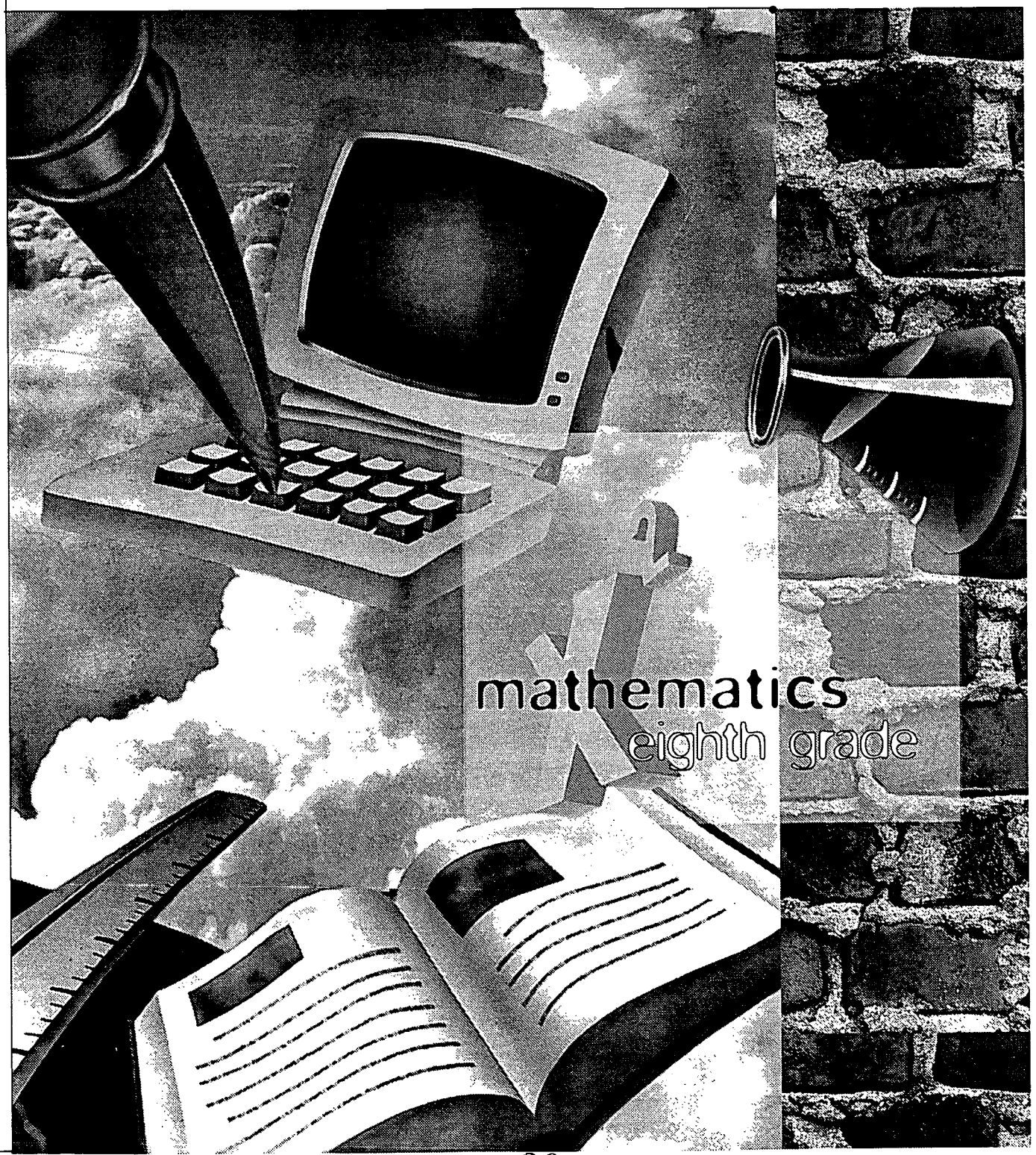
Seventh Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

Performance Indicators	Numeration	Geometry	Pre-Algebra	Measurement	Problem Solving	Data	Computation
Level IV • consistent performance beyond grade level • works independently • understands advanced concepts • applies strategies creatively • analyzes and synthesizes • shows confidence and initiative • justifies and elaborates responses • makes critical judgements • makes applications and extensions beyond grade level • applies level III competencies in more challenging situations	• uses estimation techniques without prompting • uses squares, square roots in problem solving situations • completes complex/multistep problems utilizing ratios, proportions and percent in meaningful contexts • recognizes without prompting the need for and uses of positive and negative rational numbers	• recognizes the need for and accurately applies geometric concepts and relationships in problem solving situations • explains, models of Pythagorean Theorem; applies to real world situations • graphs complex shapes, transformations	• investigates, utilizes more complex patterns, i.e. fractals, Golden Ratio, Fibonacci Sequence • conceptualizes operations with variables • solves two-step equations • applies expressions in real-life situations	• distinguishes between situations requiring estimation, precision • explains accurately relationships between, among plane, solid figures • chooses, uses formulas accurately	• recognizes need for and creates original models or graphics to aid in problem solving • uses problem solving strategies to solve real world contextual problems creatively • shows confidence and initiative in solving problems • goes beyond the mathematics that has been taught • formulates problems for more complex equations	• predicts how changes in data effects measures of central tendency, inferences, conclusions • finds probability of independent, dependent events • makes predictions based on experimental results, expectations theoretical • selects most effective means of displaying data	• selects appropropriate strategies and solves complex problems accurately using rational numbers consistently • creates and analyzes models which represent situations across the curriculum and explains the rationale • applies and modifiers mental math strategies to operations with national numbers
Level III (Proficient) • exhibits consistent performance • shows conceptual understanding • applies strategies in most situations • responds with appropriate answer or procedure • completes tasks accurately • needs minimal assistance • takes appropriate risks • makes applications and extensions • exhibits fluency • shows some flexibility in thinking • works with confidence • recognizes cause and effect relationships • can apply, model and explain concepts	• models positive, negative, rational numbers • uses exponential notation to express prime factorization • relates ratio, proportion, percent in contexts • shows integration of numeration concepts across the curriculum • relates standard form and scientific notation • compares, orders, estimates rational numbers in real world situations; justifies strategies • models squares, square roots geometrically; estimates, finds square roots with calculator	• constructs with straight edge, compass • solves real world problems with geometric concepts, relationships • models, uses Pythagorean theorem • explains applications of geometry in environment • builds models of 3-D figures given top, side, end views; draws model • graphs congruent figures given translation of corresponding vertices	• uses concrete materials to develop the concepts of operations with variables; informal, formal methods to solve simple equations • uses patterns to investigate patterns, solve problems; • evaluates expressions using mental calculations, paper and pencil, calculators	• applies measurement concepts, skills; estimates, solve real-life problems • makes accurate judgements about the precision • uses models to develop concept, formulas for surface area of rectangular solids, cylinders • uses models to develop concepts of volume for prisms, cylinders; relates volume of cone to cylinder, pyramid to prism	• uses organized approach and variety of strategies to solve increasingly complex, non-routine problems • discusses alternative strategies, evaluates outcomes, makes conjectures, generalizations based on problem situations • uses concrete, pictorial models spatial reasoning to solve problems • solves problems involving interpretation of graphs • uses technology, problem solving strategies as tools for daily living • formulates problems from simple equations	• creates, evaluates different graphic representations of data, including box plots, scatter plot • draws inferences, constructs arguments based on data analysis • finds, explains probability of simple events experimentally, theoretically • shows all possible outcomes in multiple ways; explores permulations, combinations • investigates misuses of data	• selects appropriate operations, strategies, methods of solving application problems using positive rational numbers; justifies selection • uses operations with integers in relevant problems • estimates, solves real world problems (consumer applications, science, social studies) using ratio, proportion, percent; explains thinking • computes accurately with or without calculator • applies mental math strategies in operations with rational numbers
Level II • exhibits inconsistent performance and misunderstandings at times • shows some evidence of conceptual understanding • has difficulty applying strategies in unfamiliar situations • responds with appropriate answer or procedure sometimes • occasionally completes tasks appropriately and accurately • requires teacher guidance frequently • needs additional time, opportunities • demonstrates some level III competencies but is inconsistent	• uses models to represent integers • compares, orders decimals; needs assistance with fractions • is inconsistent using exponential or scientific notation • uses estimation techniques inconsistently • uses a calculator to find square, square root; has difficulty explaining concepts • needs assistance with proportions	• needs assistance in constructions • needs assistance solving problems using geometric relationships, concepts • graphs figures on a coordinate plane using positive, whole numbers • has difficulty drawing 3-D models • limited recognition of the applications of geometry in the environment	• demonstrates some understanding of visual, numerical patterns, models of operations with variables • demonstrates some understanding of concrete, informal, formal methods to model, solve equations • evaluates expressions, verbalizes problems for simple equations	• applies measurement concepts, skills to basic problem solving situations with assistance • demonstrates some understanding of precision and estimation of measurement • uses manipulatives to find surface area, volume of rectangular prisms • uses models with assistance to explore the relationship of the volume of cone to cylinder, pyramid to prism, with the same base and height	• uses limited strategies for solving routine problems • has trouble with inferences, conjectures in relation to graphical data • has difficulty comprehending complex problems, choosing appropriate strategies, and articulating outcomes • solves problems using modeled processes but has difficulty applying variations of the processes	• is comfortable with simple representations of data; needs assistance to create, interpret complex data displays • has difficulty recognizing misuse of data • finds, explains experimentally probability of simple events; needs assistance determining theoretical outcomes • does not recognize appropriate uses of measures of central tendency	• selects operations and strategies, solving a variety of simple application problems using positive rational numbers with assistance • has difficulty explaining computational processes • needs assistance to apply ratio, proportion, percents • recognizes examples, models of operations with integers when demonstrated by others
Level I • exhibits minimal performance • shows very limited evidence of conceptual understanding and use of strategies • responds with inappropriate answer and/or procedure frequently • very often displays misunderstandings • rarely completes tasks appropriately and accurately • needs assistance, guidance and modified instruction	• uses rational numbers with limited accuracy • has difficulty using estimation techniques • does not grasp basic concepts of scientific and exponential notation, prime factorization, ratio, proportions, percent • has not mastered objectives from previous levels	• has considerable difficulty making constructions • does not see relationships between models and different views of a spatial figure • confuses integers, x and y axes on coordinate plane • has difficulty applying geometric concepts	• does not use patterns, relationships, concept of variables • makes frequent errors modeling simple equations • does not comprehend the procedures for evaluating algebraic expressions • formulates inappropriate problems for simple equations	• is unable to solve problems which utilize measurement concepts and skills • does not comprehend precision as it relates to measurement • does not understand concept of surface area, volume • does not recognize spatial figures and their relationships • cannot estimate volume within reasonable parameters	• needs teacher, peer assistance to successfully solve most problems • does not understand the relationship of a model to its problem frequently • is unable to make reasonable conjectures and inferences • exhibits little confidence when presented with a problem	• is successful with only simple data investigations • needs assistance to select, display, use data appropriately • conducts simple experiments, reports outcomes; has difficulty drawing conclusions • exhibits confusion with permutations, combinations	• has difficulty solving problems accurately • does not understand the concepts of ratio, proportion, percent • has difficulty relating models of operations with integers and their symbolic representation • does not know many number facts

NAME _____

Teacher Comments

Eighth Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation



Public Schools of North Carolina
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Student Name _____ ID # _____ Teacher's Name _____ School _____ Year _____

eighth grade observation matrix

Eighth Grade Observation Matrix for On-Going Assessment and End of the Year Evaluation

Performance Indicators	Numeration	Geometry	Pre-Algebra	Measurement	Problem Solving	Data	Computation
Level IV • consistent performance beyond grade level • works independently • understands advanced concepts • applies strategies creatively • analyzes and synthesizes • shows confidence and initiative • justifies and elaborates responses • makes critical judgements • makes applications and extensions beyond grade level • applies level III competencies in more challenging situations	• uses fractions and decimals interchangeably as fits the situation • uses and justifies the appropriate form of a number for the given situation • is equally comfortable using numbers in non-routine or unusual circumstances as in daily applications	• uses trigonometric relationships to solve problems with right triangles • uses deductive as well as inductive methods to describe triangle congruency, properties of lines, applications of geometry	• demonstrates extensive knowledge of geometric and numerical patterns • forms expressions or equations, substitutes, solves • recognizes nonlinear equations	• is confident in estimating answers, determining precision, checking for reasonableness • applies significant digits to real life situations • provides clear and precise articulation of measurements and calculations • devises formulas for surface area and volume of pyramids, prisms, cylinders, and cones	• explores different methods of solving problems; searches for alternative solutions • shows confidence and initiative in problem solving, using calculators and computers when appropriate • analyzes, synthesizes conjectures, arguments; uses deductive, inductive reasoning • intuitively goes beyond mathematics that has been taught	• collects, displays, and analyzes data involving two variables • identifies, explains factors which may influence results of investigations; suggests modifications	• consistently selects appropriate strategies and solves complex problems accurately using real numbers • applies and modifies mental math strategies to operations with real numbers
Level III (Proficient) • exhibits consistent performance • shows conceptual understanding • applies strategies in most situations • responds with appropriate answer or procedure • completes tasks accurately • needs minimal assistance • takes appropriate risks • makes applications and extensions • exhibits fluency • shows some flexibility in thinking • works with confidence • recognizes cause and effect relationships • can apply, model and explain concepts	• uses and justifies appropriate estimation techniques in meaningful situations • uses, defines laws of exponents; writes expressions in equivalent forms • uses scientific notation to express whole numbers, numbers less than one; uses calculator appropriately • uses a calculator to investigate irrational numbers • describes the properties of terminating, repeating, and non-repeating decimals • uses the number line to describe absolute value • uses numbers in an accurate and appropriate manner	• uses the Pythagorean Theorem • solves problems related to similar figures using indirect measures • models triangle congruency • solves problems relating geometric concepts to real world situations • draws 3-D figures from different perspectives • graphs transformations in all quadrants on a coordinate plane • models relationships created by transversals cutting parallel lines	• uses geometric, numerical patterns, algebraic methods to solve problems with rational numbers • uses, explains properties with variables • analyzes data with tables, graphs, verbal rules, equations • produces, graphs, ordered pairs from equations	• estimates answers, determines precision, checks reasonableness of results • determines the number of significant digits and the greatest possible error in measurement situations • selects appropriate unit, tool to measure based upon accuracy required, nature of problem • determines the surface area and volume of pyramids, prisms, cylinders, and cones with and without models • explores effects on plane, solid figures when dimensions are changed	• uses an organized approach and a variety of strategies to solve increasingly complex non-routine problems • uses calculators and computers when appropriate in problem solving • uses deductive, inductive reasoning to make, evaluate conjectures, arguments • investigates open-ended problems, formulates questions, and extends the problem solving process • represents situations verbally, numerically, graphically, geometrically, or symbolically • uses proportional reasoning	• designs investigations, collects data, chooses most appropriate display, interprets results, draws conclusions with respect to original question • finds, uses experimental, theoretical results to make predictions, decisions • evaluates arguments; investigates bias • recognizes appropriateness, inappropriations of data presented in real-life contexts	• selects (justifying the selection) appropriate operations, strategies, and methods of solving problems using real numbers • applies the laws of exponents and solves problems in meaningful situations • consistently computes accurately with and without a calculator • uses mental math strategies without prompting
Level II • exhibits inconsistent performance and misunderstandings at times • shows some evidence of conceptual understanding • has difficulty applying strategies in unfamiliar situations • responds with appropriate answer or procedure sometimes • occasionally completes tasks appropriately and accurately • requires teacher guidance frequently • needs additional time, opportunities • demonstrates some level III competencies but is inconsistent	• can give examples of irrational numbers but may not be able to explain • identifies terminating, repeating, and non-repeating decimals • demonstrates limited understanding of the relationship between absolute value and number line • gives examples to illustrate types of numbers; unable to explain underlying concepts • applies estimation techniques inconsistently	• solves problems dealing with similar figures with setup assistance • needs assistant reading or drawing views of 3-D figures applying Pythagorean Theorem, describing attributes of congruence, generalizing relationships among angles formed by parallel lines • describes, makes transformations, graphs on coordinate plane with some errors	• evaluates expressions with specific directions • analyzes simple data sets • solves whole number equations algebraically	• estimates answers with some understanding of reasonableness of results • determines with assistance effect on plane, solid figures when dimension is changed • evaluates surface area and volume of pyramids, prisms, cylinders, and cones with the aid of a calculator and formulas • shows some understanding of inaccuracies in measurement	• uses a limited number of strategies to solve problems • suggests reasonable conjectures and arguments with some teacher guidance • investigates open-ended problems, but has difficulty formulating questions and extending the problem solving process • represents situations in a limited number of ways • solves problems involving proportions by creating and extending patterns	• demonstrates understanding of on-grade level competencies but is inconsitent, often lacking attention to detail, when completing experiments, investigations • states obvious conclusions; overlooks other factors in explanations	• uses the laws of exponents but with some difficulty and errors • with assistance solves problems using real numbers • uses a limited number of mental math strategies • makes errors in computing (sometimes with process and sometimes with facts)
Level I • exhibits minimal performance • shows very limited evidence of conceptual understanding and use of strategies • responds with inappropriate answer and/or procedure frequently • very often displays misunderstandings • rarely completes tasks appropriately and accurately • needs assistance, guidance and modified instruction	• cannot translate numbers from one form to another • has an incomplete understanding of the number system as demonstrated by many inaccuracies • uses estimation techniques inaccurately • performs similar to students in earlier grades	• applies Pythagorean Theorem with specific step-by-step guidance • has difficulty relating verbal, written descriptions to graphical representations • has minimal understanding of middle grades geometric concepts; needs assistance when applying formulas	• needs additional experiences prior to formal algebra • graphs ordered pairs; little understanding of relationships • has little understanding of concept of variables	• estimates the answer without understanding • determines significant digits occasionally • has difficulty using measurement tools, reporting results accurately • confuses surface area, volume of solid figures	• uses a calculator to solve routine problems • needs modified instruction to investigate questions and to solve many problems • has difficulty representing problem situations or making reasonable conjectures and arguments; lacks confidence in own abilities	• makes frequent errors in data investigations when working independently • has not yet mastered objectives in earlier grade levels	• has difficulty using exponential notation • has difficulty setting up problems • makes frequent errors in computation • does not know many number facts • rarely use mental math strategies

NAME _____

Teacher Comments

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