

**Scranton School District
Planned Course
Mathematics**

Unit: 3rd Grade

Standards	Skills/Knowledge	Suggested Activities	Assessment
2.1 Numbers, Number Systems and Number Relationships	<p>A. Count using whole numbers (to 10,000) and by 2's, 3's, 5's 10's, 25's and 100's.</p> <p>B. Use whole numbers and fractions to represent quantities.</p>	<ol style="list-style-type: none"> 1. Use manipulatives to make and count groups of 2's, 3's, 5's 10's, 25's and 100's. 2. Practice skip counting aloud. 3. Use a hundred's board to mark numbers by 2's, 3's, 5's 10's, and 25's. <ol style="list-style-type: none"> 1. Use manipulatives (fraction pies, egg carton sections, etc.) to demonstrate fractions and wholes. 2. Illustrate fractions, wholes and mixed numbers. 3. Use illustrations to write corresponding fractions in numeric terms. 4. Call a group of children to the front of the room and have the class list fractions to describe them. (Ex. fractions to describe how many girls, boys, blue shirts, white shirts, etc.) 	<ul style="list-style-type: none"> • Observation • Class participation • Board work • Tests and worksheets • Discussion • Student journaling • Performance assessment

Standards	Skills/Knowledge	Suggested Activities	Assessment
2.1 Numbers, Number Systems and Number Relationships – Con't.	<p>C. Represent equivalent forms of the same number, through the use of concrete objects, drawings, word names and symbols.</p> <p>D. Use drawings, diagrams, and models to show the concept of a fraction as part of a whole.</p> <p>E. Count, compare and make change using a collection of coins and one dollar bills.</p>	<ol style="list-style-type: none"> 1. Use manipulatives (fraction pies, egg carton sections, etc.) to show equivalent fractions. 2. Use rulers to explore equivalent fractions ($1/2$ foot = $6/12$ of a foot, etc.). 3. Draw equivalent fraction of pizza pies. <ol style="list-style-type: none"> 1. Illustrate and color a picture according to fractions given in directions. (ex. draw 12 flowers and color $1/2$ blue, $1/4$ red, and $1/4$ yellow). <ol style="list-style-type: none"> 1. Use play money at the “class store”. Find total for goods bought and subtract to find the correct change. 2. Play “dollar dash”. Small groups spin a spinner and collect the amount of money shown. Trade coins with the bank throughout the game. (2 dimes and a nickel for a quarter). The first one able to trade in their coins for a dollar bill wins the game. 3. Use different coins to show equivalent values. (Ex. Show how you can make 37 cents in 4 different ways. 	Con't.

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2.1 Numbers, Number Systems and Number Relationships – Con't.	<p>F. Apply number patterns (even and odd) and compare values of numbers on the hundred board.</p> <p>G. Use concrete objects to count, order and group.</p> <p>H. Demonstrate understanding of one – to – one correspondence</p> <p>I. Apply place-value concepts and numeration to counting, ordering and grouping.</p>	<ol style="list-style-type: none"> 1. Use a hundreds chart to shade the even or odd numbers. 2. Use a hundreds board to add or subtract by tens moving vertically on the chart. 3. Skip count using even or odd numbers. <ol style="list-style-type: none"> 1. Use manipulatives (beans, macaroni, counters, etc.) to count and group by tens. 2. Use 10 beans to glue on craft sticks. Use the sticks to count by 10's. 3. Bundle 10 sticks to show the value of 100. <ol style="list-style-type: none"> 1. Use manipulatives to count aloud to a given number. <ol style="list-style-type: none"> 1. Use a place-value mat with a hundreds, tens and ones column to demonstrate value. Demonstrate a given number by putting the correct amount of chips in each column. 	Con't.

Standards	Skills/Knowledge	Suggested Activities	Assessment
2.2 Numbers, Number Systems and Number Relationships – Con't.	<p>J. Estimate approximate, round or use exact numbers as appropriate.</p> <p>K. Describe the inverse relationship between addition and subtraction.</p> <p>L. Demonstrate knowledge of basic facts in four basic operations.</p>	<ol style="list-style-type: none"> 1. Estimate the number of candies in a jar. Count to find actual amount. 2. Round numbers to the nearest ten or hundred in order to estimate answers to addition and subtraction problems. <ol style="list-style-type: none"> 1. Use manipulatives to demonstrate addition. Then use them to show the inverse subtraction problem. 2. Write fact families for given numbers. <ol style="list-style-type: none"> 1. Use flashcards to practice basic facts. 2. Use computer games to practice basic facts. 	Con't.

Standards	Skills/Knowledge	Suggested Activities	Assessment
2.3 Computation and Estimation	<p>A. Apply addition and subtraction situations using concrete objects.</p> <p>B. Solve single and double-digit addition and subtraction problems with regrouping in vertical form.</p> <p>C. Demonstrate concept of multiplication as repeated addition and arrays.</p> <p>D. Demonstrate concept of division as repeated subtraction and sharing.</p>	<p>1. Use base ten blocks, counters, beans, etc. to demonstrate addition and subtraction.</p> <p>1. Use base ten blocks to demonstrate regrouping in addition and subtraction.</p> <p>2. Complete problems using regrouping. Discuss why regrouping was necessary.</p> <p>3. Play “buzz” where teacher purposely makes a mistake at the board. The class needs to buzz and explain where the teacher’s mistake is.</p> <p>1. Use manipulatives to create arrays and groups to demonstrate multiplication tables.</p> <p>2. Write repeated addition problems to correspond with given times tables (Ex. 3×5, $5+5+5$).</p> <p>1. Divide manipulatives into groups to demonstrate division facts.</p> <p>2. Write a repeated subtraction problem to correspond with division facts. ($20/5$, $20 - 5 - 5 - 5 - 5 = 0$).</p>	<ul style="list-style-type: none"> • Observation • Class participation • Board work • Tests and worksheets • Discussion • Student journaling • Performance assessment

Standards	Skills/Knowledge	Suggested Activities	Assessment
2.2 Computation and Estimation – Con't.	<p>E. Use estimation skills to arrive at conclusions.</p> <p>F. Determine the reasonableness of calculated answers.</p> <p>G. Explain addition and subtraction algorithms with regrouping.</p>	<p>1. Estimate the number of candies in a jar.</p> <p>2. Estimate how long it will take to complete a given task.</p> <p>3. Round numbers in order to solve problems.</p> <p>1. Use a “reasonable check” as a final step in completing word problems. (Does the answer make sense?)</p> <p>2. Create and solve word problems. Check the reasonability of the answer.</p> <p>1. Use manipulatives (base ten blocks, bean sticks, etc.) to demonstrate regrouping.</p>	Con't.

Standards	Skills/Knowledge	Suggested Activities	Assessment
2.3 Measurement and Estimation	<p>A. Compare measurable characteristics of different objects on the same dimensions. (time, temperature, area, length, weight, capacity, perimeter).</p> <p>B. Determine the measurement of objects with non-standard (e.g. U.S. customary and metric) units.</p> <p>C. Determine and compare elapsed times.</p> <p>D. Tell time (analog and digital) to the minute.</p>	<p>1. Measure objects using various units of measurement (inches, centimeters, feet, lbs, kg., etc.)</p> <p>1. Use blocks, paper clips and other manipulatives as non-standard measurement tools.</p> <p>2. Use various standard measurement tools to measure objects. (rulers, yardsticks, tape measures, volume containers, scales, etc.).</p> <p>1. Use clocks to demonstrate elapsed time.</p> <p>2. Have students put their clock hands on a given starting time. Tell them the elapsed time, and have them put their clock hands on the ending times.</p> <p>1. Use standard clocks and digital clocks to read given times.</p>	<ul style="list-style-type: none"> • Observation • Class participation • Board work • Tests and worksheets • Discussion • Group work

Standards	Skills/Knowledge	Suggested Activities	Assessment
2.3 Measure and Estimation – Con't.	<p>E. Determine appropriate unit of measure.</p> <p>F. Use concrete objects to determine area and perimeter.</p> <p>G. Estimate and verify measurements.</p> <p>H. Demonstrate that a single object has attributes that can be measured in different ways (e.g. length, mass/weight, time, area, temperature, capacity, perimeter).</p>	<p>1. Choose the best unit of measure to measure a given object (Ex. Would you measure an elephant using inches or feet?).</p> <p>1. Use a hundreds block. Count all of the squares to find the area, count outside squares to find the perimeter.</p> <p>2. Use graph paper to draw objects with a given area or perimeter.</p> <p>1. Estimate measurements of various classroom objects (blackboard, desk, chalk, etc.). Measure to check accuracy of estimate.</p> <p>1. Use various concrete objects found in the classroom (chalkboard, desk, chair, floor), and measure to find attributes such as height, width, perimeter, weight, volume, (where applicable).</p>	Con't.

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2.4 Mathematical Reasoning and Connections	<p>A. Make, check and verify predictions about quantity, size and shape of objects and groups of objects.</p> <p>B. Use measurements to determine the geography of the school building.</p>	<ol style="list-style-type: none"> 1. Guess the number of objects in a given container and count to verify the prediction. (Ex. How many gumballs are in the jar?). 2. Estimate the length of various objects in the classroom (erasers, chalkboard, desk, books, etc.). Measure these objects with a ruler or tape measure to verify response. 3. Predict the next logical shape in a given pattern. (Ex. circle, square, triangle, circle, square, _____). <ol style="list-style-type: none"> 1. Use a trundle wheel to measure the dimensions of the school 2. Map the building to scale using graph paper. 	<ul style="list-style-type: none"> • Observation • Class participation • Board work • Tests and worksheets • Student journaling • Performance assessment

Standards	Skills/Knowledge	Suggested Activities	Assessment
2.5 Mathematical Problem Solving and Communication	<p>A. Use appropriate problem solving strategies such as guess and check and work backwards.</p> <p>B. Determine when sufficient information is present to solve a problem and explain.</p> <p>C. Select and use an appropriate method, materials and strategies to solve problems, including mental math, paper and pencil, and concrete objects.</p>	<p>1. Complete word problems involving mixed applications.</p> <p>2. Use “act out” as a strategy.</p> <p>3. Use manipulatives to demonstrate the understanding of word problems.</p> <p>1. Student will journal the steps used to solve problems.</p> <p>2. Class discussion of the steps in how to solve a problem.</p> <p>3. Provide yes or no options if enough information is present to solve a problem.</p> <p>1. In small groups, students will discuss appropriate method to solve a given problem. Demonstrate using manipulatives.</p>	<ul style="list-style-type: none"> • Observation • Class participation • Board work • Tests and worksheets • Discussion • Student journaling • Performance assessment

Standards	Skills/Knowledge	Suggested Activities	Assessment
2.6 Statistics and Data Analysis	<p>A. Gather, Organize and display data, using pictures, tallies, charts, bar graphs and pictographs.</p> <p>B. Formulate and answer questions based on data shown on graphs.</p> <p>C. Predict the likely number of times a condition will occur based on analyzed data.</p> <p>D. Form and justify an opinion on whether a given statement is reasonable based on comparison data.</p>	<p>1. Count tallies, record on student worksheet.</p> <p>2. Design and conduct a student survey.</p> <p>1. BAG IT – Students will put colored counters in a bag, and determine which color will be pulled most often. Record results.</p> <p>1. Pair students, use a penny. Predict the outcome, flip 50 times. Tally and graph results.</p>	<ul style="list-style-type: none"> • Observation • Class participation • Board work • Tests and worksheets • Discussion • Student journaling • Performance assessment

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2.7 Probability and Predictions	<p>A. Predict and measure the likelihood of events and recognize that the results of an experiment may not match predicted outcomes.</p> <p>B. Design a fair and unfair spinner.</p> <p>C. List and graph the possible results of an experiment.</p> <p>D. Analyze data using the concepts of largest, smallest, most often, least often, and middle.</p>	<p>1. Have students work in groups to count how many of each color are present in a bag of m and m's. Have them put the candy back in the bag and predict which candy they are likely to pick based on the information collected. Record results.</p> <p>1. Create a spinner where colors appear on an even number of times. (Ex. 2 red spots, 2 green spots, and 2 blue spots).</p> <p>2. Create a spinner where certain colors appear unevenly. (Ex. one red, 2 greens, and 3 blues).</p> <p>1. Create a bar graph to show the results of the spinner experiments indicating how often colors were spun on each spinner.</p> <p>2. Create a pie chart to show the results of the m and m experiment.</p> <p>1. Use a variety chart and table to interpret data.</p> <p>2. Create charts to track weekly weather, list favorite sports, hobbies, pets, ice cream flavors, etc.</p>	<ul style="list-style-type: none"> • Observation • Class participation • Board work • Tests and worksheets • Discussion • Student journaling • Performance assessment

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2.8 Algebra and Functions	<p>A. Recognize, describe, extend, create, and replicate a variety of patterns including attribute, activity, number, and geometric patterns.</p> <p>B. Use concrete objects and trial and error to solve number sentences and check if solutions are sensible and accurate.</p> <p>C. Substitute a missing addend in a number sentence.</p>	<p>1. Extend a given pattern , by drawing the correct shapes. (Ex. circle, circle, square, _____, _____, _____).</p> <p>2. Predict the next number in a given sequence, and explain the relationship between the numbers. (Ex. 1, 4, 7, 10, 13, __. *adding 3).</p> <p>1. Use manipulatives such as buttons, chips, etc., to solve number sentences.</p> <p>2. Use the “guess and check” method to solve number problems. (Ex. two numbers have a sum of 11, and a difference of 1. What are the numbers?) Try various numbers until you find ones that fit both equations. (5 and 6).</p> <p>1. Use manipulatives to help find missing addends. (Ex. $3 + \underline{\quad} = 7$) Put out three counters. See how many more you need to put out to make seven.</p> <p>2. Use subtraction to find missing addends. (Ex. $3 + \underline{\quad} = 7$, and $7 - 3 = 4$). Therefore the missing addend is 4.</p>	<ul style="list-style-type: none"> • Class participation • Discussion • Evaluation of journals • Observation • Board work • Tests

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2.8 Algebra and Functions – Con't.	<p>D. Create a story to match a given combination of symbols and numbers.</p> <p>E. Use concrete objects and symbols to model the concept of variables, expressions, equations and inequalities.</p> <p>F. Explain the meaning of solutions and symbols.</p> <p>G. Gather information and display it in the form of a table or chart.</p>	<p>1. Create a story problem to correspond with a given addition, subtraction, multiplication or division fact. Switch papers with a partner to solve each other's problems.</p> <p>1. Have a "sill word of the day" stand for a variable in a given number sentence. (Ex. hotdog + 4 = 7. What number does the word hotdog stand for?)</p> <p>1. Use journals to write about how to solve a given problem. Have students write about their thought process throughout the problem.</p> <p>1. Survey the class to find information such as favorite vacation spots, ice cream flavors, pets, etc. Display the given information on bar graphs, pie charts, line graphs, etc.</p>	Con't.

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2.8 Algebra and Functions – Con't.	<p>H. Describe and interpret the data shown in tables and charts.</p> <p>I. Demonstrate simple function rules.</p> <p>J. Analyze simple functions and relationships and locate points on a simple grid.</p>	<p>1. Create a chart and switch with a partner. Have the partner interpret and describe the information found on the chart.</p> <p>1. Create a grid using chart paper. Number the chart across the bottom and use letters down the sides. Students can draw pictures at given locations. (Ex. draw a star at D7).</p> <p>2. Switch charts with a partner and have the partner and have the partner label the points where the symbols are drawn.</p>	Con't.

Standards	Skills/Knowledge	Suggested Activities	Assessment
2.9 Geometry	<p>A. Name and label geometric shapes in two and three dimensions (circle/sphere, square/ cube, triangle/ pyramid, rectangle/prism).</p> <p>B. Build geometric shapes using concrete objects (manipulatives).</p> <p>C. Draw tow and three-dimensional geometric shapes and construct rectangles, squares and triangles on the geoboard and on graph paper satisfying specific criteria.</p> <p>D. Find and describe geometric figures in real life.</p>	<ol style="list-style-type: none"> 1. Use 2 and 3 D shapes – match similar shapes to given words. 2. Explain how a square is different from a cube, a circle/ sphere, triangle/pyramid, and rectangle/prism. <ol style="list-style-type: none"> 1. Use pattern blocks or color tiles to recreate given picture. 2. Create a tangram. 3. Construct geometric shapes using paper templates. <ol style="list-style-type: none"> 1. Use rubber bands and geoboard to make given shapes. 2. On computer program, create 2 and 3D shapes. <ol style="list-style-type: none"> 1. Show pictures of pyramid, pentagon, Washington Monument, etc. 2. Find objects in classroom to identify as 2 or 3D. 3. Use <u>Sage Kit</u> to identify geometric shapes. 	<ul style="list-style-type: none"> • Observation • Class participation • Board work • Tests and worksheets • Discussion • Student journaling • Performance assessment

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2.9 Geometry – Con't.	<p>E. Identify and draw lines of symmetry in geometric figures.</p> <p>F. Identify symmetry in nature.</p> <p>G. Fold paper to demonstrate the reflections about a line.</p> <p>H. Show relationships between and among figures using reflections.</p> <p>I. Predict how combining them or dividing them can change shapes.</p>	<p>1. Cut pictures from magazines, paste them on paper and trace line of symmetry.</p> <p>2. Trace a symmetrical shape, have a partner draw the line of symmetry.</p> <p>1. Discuss objects in nature that have symmetry. (e.g. human face, body, butterflies.)</p> <p>1. Fold paper in half – Trace on fold and cut. Identify line of symmetry.</p> <p>1. Place $\frac{1}{2}$ symmetrical figure or pattern against a mirror along its line of symmetry. Reflections show the other half.</p> <p>1. Rotate and invert tangram to create new shape.</p>	Con't.

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2.10 Trigonometry	<p>A. Identify right angles in the environment.</p> <p>B. Model right angles and right triangles using concrete objects.</p>	<p>1. Find objects in classroom with right angles (e.g. desk, paper, chalkboard, door).</p> <p>2. Technology – Use Math Carnival Countdown</p> <p>1. Create right angles using toothpicks, geoboard, Q-tips.</p>	<ul style="list-style-type: none"> • Observation • Class participation • Board work • Tests and worksheets • Discussion • Student journaling • Performance assessment

Standards	Skills/Knowledge	Suggested Activities	Assessment
2.11 Concepts of Calculus	<p>A. Identify whole number quantities and measurements from least to most and greatest value.</p> <p>B. Identify least and greatest values represented in bar graphs and pictographs.</p> <p>C. Categorize rates of change as faster and slower.</p> <p>D. Continue a pattern of numbers or objects that could be extended to infinity.</p>	<ol style="list-style-type: none"> 1. Put given numbers in order to form least to greatest and greatest to least. 2. Plot given numbers in the correct location on a number line. <ol style="list-style-type: none"> 1. On a computer, show vertical and horizontal bar graphs to show data. 2. Use frequency tables to show how often something happens. 3. Convert a pictograph to a bar graph and vice versa. <ol style="list-style-type: none"> 1. Use miles per hour to determine the faster and slower time between tow points. <ol style="list-style-type: none"> 1. Skip count by 2's and 10's. 2. Use shapes to create repeated geometric patterns. (circle, circle, square, circle, circle, square). 3. continue a pattern in which a given number is continually added to each new number. (Ex. 2, 6, 10, 14, 18, 22, 26. $*+4$) 	<ul style="list-style-type: none"> • Observation • Class participation • Board work • Tests and worksheets • Discussion • Student journaling • Performance assessment

