

**TOWNSHIP OF FRANKLIN PUBLIC SCHOOLS  
MATHEMATICS CURRICULUM  
GRADE 4**

SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>NUMBER SENSE</b>	Students will be able to: <ul style="list-style-type: none"> <li>• explore the concept of a million.</li> </ul>	<ul style="list-style-type: none"> <li>• Play a song for one minute. Students write as many numbers as they can, starting with 1 and continuing in order until music stops.</li> <li>• Display a hundreds place value model. Place models on top of the first one until you have 1,000.</li> </ul>	<ul style="list-style-type: none"> <li>• Tape</li> <li>• Cassette Player</li> <li>• Place-Value Models.</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	<u>By the end of Grade 4</u> 4.1      A.1
<b>NUMBER SENSE</b>	<ul style="list-style-type: none"> <li>• count, read, and write whole numbers through 999,999,999.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide students with place-value charts through hundred thousands. Give students number riddles to solve. For example: I am a 5 digit number; the sum of my digits is 20; the value of my thousands digit is 1,000; my ten-thousands digit is 3 more than my thousands digit and 2 more than my ones digit; my tens digit is one less than my hundreds digit. Who am I? (41,762)</li> </ul>	<ul style="list-style-type: none"> <li>• Place-Value Charts</li> <li>• Counters</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Answers to Riddles</li> <li>• Assignments</li> </ul>	4.1      A.1,2,3
<b>NUMBER SENSE</b>	<ul style="list-style-type: none"> <li>• compare and order whole numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Distribute 9 tens models and a ones model. Students each make up a number with their models and compare with other students' models to find the greater and lesser numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Place-Value Models (tens, ones)</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1      A.6

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<b>NUMBER SENSE</b>	Students will be able to: <ul style="list-style-type: none"> <li>• identify the four steps in a problem solving process.</li> </ul>	<ul style="list-style-type: none"> <li>• Pass out one index card to each student. Ask students to think about what steps are needed to make an apple pie. Each student writes one step. Compare steps and construct a chart based on these steps. Do this same process for the steps needed to solve a problem (Read, Plan, Solve, Look Back).</li> </ul>	<ul style="list-style-type: none"> <li>• Index Cards</li> <li>• Chart Paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.4
<b>NUMBER SENSE</b>	<ul style="list-style-type: none"> <li>• round whole numbers and money amounts through millions.</li> </ul>	<ul style="list-style-type: none"> <li>• Write a number line on the board for students to copy. The line should be from 1-100, with multiples of 10 circled. Have students take a handful of counters and decide which circled numbered of counters is closest to.</li> <li>• Have students should the number 342 using place-value models. Students can determine whether they should round up or down by counting the number of tens in the model.</li> </ul>	<ul style="list-style-type: none"> <li>• Counters</li> <li>• Place Value Models</li> <li>• Place-Value Charts</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.2
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>• make a table to organize data and solve a problem.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide each small group of students with a handful of red, white, blue, and yellow connecting cubes. Have students organize the cubes so that they are easy to count. Discuss how they organized cubes.</li> <li>• Display pictures of 3 types of fish. Have students survey the class as to the fish they would choose for a class aquarium and display the results in a chart.</li> </ul>	<ul style="list-style-type: none"> <li>• Connecting cubes (red, blue, yellow)</li> <li>• Pictures of 3 types of fish</li> <li>• Chart Paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4    A.1 4.5    A.1

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<b>NUMBER SENSE</b>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>count coins and bills to find money amounts and make change.</li> </ul>	<ul style="list-style-type: none"> <li>Write several dollar and coin amounts on the board: \$0.69; \$0.87, \$1.38; \$3.52. Have pairs of students use bills and coins to model the amounts.</li> <li>Have students look through newspapers to find prices of things less than \$10.00. Pairs of students can practice buying items and making change.</li> </ul>	<ul style="list-style-type: none"> <li>Play money (bills &amp; coins)</li> <li>Newspapers</li> </ul>	<ul style="list-style-type: none"> <li>Teacher observation</li> <li>Assignment</li> </ul>	4.1 B.6
<b>NUMBER SENSE</b>	<ul style="list-style-type: none"> <li>use negative numbers to represent situations; compare negative numbers</li> </ul>	<ul style="list-style-type: none"> <li>Display a thermometer. Have students point to zero, 5 below zero, 15 below zero.</li> <li>Have students brainstorm real life examples that might show a negative number (items lost, temperatures, depth below surface).</li> <li>Provide students with positive and negative number cards. Have students line up cards according to value.</li> </ul>	<ul style="list-style-type: none"> <li>Thermometer</li> <li>Number Cards</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.1 A.7
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>analyze data and make decisions.</li> </ul>	<ul style="list-style-type: none"> <li>Have students look through grocery store advertisements to find examples of the cost of 5-, 10-, and 20-pound bags of dog food. Have students make a chart to determine the best buy.</li> </ul>	<ul style="list-style-type: none"> <li>Chart Paper</li> <li>Grocery Advertisements</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.4 A.1

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>MEASUREMENT</b>	Students will be able to: <ul style="list-style-type: none"> <li>• apply place value to investigate science concepts.</li> </ul>	<ul style="list-style-type: none"> <li>• Pair students and have them answer these questions using numbers. What is your height? What is your shoe size? How long is your arm? How far can you jump?</li> </ul>	<ul style="list-style-type: none"> <li>• Ruler</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.2 D.1 4.5 C.3
<b>NUMBER SENSE</b>	<ul style="list-style-type: none"> <li>• use addition properties.</li> </ul>	<ul style="list-style-type: none"> <li>• Have pairs of students work together to model basic addition facts with variables. One student puts 1 to 9 counters in a cup and shows a group of 1 to 9 remaining counters. The student tells how many counters in all. The partner tells how many counters are in the cup.</li> </ul>	<ul style="list-style-type: none"> <li>• Counters, Cup</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 B.1
<b>NUMBER SENSE</b>	<ul style="list-style-type: none"> <li>• add multiples of 10, 100, and 1,000.</li> </ul>	<ul style="list-style-type: none"> <li>• Have student use place-value models to show <math>4 + 3</math>; <math>4 + 30</math>; <math>400 + 300</math>; <math>4,000 + 3,000</math>; etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Place-Value Models</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 B.1
<b>NUMBER SENSE</b>	<ul style="list-style-type: none"> <li>• add two or more whole numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Distribute place-value models for hundreds, tens, and ones to pairs of students. Write <math>428 + 287</math> on the chalkboard. Have students model the addition, using place value models.</li> </ul>	<ul style="list-style-type: none"> <li>• Place-Value Models</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 B.3,4

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<b>MENTAL MATH &amp; ESTIMATION</b>	Students will be able to: <ul style="list-style-type: none"> <li>• use mental math strategies to add.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students model the addends <math>37 + 59</math>. Have them add 1 ones model to 59 and exchange the 10 ones for 1 ten. Then take 1 one block away from 37 to make 36. Repeat using different numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Tens and Ones Place-Value Models</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 C.2
<b>MENTAL MATH &amp; ESTIMATION</b>	<ul style="list-style-type: none"> <li>• estimate sums up to 6 digit numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students model 46 as a group of 4 tens and 6 ones using place-value models. Have them round to the nearest ten.</li> <li>• Write the following on the board: <math>3,289 + 4,517</math>. Have students circle digits that they would look at when rounding each number. Then have them give an estimated sum. Repeat with different numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Place-Value Models</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 C.1
<b>MENTAL MATH &amp; ESTIMATION</b>	<ul style="list-style-type: none"> <li>• form conclusions about whether to estimate or find an exact answer.</li> </ul>	<ul style="list-style-type: none"> <li>• Students work in pairs, with one student writing a problem where the answer is an exact sum. The other writes a problem where the answer can be an estimated sum. Repeat, switching roles.</li> </ul>	<ul style="list-style-type: none"> <li>• Paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 C.3

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<b>NUMBER SENSE</b>	Students will be able to: <ul style="list-style-type: none"> <li>• subtract multiples of 10, 100, and 1,000.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students use place-value models to model 12-9; 120-90; 1,299-900. Have students show these models on grids.</li> </ul>	<ul style="list-style-type: none"> <li>• Place-Value Models</li> <li>• Grids</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    B.2
<b>NUMBER SENSE</b>	<ul style="list-style-type: none"> <li>• subtract whole numbers of up to 6 digit numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide students with spinners numbered from 1 to 9. One student spins a 2 digit number and models it with place value models. The second spins a 1 digit number. Together both students try to subtract the second from the first. Repeat.</li> <li>• Provide pairs of students with 3 to 4 number cubes. Have students take turns rolling 3 or 4 digit numbers, subtracting the lower number from the higher one.</li> <li>• Allow students to use place-value models to practice exchanging 10 hundreds for 1 thousand; 10 tens for 1 hundred; and 10 ones for 1 ten. Then have them subtract one number from another such as 347 from 500.</li> </ul>	<ul style="list-style-type: none"> <li>• Spinners</li> <li>• Place-Value Models</li> <li>• Number Cubes</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    B.2
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• write a number sentence to solve a problem.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students write a number sentence to solve this problem. Walter has saved \$28; he wants to buy a new baseball glove for \$43. How much more money does he need? (<math>\\$28 + M = \\$43</math>; <math>\\$43 - \\$28 + M</math>). Have students use play money to solve the problem.</li> </ul>	<ul style="list-style-type: none"> <li>• Paper</li> <li>• Play Money</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.5    A.1,5

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<b>MENTAL MATH &amp; ESTIMATION</b>	Students will be able to: <ul style="list-style-type: none"> <li>• use mental math and strategies to subtract.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students model 789 with place-value models. Show them a zig zag way to subtract 347. Have them remove 3 hundreds, then subtract 4 tens and then subtract 7 ones.</li> <li>• Have partners name 3 digit estimated numbers as differences. Have them write as many problems as they can that give the same estimated differences.</li> </ul>	<ul style="list-style-type: none"> <li>• Place-Value Models</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    B.7
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>• analyze data and make decisions.</li> </ul>	<ul style="list-style-type: none"> <li>• Use play money to show this amount: \$2.29. Tell students that this is the cost of a school lunch. Show much would 2 lunches cost? 5 lunches? 10 lunches?</li> </ul>	<ul style="list-style-type: none"> <li>• Play Money</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4    A.1
<b>GENERAL NATURE &amp; USE OF MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• apply addition and subtraction to investigate science concepts.</li> </ul>	<ul style="list-style-type: none"> <li>• Students work in groups. They place a magnet in a pile of paper clips. They count the paper clips that hang from the magnet. Record. Repeat after wrapping the magnet in paper (record); then in foil (record); then in tape (record). Compare the results and discuss.</li> </ul>	<ul style="list-style-type: none"> <li>• Magnet</li> <li>• Paper Clips</li> <li>• Paper</li> <li>• Foil</li> <li>• Tape</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    B.1,4 4.5    C.3

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<b>TELLING TIME</b>	Students will be able to: <ul style="list-style-type: none"> <li>• tell time to the nearest minute.</li> </ul>	<ul style="list-style-type: none"> <li>• Invite students to show times of various activities they do such as waking up, going to school, eating dinner, going to bed, and so on. Ask students to say the time and write the time.</li> </ul>	<ul style="list-style-type: none"> <li>• Analog Clock or Non-digital Clock</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.2 D.5
<b>TELLING TIME</b>	<ul style="list-style-type: none"> <li>• find and use elapsed time.</li> </ul>	<ul style="list-style-type: none"> <li>• Use an analog clock or non-digital clock to show how the hour and minute hands move when time passes. Start by showing 11:00; move the minute hand on full hour. Ask students how much time has passed. Continue in this matter until several hours have passed. Repeat this procedure, demonstrating elapsed time for half hour intervals and for five minute intervals.</li> </ul>	<ul style="list-style-type: none"> <li>• Analog Clock or Non-digital Clock</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.2 D.5
<b>MEASUREMENT</b>	<ul style="list-style-type: none"> <li>• use a calendar and ordinal numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Display a calendar for the current year. Have students circle the dates of their birthdays. Then have them make a tally chart to show on what days of the week all of the birthdays fall.</li> </ul>	<ul style="list-style-type: none"> <li>• Yearly Calendar</li> <li>• Construction Paper</li> <li>• Ruler</li> <li>• Markers</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.2 D.1

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<b>COLLECTION &amp; USE OF DATA</b>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>use tallies and line plots to collect and organize data.</li> </ul>	<ul style="list-style-type: none"> <li>Have students roll the number cube 20 times and record the number on the cube each time.</li> <li>Draw a line across the board and write the numbers 1 to 12 below the line. Ask students to each come to the board and make an "X" above the number of the month in which they were born.</li> </ul>	<ul style="list-style-type: none"> <li>Number Cubes</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.4    A.1
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>find the range, median, and mode of a set of data.</li> </ul>	<ul style="list-style-type: none"> <li>Display a set of numbers as stacks of connecting cubes - 1, 4, 8, 6 cubes and so on. Have students identify the tallest and the shortest stack and move them close together to determine the range. Then have students group equal sized stacks to determine the biggest group (made) and arrange the stacks by size to find the median.</li> </ul>	<ul style="list-style-type: none"> <li>Connecting Cubes</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.4    A.2
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>identify information in problems as important, unimportant, missing or extra.</li> </ul>	<ul style="list-style-type: none"> <li>Write this information on the chalkboard: "Trains from Boston to New York leave every half hour. What is the cost of a round trip ticket?" Ask students what information is needed to solve the problem. Repeat using other problems.</li> </ul>	<ul style="list-style-type: none"> <li>Chalkboard</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.5    A.1

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<b>COLLECTION &amp; USE OF DATA</b>	Students will be able to: <ul style="list-style-type: none"> <li>• read and make pictographs and bar graphs.</li> </ul>	<ul style="list-style-type: none"> <li>• Give each student an index card and have them write their name on the card. Write the colors "Red," "Blue," "Yellow," "Green," "Orange," and "Purple" in a column on the board. Have students come to the board and tape their cards next to their favorite color. Discuss.</li> <li>• Have students construct a bar graph showing their peers' favorite colors.</li> </ul>	<ul style="list-style-type: none"> <li>• Index Cards</li> <li>• Construction Paper</li> <li>• Ruler</li> <li>• Crayons</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4    A.2
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>• read and make coordinate graphs.</li> </ul>	<ul style="list-style-type: none"> <li>• Assign letter values to the first student in each row of seats in the class starting with "A." Assign number values to each student in row A starting with number 1. Ask students who sit at the following coordinate points to stand up: C4, B6, A2, D3. Ask several students their location by coordinates.</li> </ul>		<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.2    C.1,2
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>• explore reading and making line graphs.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide students with centimeter graph paper. Have them label the X-axis and the Y-axis, and draw both from 1 to 10. Call out the coordinate pairs and have students mark a dot at each location: (2,5), (3,3), (7,3), (9,5), (3,8), (7,8).</li> <li>• Have students look through newspapers and magazines for examples of line graphs.</li> </ul>	<ul style="list-style-type: none"> <li>• Centimeter Graph Paper</li> <li>• Newspapers</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4    A.2

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<b>COLLECTION &amp; USE OF DATA</b>	Students will be able to: <ul style="list-style-type: none"> <li>• analyze data and make decisions.</li> </ul>	<ul style="list-style-type: none"> <li>• Write these activities in a table on the board: Hiking, Swimming, Biking, Boating. Have the students come to the board and place a tally mark next to their choice in the chart. Have the students organize this data in order from the most votes to the least votes. Ask students to take turns deciding how to use the time from 8:00 a.m. to 5:00 p.m. to do the greatest number of activities in order of preference.</li> </ul>	<ul style="list-style-type: none"> <li>• Chalkboard</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4    B.3
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>• apply time and data to investigate science concepts.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students work with partners. Time how long it takes to finish a puzzle. Record the data and repeat nine more times. Discuss the results.</li> </ul>	<ul style="list-style-type: none"> <li>• Puzzle Pieces</li> <li>• Timer</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.4    B.3 4.5    C.3
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• define multiplication.</li> </ul>	<ul style="list-style-type: none"> <li>• Give students sheets of centimeter graph paper. Have students represent 4 x 3 by using the graph paper as an array. Ask students to write the multiplication problem that the array represents on the figure. Repeat with different numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Centimeter Graph Paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    B.1

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<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	Students will be able to: <ul style="list-style-type: none"> <li>• review the properties of multiplication.</li> </ul>	<ul style="list-style-type: none"> <li>• Give students graph paper. Have them shade 1 row of 5 boxes, then 5 rows of 1 box. Discuss Commutative Property. Then have them shade 0 rows of 7 boxes. Discuss Zero Property.</li> </ul>	<ul style="list-style-type: none"> <li>• Graph Paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 B.1
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• multiply by 2, 3, 4 and 6.</li> </ul>	<ul style="list-style-type: none"> <li>• Practice skip-counting as a whole group. Group students according to the number that is being practiced in the skip-counting. Groups move forward as the entire class chants the skip-counting.</li> </ul>		<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 B.2
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• multiply by 5 and 10.</li> </ul>	<ul style="list-style-type: none"> <li>• Give students graph paper and have them circle 2 rows of 5 clocks. Directly below that tell students to circle 2 rows of 10 blocks. Ask students to find the product of <math>2 \times 5</math> and <math>2 \times 10</math>. Continue in this manner with other facts for 5 and 10. Use the drawings and products to show that facts for 10 are double the facts for 5.</li> </ul>	<ul style="list-style-type: none"> <li>• Graph Paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4 B.2
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• multiply by 7, 8, and 9.</li> </ul>	<ul style="list-style-type: none"> <li>• Ask students to use connecting cubes to model the strategies for these: <math>7 \times 5</math>; <math>8 \times 6</math>; <math>9 \times 5</math>. Have students make connecting cube trains to model <math>6 \times 5 + 5</math> to get <math>7 \times 5</math>. Continue with other multiplications.</li> </ul>	<ul style="list-style-type: none"> <li>• Connecting Cubes</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4 B.2

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>DISCRETE MATHEMATICS</b>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• make a judgement to decide the best operation to use.</li> </ul>	<ul style="list-style-type: none"> <li>• Display a train of connecting cubes in a train. Display another train of 9 connecting cubes. Ask students what they would do to find how many cubes in all. Repeat the procedure using a subtraction example.</li> </ul>	<ul style="list-style-type: none"> <li>• Connecting Cubes</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.1 B.1
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• review patterns in the multiplication table.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students shade grids to show <math>3 \times 3</math>, <math>5 \times 5</math>, <math>6 \times 6</math>. Tell students to use grids to find each product: 9, 25, 36. Use the graph paper to show that the product of 7 can only be formed with 1 row of 7 boxes. Give students other prime numbers and challenge them to draw as many grids as they can.</li> </ul>	<ul style="list-style-type: none"> <li>• Graph Paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 B.2
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• find the product of three factors.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students use counters to model <math>3 \times 2 \times 4</math>; <math>2 \times 9 \times 4</math>; etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Counters</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 B.2
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• relate multiplication and division facts.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide students with 24 two-color counters. Ask two students to divide the counters equally between themselves, then three students, then four students. Discuss results.</li> </ul>	<ul style="list-style-type: none"> <li>• Two-Color Counters</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 B.2

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>DISCRETE MATHEMATICS</b>	Students will be able to: <ul style="list-style-type: none"> <li>• solve a problem by acting it out with models.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students create a multiplication problem that other students can act out by using items from the classroom.</li> </ul>	<ul style="list-style-type: none"> <li>• Slips of Paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.5    A.1
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• use related multiplication facts to find division facts for 2 through 12.</li> </ul>	<ul style="list-style-type: none"> <li>• Tell students to use two-color counters to create an array that represents a multiplication problem. Have the students use the same array to explain how to solve a division problem.</li> </ul>	<ul style="list-style-type: none"> <li>• Two-Color Counters</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    B.2
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• to use inverse operations to find missing factors.</li> </ul>	<ul style="list-style-type: none"> <li>• Students make sets of index cards with related facts. Each fact is written on a separate card. Have students play memory with the cards. Any related fact is considered a pair.</li> </ul>	<ul style="list-style-type: none"> <li>• Index Cards</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    B.10
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>• analyze data and make decisions.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students design a display of trophies and medals to make a trophy shop. Have students make an inventory list showing how many of each kind of medal or trophy they have.</li> </ul>	<ul style="list-style-type: none"> <li>• Ribbon</li> <li>• Aluminum Foil</li> <li>• Modeling Clay</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.4    A.1

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>COLLECTION &amp; USE OF DATA</b>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• apply multiplication and division facts to investigate Science concepts.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students work with partners. They place a book flat on the floor and then lean another book against it to make a ramp. Place a crayon on top of the tilted book and let it go. Measure and record how far the crayon traveled past the bottom of the ramp. Put another book on the stack and repeat. Add a third, fourth, and fifth book and repeat. Compare and discuss the results.</li> </ul>	<ul style="list-style-type: none"> <li>• Six Textbooks</li> <li>• Crayon</li> <li>• Ruler</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	<p>4.1 B.1 4.4 A.1 4.5 C.3</p>
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• use patterns to multiply.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students draw a 10 x 3 grid on graph paper. Have them record <math>6 \times 3 = 18</math>; <math>6 \times 30 = 180</math>; and <math>6 \times 300 = 1,800</math>. Discuss the pattern. Students may use different colored pencils for each subsequent pattern using 6, 3 &amp; 18.</li> </ul>	<ul style="list-style-type: none"> <li>• Graph Paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	<p>4.1 A.2</p>
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• use models to multiply 2 digit numbers by 1 digit numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students model 4 groups of 2 counters per group. Ask them to write 2 multiplication facts for the model. Then have students repeat for 4 groups of 12 counters each. Have them write facts. Discuss the difference in the two models.</li> <li>• Use place-value models to show multiplication that results in a product over 100, such as <math>5 \times 27</math>. Place 5 groups of both 3 tens and 7 ones on an overhead projector. Ask a volunteer to count the ones. Then exchange the 30 ones for 3 tens. Ask a volunteer to count the tens. Exchange the 10 tens for 1 hundred. Discuss.</li> </ul>	<ul style="list-style-type: none"> <li>• Counters</li> <li>• Place-Value Models</li> <li>• Overhead Projector</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	<p>4.1 B.4</p>

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<b>MENTAL MATH &amp; ESTIMATION</b>	Students will be able to: <ul style="list-style-type: none"> <li>• estimate products.</li> </ul>	<ul style="list-style-type: none"> <li>• Display 4 tens and 8 ones models. Ask students to round to the nearest multiple of ten. Display 3 hundreds, 4 tens, and 6 ones models. Ask students to round to the nearest multiple of 100. Explain that you would estimate <math>7 \times 48</math> by rounding 48 to 50 and then multiplying <math>7 \times 50</math>.</li> </ul>	<ul style="list-style-type: none"> <li>• Place-value models.</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1      C.2
<b>MENTAL MATH &amp; ESTIMATION</b>	<ul style="list-style-type: none"> <li>• form conclusions about using an overestimate or underestimate to solve a problem.</li> </ul>	<ul style="list-style-type: none"> <li>• Write the following problem on the board: Boxed lunches for a trip cost \$6 each. The travel club has \$175 to spend on lunches. Will there be enough money to buy boxed lunches for 28 people? Explain to the students that you would overestimate in the problem because you want to sure there is enough money. Work out the problem overestimating, underestimating, and finding the exact answer. Explain.</li> </ul>	<ul style="list-style-type: none"> <li>• Chalkboard</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1      C.3
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• use Math Tools to model multiplication.</li> </ul>	<ul style="list-style-type: none"> <li>• Using Math Tools program, students click on the up or down arrows in the box at the bottom left-hand corner of the screen to change the number of groups.</li> </ul>	<ul style="list-style-type: none"> <li>• Computer</li> <li>• Math Tools Program</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.1      A.7 B.3,7

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	Students will be able to: <ul style="list-style-type: none"> <li>• multiply greater numbers by 1 digit numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide spinners and two number cubes to pairs of students. One student rolls the number cube twice and writes a 2 digit number. The second spins the spinner, and uses the number to write a multiplication sentence using the 2 digit number from the first student. The first student finds the product. Repeat the activity, switching roles.</li> </ul>	<ul style="list-style-type: none"> <li>• Number Cubes numbered 1-6</li> <li>• Spinners numbered 1-6</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1      B.4
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• find a pattern to solve a problem.</li> </ul>	<ul style="list-style-type: none"> <li>• Distribute connecting cubes. Display this pattern using connecting cubes: 1 red, 2 blue, 3 yellow, 1 rd, 2 blue. Ask students what comes next in the pattern.</li> <li>• Have students create a pattern using connecting cubes. Call on volunteers to describe their patterns.</li> </ul>	<ul style="list-style-type: none"> <li>• Connecting Cubes</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.5      A.3
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>• use a table to explore functions and graph them.</li> </ul>	<ul style="list-style-type: none"> <li>• Pass out index cards to each pair of students with rules written on them such as "add 6, subtract 3." One student shows the input number with counters. The second student shows the output number with counters. Have students continue, taking turns, switching roles, using different input numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Counters</li> <li>• Index Cards</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4      A.1,2

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<b>DISCRETE MATHEMATICS</b>	Students will be able to: <ul style="list-style-type: none"> <li>• analyze and make decisions.</li> </ul>	<ul style="list-style-type: none"> <li>• Ask students to solve this problem: Mary went to the store and bought 5 boxes of cat food for \$2.89 each and 2 bags of cat litter for \$4.19. How much did she spend? How did you solve the problem?</li> </ul>		<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4 C.2
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• apply multiplication to investigate science concepts.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students work in small groups to make a list of all the places they use water. Have them record the number of times that they use that source. Estimate of measure how much water is used in each activity. Have them find the total amount of water used daily.</li> </ul>	<ul style="list-style-type: none"> <li>• Measuring Cups</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 B.1 4.5 C.3
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• use multiplication patterns to multiply 2 digit numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students spin a spinner numbered from 1 to 9. Have students multiply the numbers by 10, then by 100. Then ask how many zeros are in the product when you multiply by 10 and how many zeros are in the product when you multiply by 100. Discuss.</li> </ul>	<ul style="list-style-type: none"> <li>• Spinners numbered 1-9</li> <li>• Place-Value Charts</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 B.4
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• use models to multiply 2 digit numbers by 2 digit numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Write the problem <math>13 \times 12</math> on the board. Have students use counters to show 13 groups of 12. Tell students to find the number of counters there are altogether without counting them individually. Then have them write the product in standard form.</li> </ul>	<ul style="list-style-type: none"> <li>• Counters</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 B.4

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	Students will be able to: <ul style="list-style-type: none"> <li>• multiply multi-digit numbers by multiples of 10.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide graph paper to pairs of students. One student draws a rectangle on the paper that is no larger than 9 squares on all sides. The second student counts the number of boxes across and down and writes the number of boxes as a basic fact. Continue the activity using <math>6 \times 10</math>; <math>6 \times 20</math>; <math>8 \times 10</math>; <math>8 \times 20</math>.</li> </ul>	<ul style="list-style-type: none"> <li>• Graph Paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1      A.2
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• make inferences to solve multi-step problems.</li> </ul>	<ul style="list-style-type: none"> <li>• Display two cups. Place 6 counters in one cup and 9 counters in the second cup. Tell students that there are 15 counters in all. Tell students that they can make an inference, a decision based on things they know. Ask the students what inference can they make about the second cup if they know that there are 6 counters in the first cup.</li> </ul>	<ul style="list-style-type: none"> <li>• Two-color Counters</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4      C.2
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• multiply 2 digit numbers by 2 digit numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Use graph paper to model <math>30 \times 43</math>. Break apart the factors to multiply (<math>30 \times 40</math>) and (<math>30 \times 3</math>). Write the partial products on the board and add. Continue with similar multiplication items.</li> </ul>	<ul style="list-style-type: none"> <li>• Graph Paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1      B.4

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>MENTAL MATH &amp; ESTIMATION</b>	Students will be able to: <ul style="list-style-type: none"> <li>• estimate products.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students use place-value models to review rounding numbers.</li> <li>• Write <math>525 \times 63</math> on the board. Circle the first digit in each factor and have students find the product. Count remaining digits and attach to 30 to get an estimate of 30,000. Continue in this manner.</li> </ul>	<ul style="list-style-type: none"> <li>• Place-Value Models</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1      C.2
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• multiply greater numbers by 2 digit numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Write <math>2 \times 30</math>, <math>20 \times 30</math>, and <math>200 \times 30</math> on the board and have students write the products. Have students use graph paper to model multiplication of 3 digit by 2 digit numbers, using the Distributive Property.</li> </ul>	<ul style="list-style-type: none"> <li>• Graph Paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1      B.4
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>• make a graph to solve problems.</li> </ul>	<ul style="list-style-type: none"> <li>• Write this information on the board:               <p style="text-align: center;"><u>Number of Shells Collected</u> Ben - 8 Maya - 5 Rico - 3 Mike - 6</p> </li> <li>• Have students construct a pictograph to show this information and ask questions about the pictograph (Who collected the most/least shells?).</li> </ul>	<ul style="list-style-type: none"> <li>• Graph Paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4      A.1,2

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<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	Students will be able to: <ul style="list-style-type: none"> <li>use strategies to multiply.</li> </ul>	<ul style="list-style-type: none"> <li>Display 9 tens, 9 ones, 3 tens, and 5 ones. Explain in an easy way to find <math>99 + 35</math> (add 1 to 99, subtract 1 from 35 to get <math>100 + 34</math> - this is called compensation).</li> <li>Explain how to multiply <math>34 \times 16</math>:               <math display="block">\begin{array}{r} 30 \times 10 = 300 \\ 30 \times 6 = 180 \\ 4 \times 10 = 40 \\ 4 \times 6 = \underline{24} \\ 544 \end{array}</math> </li> </ul>	<ul style="list-style-type: none"> <li>Place-Value Models</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.1      A.10
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>analyze and make decisions.</li> </ul>	<ul style="list-style-type: none"> <li>Display play money for 3 one dollar bills, 1 quarter, and a nickel. Tell students that this is what it costs to go to a movie. Ask them how much it would cost for 3 people to go to the movies. If they had \$15.60 would that be enough for 3 tickets and snacks?</li> </ul>	<ul style="list-style-type: none"> <li>Play Money</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.4      D.1
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>apply multiplying 1 digit numbers to investigate science concepts.</li> </ul>	<ul style="list-style-type: none"> <li>Have the students measure their heart rate for 1 minute. Then ask them to calculate the number of beats in one hour, one day, one year.</li> </ul>	<ul style="list-style-type: none"> <li>Timer or Clock</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.1      B.1,4 4.5      C.3
<b>MENTAL MATH &amp; ESTIMATION</b>	<ul style="list-style-type: none"> <li>use mental math strategies to divide multiples of 10, 100, and 1,000.</li> </ul>	<ul style="list-style-type: none"> <li>Give students 10 x 10 grids. Have them record <math>72 \div 9 = 8</math>; <math>720 \div 8 = 80</math>; and <math>7,200 \div 9 = 800</math> in the grid. Ask students how they can use the grid and pattern to find <math>4,800 \div 8</math> and <math>5,400 \div 6</math>.</li> </ul>	<ul style="list-style-type: none"> <li>10 x 10 Grids</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.1      C.2

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	Students will be able to: <ul style="list-style-type: none"> <li>• use models to divide.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide students with place-value models and have them use the models to show <math>129 \div 6</math>. Repeat using other division problems.</li> </ul>	<ul style="list-style-type: none"> <li>• Place-Value Models</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1      B.1
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• divide 3 digit numbers by 1 digit numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Distribute 9 hundreds, 9 tens, and 9 ones models to each pair of students. Each student makes up a division problem involving a 3 digit number divided by a 1 digit number for his or her partner to solve using the place-value models.</li> <li>• Provide students with place-value models. Have them use the models to show how to divide 417 by 4. Explain.</li> </ul>	<ul style="list-style-type: none"> <li>• Place-Value Models</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1      B.4
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• make an inference to interpret remainders and solve problems.</li> </ul>	<ul style="list-style-type: none"> <li>• Place 50 blue connecting cubes in a paper bag without students knowing what is in the bag. Have each student take a cube from the bag without looking. Ask the students what inference they can make about the cubes in the bag.</li> <li>• Ask students that if there are 143 students on 8 soccer league teams with an equal number of players on each team, how many students remain to be equipment managers.</li> </ul>	<ul style="list-style-type: none"> <li>• Connecting Cubes</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4      D.1

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>MENTAL MATH &amp; ESTIMATION</b>	Students will be able to: <ul style="list-style-type: none"> <li>estimate quotients by using compatible numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Ask students to divide 36 counters into 8 equal groups - 4 groups with remaining. Explain that 32 is a compatible number - a multiple of 8. Continue with 42, 337.</li> </ul>	<ul style="list-style-type: none"> <li>Counters</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.1 C.2
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>divide 4 digit numbers by 1 digit numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Provide students with place-value models. Have them use the models to find the quotient for <math>137 \div 5</math>. Have the students work together to write the steps that they used to divide.</li> </ul>	<ul style="list-style-type: none"> <li>Place-Value Models</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.1 B.4
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>divide 5 digit numbers by 1 digit numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Distribute number cubes numbered 1-6 to each pair of students. Ask them to take turns rolling the cubes to find a 4 digit dividend and then 1 digit divisor. Have the pairs work together to write the steps they would use to divide.</li> </ul>	<ul style="list-style-type: none"> <li>Number Cubes (1-6)</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.1 B.4
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>compare unit costs to find the better buy.</li> </ul>	<ul style="list-style-type: none"> <li>Provide students with play money. Write <math>\\$3.69 \div 3</math> and <math>\\$4.64 \div 4</math> on the board. Ask students to use the play money to model each problem and find the quotients.</li> </ul>	<ul style="list-style-type: none"> <li>Play Money</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.4 D.2

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>DISCRETE MATHEMATICS</b>	Students will be able to: <ul style="list-style-type: none"> <li>• solve problems by using the guess-and-check strategy.</li> </ul>	<ul style="list-style-type: none"> <li>• Give each student a handful of two-color counters. Have students solve the following problem, using the counters:                 There are 36 friends at a pool party getting ready to swim a meet. They make 2 equal teams and another team of 10 swimmers. How many swimmers are on each of the 2 equal teams?</li> </ul>	<ul style="list-style-type: none"> <li>• Two-Color Counters</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4 D.1
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>• find the mean of a set of numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Students can use counters to model the numbers 4, 7, 13 and record the numbers. To find the mean, students combine all the counters into one pile and divide into 3 equal groups.</li> </ul>	<ul style="list-style-type: none"> <li>• Counters</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4 A.1
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• apply division to making decisions.</li> </ul>	<ul style="list-style-type: none"> <li>• Distribute play money and have the students act out the following problems:                 If 25 students buy tickets to a show and each ticket cost \$7, what is the total cost? If 6 students do not go to the show, what is the total cost?</li> </ul>	<ul style="list-style-type: none"> <li>• Play Money</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4 D.1
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• investigate Science concepts.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students design an experiment that determines if a ball of crumpled aluminum foil or a ball of crumpled paper falls faster toward the Earth. Have them include a hypothesis.</li> </ul>	<ul style="list-style-type: none"> <li>• Ball of Crumpled Aluminum Foil</li> <li>• Ball of Crumpled Paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.5 A.3 C.3

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>MENTAL MATH &amp; ESTIMATION</b>	Students will be able to: <ul style="list-style-type: none"> <li>use mental math to divide by multiples of 10.</li> </ul>	<ul style="list-style-type: none"> <li>Provide small groups of students with place-value models for hundreds, tens, and ones. Have students arrange 8 tens into 4 equal groups of 2 tens each. (<math>80 \div 4 = 20</math>) Repeat for 8 hundreds into 4 groups of 2 hundreds each. (<math>800 \div 4 = 200</math>) Discuss the pattern.</li> </ul>	<ul style="list-style-type: none"> <li>Place-value models</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.1 C.2
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>use models to divide by 2-digit numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Have each student in a pair model a dividend that is a multiple of 10. Have student use counters by showing a group of counter, such as 16, and writing that number with 3 zeros added to the end. Then have the student write a division problem such as <math>16,000 \div 2</math>. Have members of the pair exchange models and problems to solve them.</li> </ul>	<ul style="list-style-type: none"> <li>Counters</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.1 B.4
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>divide 2-digit numbers by multiples of 10.</li> </ul>	<ul style="list-style-type: none"> <li>Provide small groups with connecting cubes. Write the following division problem on the board; <math>57 \div 20</math>. Tell students to use connecting cubes to model the problem.</li> </ul>	<ul style="list-style-type: none"> <li>Connecting cubes</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.1 B.4,7
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>divide by 2-digit divisors</li> </ul>	<ul style="list-style-type: none"> <li>Provide groups of students with connecting cubes. Write this division on the board; <math>132 \div 24</math>. Have groups model the division by making cube trains. Ask: How many groups of 24 are there? How many left over? What basic facts and division pattern can you use to find where the first digit of the quotient goes?</li> </ul>	<ul style="list-style-type: none"> <li>Connecting cubes</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.1 B.4,7

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>MENTAL MATH &amp; ESTIMATION</b>	Students will be able to: <ul style="list-style-type: none"> <li>• estimate quotients by using compatible numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Write this example on the board: <math>254 \div 28</math>. Tell students to circle 28 and write a multiple of 10 above it (30). What number close to 254 can you think of that is a multiple of 30? (270) Have the students circle 254 and write 270 above it. Write <math>270 \div 30</math> and have the students find the quotient. Remind them to think of basic facts when estimating.</li> </ul>	<ul style="list-style-type: none"> <li>• Chalkboard</li> <li>• Place-value models</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 C.2
<b>MENTAL MATH &amp; ESTIMATION</b>	<ul style="list-style-type: none"> <li>• estimate quotients by using compatible numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide pairs of students with place-value models. Have each student make up a division problem involving a 3-digit number and a 2-digit divisor. Have partner solve the problem using place-value models. Then have students work together to write rules for dividing by a 2-digit number.</li> </ul>		<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.1 A.2 B.1
<b>MENTAL MATH &amp; ESTIMATION</b>	<ul style="list-style-type: none"> <li>• form conclusions about using an overestimate or an underestimate to solve a problem.</li> </ul>	<ul style="list-style-type: none"> <li>• Write the following problem on the board: Buses cost \$42 per bus. The students have \$158 to rent buses. How many buses can they rent? Ask students if they should overestimate or underestimate. Explain.</li> </ul>	<ul style="list-style-type: none"> <li>• Chalkboard</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 C.3

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>DISCRETE MATHEMATICS</b>	Students will be able to: <ul style="list-style-type: none"> <li>• choose a strategy to solve the problem.</li> </ul>	<ul style="list-style-type: none"> <li>• Tell students to listen carefully as you read this problem: There are 96 people going to the Sports Arena. They are taking buses that each seat 12 people. How many buses do they need? Have students work together using counters to solve the problem. Call on volunteers to describe what method they used to solve the problem.</li> </ul>	<ul style="list-style-type: none"> <li>• Counters</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4    D.2
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• use rules for the order of operations.</li> </ul>	<ul style="list-style-type: none"> <li>• Write on the board: <math>5 + 2 \times 4 = ?</math> Ask students to use place-value models to find the value of n. Ask some student to do each operation in order from left to right: <math>5 + 2 = 7</math>, <math>7 \times 4 = 28</math>. Ask others to do the multiplication first, then any other operations: <math>2 \times 4 = 8</math>; <math>5 + 8 = 13</math>. Discuss the results.</li> </ul>	<ul style="list-style-type: none"> <li>• Place-value models</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    B.1
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• analyze and make decisions.</li> </ul>	<ul style="list-style-type: none"> <li>• Show students 4 boxes of chalk. Tell students that each box costs \$1.80. Ask students how much all 4 boxes cost? Tell students that each box contains 12 pieces of chalk. Ask how much each piece cost.</li> </ul>	<ul style="list-style-type: none"> <li>• 4 boxes of chalk</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4    D.2

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>DISCRETE MATHEMATICS</b>	Students will be able to: <ul style="list-style-type: none"> <li>• apply dividing by 2-digit numbers to investigate science concepts.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students work in groups. Have students count how many sit-ups they can do before lunch then after lunch. Record results. Draw conclusions and discuss.</li> </ul>	<ul style="list-style-type: none"> <li>• Timer or clock</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.1    B.4
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• estimate and measure length in customary units.</li> </ul>	<ul style="list-style-type: none"> <li>• Have partners estimate the lengths of objects in the classroom, using customary units. Ask each pair of students to estimate and then measure 5 different items. Have them record their data.</li> </ul>	<ul style="list-style-type: none"> <li>• Inch ruler</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.2    D.4
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• estimate and measure capacity and weight in customary units.</li> </ul>	<ul style="list-style-type: none"> <li>• Give each group a measuring cup and 3 or 4 different containers. Have students study the containers and make their own estimates of how much water each one can hold, using cups, pints, quarts, or gallons. Groups can use the measuring cups to fill the containers with water and record each capacity. Have group members compare estimates with actual measurements.</li> </ul>	<ul style="list-style-type: none"> <li>• Measuring cups</li> <li>• Containers of various sizes</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.2    D.4
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• explore simple conversions of length, capacity, and weight.</li> </ul>	<ul style="list-style-type: none"> <li>• Give each pair of students rulers, measuring tapes, and measuring cups. Have students take turns asking for equivalent measures. For example: How many fluid ounces in <math>\frac{1}{2}</math> cup? Partners can use available tools to determine equivalent measures.</li> </ul>	<ul style="list-style-type: none"> <li>• Rulers</li> <li>• Tape Measures</li> <li>• Measuring cups</li> <li>• Containers</li> <li>• Scales</li> <li>• 1 lb. weights</li> <li>• 16 oz. weights</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.2    D.1,2

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>DISCRETE MATHEMATICS</b>	Students will be able to: <ul style="list-style-type: none"> <li>• compare and contrast information to check for reasonableness.</li> </ul>	<ul style="list-style-type: none"> <li>• Give groups of students a variety of place-value models. Have students in each group work cooperatively to build a 3-digit number, then let the groups compare and contrast the place-value models each has built. Have students describe the similarities and differences of the numbers built. Then have groups order the 3-digit numbers from greatest to least.</li> </ul>	<ul style="list-style-type: none"> <li>• Place-value models</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.5 C.3
<b>MEASUREMENT</b>	<ul style="list-style-type: none"> <li>• use the computer to create tables and convert measurements.</li> </ul>	<ul style="list-style-type: none"> <li>• Students follow steps in Math Tools Program to set up tables and to convert cups to quarts and centimeters to meters.</li> </ul>	<ul style="list-style-type: none"> <li>• Computer</li> <li>• Math Tools Program</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.1 A.7 4.2 D.3
<b>MEASUREMENT</b>	<ul style="list-style-type: none"> <li>• estimate and measure length in metric units.</li> </ul>	<ul style="list-style-type: none"> <li>• Divide the class into two groups. Have each student make a centimeter ruler out of a strip of paper. Show how to measure everyday objects. Ask each group to measure 10 items to the nearest centimeter, and record the items and their lengths. Compare estimates to actual lengths.</li> </ul>	<ul style="list-style-type: none"> <li>• Metric measuring tools</li> <li>• Strips of paper</li> <li>• Tape</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.2 D.2

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>MEASUREMENT</b>	Students will be able to: <ul style="list-style-type: none"> <li>• measure capacity in metric units.</li> </ul>	<ul style="list-style-type: none"> <li>• Gather some classroom objects that can be measured by using metric mass or capacity. Encourage students to make and record measurement estimates for each item. Invite different students to measure each item and record. Compare.</li> </ul>	<ul style="list-style-type: none"> <li>• Classroom objects</li> <li>• Balance</li> <li>• Gram and Kilogram weights</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.2 D.1,2
<b>MEASUREMENT</b>	<ul style="list-style-type: none"> <li>• review simple metric conversions.</li> </ul>	<ul style="list-style-type: none"> <li>• Give students centimeter rulers. Point out that the smallest lines on the ruler stand for millimeters. Tell the students that the numbers on the ruler stand for centimeters. Explain that 10 centimeters = 1 decimeter and 100 millimeters = 1 decimeter. Show students how to find other equivalent metric measures.</li> </ul>	<ul style="list-style-type: none"> <li>• Centimeter rulers</li> <li>• Meter stick</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.2 D.3
<b>MEASUREMENT</b>	<ul style="list-style-type: none"> <li>• Measure temperature in degrees Fahrenheit and Celsius.</li> </ul>	<ul style="list-style-type: none"> <li>• In small groups have students measure room temperature in Fahrenheit and Celsius and compare the readings.</li> </ul>	<ul style="list-style-type: none"> <li>• Fahrenheit thermometer</li> <li>• Celsius thermometer</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.2 D.1,2
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• use logical reasoning to solve problems.</li> </ul>	<ul style="list-style-type: none"> <li>• Let each student use play money to determine as many ways as possible to make \$2.00. Have students record and share these ways.</li> </ul>	<ul style="list-style-type: none"> <li>• Play money</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.4 D.1

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>COLLECTION &amp; USE OF DATA</b>	Students will be able to: <ul style="list-style-type: none"> <li>• analyze data and make decisions.</li> </ul>	<ul style="list-style-type: none"> <li>• Assign students to work in small groups to plan the activities for a party. Ask students to create a chart containing the types of activities and the amount of time that is required for each. Ask each group to share their chart. Have students in groups combine their charts into one master schedule.</li> </ul>	<ul style="list-style-type: none"> <li>• Chart paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.4    A.1
<b>MEASUREMENT</b>	<ul style="list-style-type: none"> <li>• apply measurement to investigate science concepts.</li> </ul>	<ul style="list-style-type: none"> <li>• Have groups of students record the starting temperature of the 3 thermometers. Then students fold the black and white paper and aluminum foil into packets. Insert the bulb of each thermometer into the pockets. Place them in a sunny window or under a lamp. Wait 10 minutes then read the temperatures. Discuss.</li> </ul>	<ul style="list-style-type: none"> <li>• Three Thermometers</li> <li>• Black paper</li> <li>• White paper</li> <li>• Aluminum foil</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.2    D.1,2 4.5    C.3
<b>SPATIAL SENSE &amp; GEOMETRY</b>	<ul style="list-style-type: none"> <li>• identify, describe, and classify 3-dimensional objects.</li> </ul>	<ul style="list-style-type: none"> <li>• Quickly review examples of each type of 3-dimensional figure: cone, cube, cylinder, rectangular prism, sphere, square pyramid, triangular prism, triangular pyramid. Take students on a quiet walk through the school to locate examples of each type of figure. Ask students to use graphic organizers to list the examples that they observe.</li> </ul>	<ul style="list-style-type: none"> <li>• Common 3-dimensional figures, 3-dimensional figure nets, index cards</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher observation</li> </ul>	4.2    E.3

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>SPATIAL SENSE &amp; GEOMETRY</b>	Students will be able to: <ul style="list-style-type: none"> <li>• identify, describe, and classify 2-dimensional figures and polygons.</li> </ul>	<ul style="list-style-type: none"> <li>• Each member of a small group draws three 10 by 10 cm figures and cuts them out. Each draws a diagonal line across one of the figures, from corner to opposite corner, and cuts along the line to make two equal-sized shapes. Students can compare and contrast the shapes they cut out as well as the shapes they can make by joining the pieces side by side.</li> </ul>	<ul style="list-style-type: none"> <li>• Centimeter graph paper</li> <li>• Scissors</li> <li>• Crayons</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.2 E.1
<b>SPATIAL SENSE &amp; GEOMETRY</b>	<ul style="list-style-type: none"> <li>• identify, describe, and classify lines, line segments and rays.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students in each small group drop a handful of craft sticks. Have students find sticks that are parallel, perpendicular, intersecting lines. Go over lines, line segments, rays, chords, diameter, radius.</li> </ul>	<ul style="list-style-type: none"> <li>• Craft sticks</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.2 A.2
<b>SPATIAL SENSE &amp; GEOMETRY</b>	<ul style="list-style-type: none"> <li>• identify, describe, draw, and classify angles.</li> </ul>	<ul style="list-style-type: none"> <li>• Draw a right angle. Have students draw a right angle. Discuss the right angles. Allow students to take turns drawing right angles on the board. Draw an acute angle on the board. Ask students to draw an acute angle. Discuss. Repeat for obtuse angles.</li> </ul>	<ul style="list-style-type: none"> <li>• Variety of colored pencils or markers</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.2 A.4

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>SPATIAL SENSE &amp; GEOMETRY</b>	Students will be able to: <ul style="list-style-type: none"> <li>• identify, describe, and classify triangles and quadrilaterals.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide students with craft sticks and clay. Craft sticks can be broken in half to make different sizes. Have groups of students construct examples of each of the following: acute triangle, equilateral triangle, isosceles triangle, obtuse triangle, right triangle, scalene triangle, parallelogram, rhombus trapezoid.</li> </ul>	<ul style="list-style-type: none"> <li>• Craft sticks</li> <li>• Clay</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.2    A.2
<b>SPATIAL SENSE &amp; GEOMETRY</b>	<ul style="list-style-type: none"> <li>• use illustrations and diagrams to solve problems.</li> </ul>	<ul style="list-style-type: none"> <li>• Distribute crayons. Tell students to draw as many geometric figures as they can. Have students exchange papers with a partner and label each geometric figure they can identify.</li> </ul>	<ul style="list-style-type: none"> <li>• Models of geometric figures</li> <li>• Crayons</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.2    A.1
<b>SPATIAL SENSE &amp; GEOMETRY</b>	<ul style="list-style-type: none"> <li>• use geometry tool in the Math Tools program to draw congruent figures.</li> </ul>	<ul style="list-style-type: none"> <li>• Students follow directions on geometry tool in the Math Tools program to draw congruent figures.</li> </ul>	<ul style="list-style-type: none"> <li>• Computer</li> <li>• Math Tools Program</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.1    A.7 B.7 4.2    A.1
<b>SPATIAL SENSE &amp; GEOMETRY</b>	<ul style="list-style-type: none"> <li>• identify congruent and similar 2-dimensional figures.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students work in small groups to create a figure with bands or dot paper. Ask other students in the group to make figures congruent and then figures similar to the original.</li> </ul>	<ul style="list-style-type: none"> <li>• Bands</li> <li>• Dot paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.2    A.2

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>SPATIAL SENSE &amp; GEOMETRY</b>	Students will be able to: <ul style="list-style-type: none"> <li>• investigate and predict the results of motion.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students draw a figure and cut it out. Have students flip the figure. Discuss. Have students show a translation (move) and then a rotation.</li> </ul>	<ul style="list-style-type: none"> <li>• Dot paper</li> <li>• Scissors</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.2 B.2
<b>SPATIAL SENSE &amp; GEOMETRY</b>	<ul style="list-style-type: none"> <li>• identify, describe, and draw symmetrical object with bilateral or rotational symmetry.</li> </ul>	<ul style="list-style-type: none"> <li>• Let students work in groups of three. The first person draws a portion of a figure on dot paper. The next person completes the figure using bilateral symmetry, and explains what occurs. The third person applies rotational symmetry to the figure and explains what occurs.</li> </ul>	<ul style="list-style-type: none"> <li>• Dot paper</li> <li>• Crayons</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.2 B.2,3
<b>SPATIAL SENSE &amp; GEOMETRY</b>	<ul style="list-style-type: none"> <li>• use tessellation to solve a problem.</li> </ul>	<ul style="list-style-type: none"> <li>• Explain what a tessellation is (shapes fitted together without overlapping and no space between them). Then have the students design a tile floor.</li> </ul>	<ul style="list-style-type: none"> <li>• Graph paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.2 B.1
<b>SPATIAL SENSE &amp; GEOMETRY</b>	<ul style="list-style-type: none"> <li>• estimate or determine the perimeter of a polygon.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students use paper clips to measure the perimeter of real objects. Have them make a chart that lists the items, their estimated measurement and their actual measurement. Encourage students to try using formulas for rectangular and square objects.</li> </ul>	<ul style="list-style-type: none"> <li>• Paper clips</li> <li>• Rulers</li> <li>• Chart paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.2 E.2

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>SPATIAL SENSE &amp; GEOMETRY</b>	Students will be able to: <ul style="list-style-type: none"> <li>estimate or determine the area of a shape using a formula.</li> </ul>	<ul style="list-style-type: none"> <li>Using graph paper, have each student draw a figure that can be broken in rectangles and squares. Introduce area = length x width. Have students pass the figure to the student on the right. Have the student determine the area of the figure and write the answer on the back of the paper. Discuss.</li> </ul>	<ul style="list-style-type: none"> <li>Graph paper</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> </ul>	4.2 E.2
<b>MEASUREMENT</b>	<ul style="list-style-type: none"> <li>estimate or determine volume.</li> </ul>	<ul style="list-style-type: none"> <li>Have students use nets to create examples of cubes. Stack the cubes to form rectangular prisms. Let the students first count to determine the volume of the prism. Check to see that the formula <math>L \times W \times H</math> applies to the figure.</li> </ul>	<ul style="list-style-type: none"> <li>Nets</li> <li>Cubes</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.2 E.3
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>analyze data and make decisions.</li> </ul>	<ul style="list-style-type: none"> <li>Write the following on the board: Mr. Harris is making a flower garden next to his house. The garden will be 64 square feet in area. Mr. Harris can plant one lilac bush every 2 square feet. How many bushes can he plant? He wanted to add mulch. He needs twice the area of his garden. How much mulch does he need?</li> </ul>	<ul style="list-style-type: none"> <li>Chalkboard</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> </ul>	4.4 A.1
<b>SPATIAL SENSE &amp; GEOMETRY</b>	<ul style="list-style-type: none"> <li>apply perimeter and area to investigate science concepts.</li> </ul>	<ul style="list-style-type: none"> <li>Have students work with a partner. They make a textbook wall between them. Each student builds a geometric pattern using pattern blocks and then describes it to his partner (size, angles, height, number of sides). The partner recreates the pattern.</li> </ul>	<ul style="list-style-type: none"> <li>Pattern blocks</li> <li>Textbook</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> </ul>	4.2 E.2

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>GENERAL NATURE &amp; USE OF MATHEMATICS</b>	Students will be able to: <ul style="list-style-type: none"> <li>• identify, read and write fractions for parts of a whole.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students draw a 6-column grid on graph paper. They shade in one of the columns. Provide students with strips for sixths as well. Explain that the fraction <math>\frac{1}{6}</math> tells what fraction of the whole is shaded. Have them shade a second column of the grid and have students tell you the fraction. Continue having students shade in one column at a time until students have identified all the remaining fractions: <math>\frac{3}{6}</math>, <math>\frac{4}{6}</math>, <math>\frac{5}{6}</math> &amp; <math>\frac{6}{6}</math>.</li> </ul>	<ul style="list-style-type: none"> <li>• Graph paper</li> <li>• Red &amp; blue crayons</li> <li>• Fraction strips</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.1
<b>GENERAL NATURE &amp; USE OF MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• identify, read, write fractions for parts of a group.</li> </ul>	<ul style="list-style-type: none"> <li>• Work in small groups. Display connecting cubes. Ask how many cubes are in all and how many cubes are yellow. Write the answer as a fraction. Repeat with other color cubes.</li> </ul>	<ul style="list-style-type: none"> <li>• 3 yellow, 1 blue, 4 red &amp; 2 green connecting cubes</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.5
<b>GENERAL NATURE &amp; USE OF MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• find equivalent fractions and write fractions in simplest form.</li> </ul>	<ul style="list-style-type: none"> <li>• With blue chalk, draw a circle divided into halves on the chalkboard. With green chalk, divide the circle into fourths. With pink chalk, divide the circle into eighths. Line segments should overlap. Shade <math>\frac{1}{2}</math> of the circle. Show that <math>\frac{1}{2} = \frac{2}{4} = \frac{4}{8} =</math> equivalent fractions. Continue to shade other equivalent fractions</li> </ul>	<ul style="list-style-type: none"> <li>• Blue, green &amp; pink chalk</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.5

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>GENERAL NATURE &amp; USE OF MATHEMATICS</b>	Students will be able to: <ul style="list-style-type: none"> <li>• compare and order fractions.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide students with fraction strips to compare and order fractions with like and unlike denominators. Have students align their fraction strips for <math>\frac{3}{8}</math> and <math>\frac{5}{8}</math>. Have them compare and order them. Continue with <math>\frac{2}{4}</math>, <math>\frac{5}{8}</math>, <math>\frac{4}{8}</math>, <math>\frac{3}{8}</math>, <math>\frac{2}{3}</math>, <math>\frac{5}{6}</math> &amp; <math>\frac{2}{6}</math>.</li> </ul>	<ul style="list-style-type: none"> <li>• Fraction strips</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.6
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• use prior knowledge to check for reasonableness of a solution.</li> </ul>	<ul style="list-style-type: none"> <li>• Write this problem on the board: Jay is making punch. He has <math>2\frac{1}{2}</math> quarts of apple juice and 1 quart of orange juice. Does he have enough to make a gallon of punch? Ask the students what they need to know to solve the problem (4 quarts are in a gallon). Tell students that prior knowledge, or what they already know can help them solve problems.</li> </ul>	<ul style="list-style-type: none"> <li>• Chalkboard</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.5
<b>GENERAL NATURE &amp; USE OF MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• find parts of a group.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide pairs of students with red and blue connecting cubes. One student shows a group of 10 cubes, some red and some blue. The partner tells what fraction of the group is red and what fraction is blue. Continue in this manner.</li> </ul>	<ul style="list-style-type: none"> <li>• Red &amp; blue connecting cubes</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.5

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>GENERAL NATURE &amp; USE OF MATHEMATICS</b>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• read and write mixed numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide fraction strips for fourths to small groups of students. Have groups model fractions for <math>\frac{4}{4}</math>. Ask students what they would have if they added 1 more fourth (<math>\frac{5}{4}</math>). Explain that this is an improper fraction that can be converted into a mixed number (<math>1\frac{1}{4}</math>). Continue with more examples.</li> </ul>	<ul style="list-style-type: none"> <li>• Fraction strips</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.5
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>• identify the likeliness of events.</li> </ul>	<ul style="list-style-type: none"> <li>• Display all the connecting cubes. Tell students to imagine the cubes have been placed in a bag. Ask students what color is likely to be picked, equally likely, and unlikely. Explain.</li> </ul>	<ul style="list-style-type: none"> <li>• 7 blue, 3 red, 3 green &amp; 1 yellow connecting cubes</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4    A.1
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>• organize, display, and analyze the results of probability experiments.</li> </ul>	<ul style="list-style-type: none"> <li>• Show students number cubes. Ask them how many outcomes are possible when they toss the cube. Ask them what the probability of tossing a 6 is (<math>\frac{1}{6}</math>). Continue with similar questions</li> </ul>	<ul style="list-style-type: none"> <li>• Number cubes</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4    B.3
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>• solve problems by drawing and using a tree diagram.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide groups of students with spinners. Ask the students to list the possible outcomes of their spinners. Discuss. Show students how to make a tree diagram to list possible outcomes.</li> </ul>	<ul style="list-style-type: none"> <li>• Spinners</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4    C.2

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>COLLECTION &amp; USE OF DATA</b>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>predict outcomes in an experiment.</li> </ul>	<ul style="list-style-type: none"> <li>Provide pairs of students with a coin. Ask students that suppose they flipped the coin 50 times, how many times do they think the coin would land on heads. Have the pairs of students flip the coins 50 times and record their results.</li> </ul>	<ul style="list-style-type: none"> <li>Coins</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.4 B.3
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>analyze data and make decisions.</li> </ul>	<ul style="list-style-type: none"> <li>Draw two different spinners on the board. Ask students questions such as: Do you think you have an equally likely chance of spinning a one on spinners A or B?</li> </ul>	<ul style="list-style-type: none"> <li>Chalkboard</li> <li>2 different spinners</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.4 B.3
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>apply fractions and probability to investigate science concepts.</li> </ul>	<ul style="list-style-type: none"> <li>Have students work in groups. Have them add 1 whole seltzer tablet to water. Time how long it takes until the water stops fizzing. Break a tablet in half and time and record. Break a tablet in quarters and time and record. Discuss.</li> </ul>	<ul style="list-style-type: none"> <li>3 seltzer tablets</li> <li>3 cups water</li> <li>timer</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> </ul>	4.1 A.5
<b>GENERAL NATURE &amp; USE OF MATHEMATICS</b>	<ul style="list-style-type: none"> <li>add fractions with like denominators.</li> </ul>	<ul style="list-style-type: none"> <li>Have students outline three 2 x 3 grids on graph paper, writing "+" between the first and second and "=" between the second and third grids. Tell the students to shade 1 box in the first row of the first grid and 2 boxes in the first row of the second grid. Ask students how many boxes they should shade in the third grid to show the sum. Finally, have students divide the third grid in half horizontally and explain that <math>3/6 = 1/2</math>. Continue with other examples.</li> </ul>	<ul style="list-style-type: none"> <li>Graph paper</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.1 A.1,5

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>GENERAL NATURE &amp; USE OF MATHEMATICS</b>	Students will be able to: <ul style="list-style-type: none"> <li>• subtract fractions with like denominators.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students outline a 5-square rectangle on graph paper to model <math>1/5 + 3/5 = 4/5</math>. Then have them cover <math>1/5</math> of the shaded area of the model with their hands. Help them write <math>4/5 - 1/5 = 3/5</math>. Repeat by covering <math>3/5</math> and writing <math>4/5 - 3/5 = 1/5</math>.</li> </ul>	<ul style="list-style-type: none"> <li>• Graph paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.1,5
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• make a judgement to decide the best operation to use.</li> </ul>	<ul style="list-style-type: none"> <li>• Students use place-value models to display 23 and 49. Ask the students: If you want to find how much both models represent together, What do you do? (add). If you want to find the difference, what do you do? (subtract). Tell the students in order to decide which operation they should use, they need to make a decision, or judgement.</li> </ul>	<ul style="list-style-type: none"> <li>• Place-value models</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4    D.1
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• use a computer program to add fractions.</li> </ul>	<ul style="list-style-type: none"> <li>• Students use the fraction tool in the Math Tools Program to practice adding fractions.</li> </ul>	<ul style="list-style-type: none"> <li>• Computer</li> <li>• Math Tools Program</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.1    A.5,7
<b>GENERAL NATURE &amp; USE OF MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• explore adding fractions with unlike denominators.</li> </ul>	<ul style="list-style-type: none"> <li>• Have groups mix up and place in a pile all the fraction strips for halves, quarters, and thirds. Group members share fraction strips for the remaining sets: sixths, eighths or twelfths. Students take turns choosing a fraction strip from the pile and then comparing that strip with one of their strips to find as many equivalent fractions as possible. Groups record all of the equivalent fractions they find.</li> </ul>	<ul style="list-style-type: none"> <li>• Fraction strips</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.1,5

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	Students will be able to: <ul style="list-style-type: none"> <li>• add fractions with unlike denominators.</li> </ul>	<ul style="list-style-type: none"> <li>• Fold one sheet of paper into 8 equal parts. Fold another sheet of paper into 4 equal parts. Use papers to show that <math>1/4 = 2/8</math>. Then ask students to find the sum of <math>1/4 + 5/8</math>. Continue with other examples.</li> </ul>	<ul style="list-style-type: none"> <li>• Sheets of paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.1,5
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• solve a simpler problem to determine how to solve a problem.</li> </ul>	<ul style="list-style-type: none"> <li>• Write a grocery list on the board and read the problem. Cross out the fractions and write the whole numbers used in a simpler problem. Discuss why it is easier to solve the problem using the whole numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Chalkboard</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    B.7
<b>GENERAL NATURE &amp; USE OF MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• explore subtracting fractions with unlike denominators.</li> </ul>	<ul style="list-style-type: none"> <li>• On the board, write <math>5/12 - 1/4</math>. Ask students to look at the denominators. Ask them if 12 is a multiple of 4. Explain that 12 will be the common denominator. Make a grid on the graph paper with 12 squares, and then share 5 of those squares. Show how <math>1/4 = 3/12</math> with fraction strips. Students cross out <math>3/12</math> from the shaded <math>5/12</math>, showing that <math>5/12 - 3/12 = 2/12</math>.</li> </ul>	<ul style="list-style-type: none"> <li>• Graph paper</li> <li>• Chalkboard</li> <li>• Fraction strips</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.1,5
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• subtract fractions with unlike denominators.</li> </ul>	<ul style="list-style-type: none"> <li>• Have pairs of students work with <math>1/4</math> and <math>1/2</math> fraction strips to model <math>1/2 - 1/4</math> (Rename <math>1/2</math> as two <math>1/4</math> strips and remove one). Repeat with <math>5/6 - 1/3</math> (Start with five <math>1/6</math> strips and remove two of them because <math>2/6 = 1/3</math>).</li> </ul>	<ul style="list-style-type: none"> <li>• Fraction strips</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.1,5

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>GENERAL NATURE &amp; USE OF MATHEMATICS</b>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>use properties to find sums and differences of fractions.</li> </ul>	<ul style="list-style-type: none"> <li>Give students graph paper and tell them to outline two 2-by-4 grids. On the board, write the problem <math>7/8 + 3/4 + 1/8</math>. Tell students to shade <math>7/8</math> in the first grid. Then shade <math>3/4</math> in the second grid. Finally, instruct them to shade the remaining <math>1/8</math> in the first grid and write the sum <math>1-3/4</math>. Tell the students to try this problem again using a different order: <math>7/8 + 1/8 + 3/4</math>. Discuss.</li> </ul>	<ul style="list-style-type: none"> <li>Graph paper</li> <li>Chalkboard</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.1    A.5
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>analyze data and make decisions.</li> </ul>	<ul style="list-style-type: none"> <li>Write this on the board: Orange juice <math>5/8</math> qt. Grape juice <math>1/8</math> qt. Cranberry juice <math>1/2</math> qt. Pineapple juice <math>1/4</math> qt. Grapefruit juice <math>1/4</math> qt.</li> </ul> <p>Have students answer the following questions: How much juice will there be if you combine pineapple and grapefruit juice? What could you add to the grapefruit to make a full quart? How much is the orange and grape juice combined? Which juices will you mix? Explain.</p>	<ul style="list-style-type: none"> <li>Chalkboard</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> <li>Assignment</li> </ul>	4.4    A.1
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>apply fraction operations to investigate science concepts.</li> </ul>	<ul style="list-style-type: none"> <li>Students work with partners. They cut 30 cm string and tie it around the center of a pencil. They hold the pencil by the ends, so the string hangs freely, then rub the balloon in their hair. They hold the balloon near the end of the string. They repeat this using the connecting cubes, crayon, sock, and their hand. Discuss the results.</li> </ul>	<ul style="list-style-type: none"> <li>String</li> <li>Scissors</li> <li>Ruler</li> <li>Pencil</li> <li>Inflated balloon</li> <li>5 connecting cubes</li> <li>Crayon</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Observation</li> </ul>	4.1    A.5

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>NUMBER SENSE</b>	Students will be able to: <ul style="list-style-type: none"> <li>• use models to relate fractions and decimals.</li> </ul>	<ul style="list-style-type: none"> <li>• Draw a 10 column square for tenths on the board and shade in 2 parts as students copy it at their seats. Explain <math>2 \text{ tenths} = 0.2</math>. Next draw 10 lines across the decimal tenths so the grid is now a hundredths grid. Explain <math>20 \text{ hundredths} = 0.20</math> and is equivalent to 0.2.</li> </ul>	<ul style="list-style-type: none"> <li>• Centimeter graph paper</li> <li>• crayons</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.5
<b>NUMBER SENSE</b>	<ul style="list-style-type: none"> <li>• read and write tenths and hundredths as decimals and fractions.</li> </ul>	<ul style="list-style-type: none"> <li>• Give students 10-by-10 grids. Draw a tenths model on the board and shade in three tenths. Have students do the same. Explain (<math>3/10 = 0.3</math>). Next have students color some squares on their hundredths grids. Explain.</li> </ul>	<ul style="list-style-type: none"> <li>• 10-by-10 grids</li> <li>• Crayons</li> <li>• Centimeter graph paper</li> <li>• Chalkboard</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.5
<b>NUMBER SENSE</b>	<ul style="list-style-type: none"> <li>• understand the meaning of thousandths.</li> </ul>	<ul style="list-style-type: none"> <li>• Draw a very large 10-by-10 grid on the board. Show one tenth by shading in one column of boxes. Show one hundredth. Show one thousandth. Explain.</li> </ul>	<ul style="list-style-type: none"> <li>• 10-by-10 grid</li> <li>• Chalkboard</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.5
<b>NUMBER SENSE</b>	<ul style="list-style-type: none"> <li>• compare and contrast information.</li> </ul>	<ul style="list-style-type: none"> <li>• Distribute fractions strips for <math>1/6</math> and <math>1/4</math>. Have students explain how they are alike and how they are different. Tell students that when we compare things, we tell how they are alike. When we contrast things, we tell how they are different.</li> </ul>	<ul style="list-style-type: none"> <li>• Fraction strips</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.1

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>NUMBER SENSE</b>	Students will be able to: <ul style="list-style-type: none"> <li>• use Math Tools Program to create decimal place-value models.</li> </ul>	<ul style="list-style-type: none"> <li>• Students go to base-10 tool in the Math Tools Program and create decimal place-value models.</li> </ul>	<ul style="list-style-type: none"> <li>• Computer</li> <li>• Math Tools Program</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.1 B.7
<b>NUMBER SENSE</b>	<ul style="list-style-type: none"> <li>• understand decimals greater than 1.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide small groups of students with play money. Ask students to model \$1.30 using bills and coins. Explain that the \$1.00 stands for 1 one, 3 dimes = 3 tenths and 0 pennies equal 0 hundredths.</li> </ul>	<ul style="list-style-type: none"> <li>• Play money</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.1
<b>NUMBER SENSE</b>	<ul style="list-style-type: none"> <li>• compare and order decimals.</li> </ul>	<ul style="list-style-type: none"> <li>• Write the following decimal numbers on the board: 2.57 and 2.37. Have pairs of students shade in 10-by-10 grids outlined on centimeter graph paper for each number. Then have them compare the grids to find which shaded area is greater. Repeat with: 4.31, 4.52, 4.36.</li> </ul>	<ul style="list-style-type: none"> <li>• 10-by-10 grids</li> <li>• Centimeter graph paper</li> <li>• Chalkboard</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.1,6
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• draw diagrams to solve problems.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide centimeter rulers to pairs of students. Have them draw a diagram showing that the distance between Boontown and Greentree is 4.5 Km, Greentree and Park City is 3.1 Km, Greentree and Rockford is 3.5 Km.</li> </ul>	<ul style="list-style-type: none"> <li>• Centimeter rulers</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.5    A.3

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>MENTAL MATH &amp; ESTIMATION</b>	Students will be able to: <ul style="list-style-type: none"> <li>• use rounding to estimate decimals.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide groups of 3 students with spinners numbered 0-9 to review rounding. The first student spins 3 numbers and writes a 3-digit number. The second student rounds the number to the nearest ten, the third student rounds the number to the nearest hundred. Repeat activity using decimals.</li> </ul>	<ul style="list-style-type: none"> <li>• Spinners</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.1 C.2
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>• analyze data and make decisions.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide small groups of students with 1 inch graph paper. One student draws a large rectangle on a sheet of paper. The second student estimates about how many 1-inch squares will fit on the rectangle. The third student uses the graph paper to find out about how many 1 inch squares will fit inside the rectangle.</li> </ul>	<ul style="list-style-type: none"> <li>• 1 inch graph paper</li> <li>• Sheet of paper</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.4    A.1
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>• apply fractions and decimals to investigate science concepts.</li> </ul>	<ul style="list-style-type: none"> <li>• Students work with a partner. They tape a sheet of paper to the board or wall 1 meter from the floor (this paper is the catcher's mitt - if they hit it, they make a strike). Try 10 pitches from 1.5 meters away. Record results. Repeat from 3, 4, 5 &amp; 6 meters away. Compare results.</li> </ul>	<ul style="list-style-type: none"> <li>• Paper ball</li> <li>• Sheet of paper</li> <li>• Tape</li> <li>• Cm ruler or meter stick</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.1    A.1

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	Students will be able to: <ul style="list-style-type: none"> <li>• use models to add decimals.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students copy the following problem <math>7.59 + 3.28</math>. Work with students to add each place. Repeat the activity using these examples. <math>1.3 + 0.90</math>; <math>1.7 + 1.34</math>.</li> </ul>	<ul style="list-style-type: none"> <li>• Chalkboard</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.1 B.5,7
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• add decimals</li> </ul>	<ul style="list-style-type: none"> <li>• Provide 10-by-10 grids (to use as hundredths models) drawn on centimeter graph paper to pairs of students. Write the following example on the board: <math>2.37 + 1.8</math>. Have each student color one of the odd ends on their decimal grids. Have students cut apart their grids and paste them together to find the sum. Repeat using other examples.</li> </ul>	<ul style="list-style-type: none"> <li>• Cm graph paper</li> <li>• Crayons</li> <li>• Scissors</li> <li>• Paste</li> <li>• 10-by-10 grids</li> <li>• Chalkboard</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    A.1 B.5,7
<b>MENTAL MATH &amp; ESTIMATION</b>	<ul style="list-style-type: none"> <li>• estimate sums.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide pairs of students with spinners numbered 1-9. Have the first student spin 3 numbers and write a decimal number in the tenths or hundredths. Have the second student round the decimal to the nearest whole number.</li> </ul>	<ul style="list-style-type: none"> <li>• Spinners</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1    C.3
<b>DISCRETE MATHEMATICS</b>	<ul style="list-style-type: none"> <li>• make a judgment to decide the best operation to use.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students draw one 10-by-10 grid to represent \$.37. Have them model \$.45 in play money. Ask them what they would do to find out how much money in all, and if they wanted to find the difference between the two amounts of money.</li> </ul>	<ul style="list-style-type: none"> <li>• Play money</li> <li>• 10-by-10 grid</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.1    B.4 4.4    D.1

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/ MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	Students will be able to: <ul style="list-style-type: none"> <li>• use Math Tools Program to model addition of fractions.</li> </ul>	<ul style="list-style-type: none"> <li>• Students use Base 10 Tool in the Math Tools Program to add decimals.</li> </ul>	<ul style="list-style-type: none"> <li>• Computer</li> <li>• Math Tools Program</li> <li>• Base 10 Tools</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.1 B.5,7
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• use models to subtract decimals.</li> </ul>	<ul style="list-style-type: none"> <li>• Write the following problem on the board: <math>9.18 - 6.25</math>. Work with students to subtract each place, beginning with hundreds place. Repeat using these examples: <math>5.4 - 3.1</math> ; <math>10.3 - 7.5</math> ; <math>4.52 - 1.67</math>.</li> </ul>	<ul style="list-style-type: none"> <li>• Chalkboard</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 A.1 B.5
<b>APPLICATION OF BASIC NUMBER CONCEPTS</b>	<ul style="list-style-type: none"> <li>• subtract decimals.</li> </ul>	<ul style="list-style-type: none"> <li>• Use bills and coins to display the money amount \$2.57. Tell the students that suppose they spent \$1.25. Demonstrate how to subtract the amounts. Have the students count the money to check the answer.</li> </ul>	<ul style="list-style-type: none"> <li>• Play money</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 A.1 B.5
<b>MENTAL MATH &amp; ESTIMATION</b>	<ul style="list-style-type: none"> <li>• estimate differences.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide small groups of students with spinners. Have the first student spin a 3-digit whole number. Have the second student spin another 3-digit whole number. Have the third student estimate the difference of the two number to the nearest hundreds.</li> </ul>	<ul style="list-style-type: none"> <li>• Spinners</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1 A.1 C.2

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>DISCRETE MATHEMATICS</b>	Students will be able to: <ul style="list-style-type: none"> <li>• solve a complex problem by solving a simpler problem.</li> </ul>	<ul style="list-style-type: none"> <li>• Write the following problem on the board: The Vaughn family takes a train trip. They buy 3 adult tickets and 3 youth tickets. The adult tickets are \$8.29 each and the youth tickets are \$5.49 each. Explain to the students that by using smaller and easier numbers (\$8.00 and \$5.00), the problem would be easier to solve.</li> </ul>	<ul style="list-style-type: none"> <li>• Chalkboard</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.5     A.4,5
<b>MENTAL MATH &amp; ESTIMATION</b>	<ul style="list-style-type: none"> <li>• use properties to find decimal sums and differences mentally.</li> </ul>	<ul style="list-style-type: none"> <li>• Use connecting cubes to review the properties of addition. Provide pairs of students with red, blue, and yellow connecting cubes. Write the following on the board: <math>13 + 14 + 7</math>. Have students model the addition using the cubes. Ask students what two numbers are easy to add together mentally (<math>13 + 7</math>). Show them how to use the commutative and associative properties to add <math>(13 + 7) + 14</math>. Then have the students solve: <math>4.4 + 2.8 + 0.6</math>.</li> </ul>	<ul style="list-style-type: none"> <li>• Chalkboard</li> <li>• Connecting cubes</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.1     A.1 B.5 C.2
<b>COLLECTION &amp; USE OF DATA</b>	<ul style="list-style-type: none"> <li>• analyze data and make decisions.</li> </ul>	<ul style="list-style-type: none"> <li>• Tell students to listen carefully to this problem, model it with play money, and solve it: A car has a 14 gallon tank. If the tank is empty and gas costs \$1.29 a gallon, how much would it cost to fill half the tank? Discuss results.</li> </ul>	<ul style="list-style-type: none"> <li>• Play money</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> <li>• Assignment</li> </ul>	4.5     A.1,4,5

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SKILL AREA	STUDENT OBJECTIVE	EXAMPLE/ACTIVITIES	RESOURCE/MATERIALS	ASSESSMENT	NJ CORE CURRICULUM STANDARD
<b>COLLECTION &amp; USE OF DATA</b>	Students will be able to: <ul style="list-style-type: none"> <li>• apply adding and subtracting decimals to investigate science concepts.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students work with partners to list 3 different ways to save \$.50 in electricity cost each day. Provide students with information charts. Have students record and then share their answers.</li> </ul>	<ul style="list-style-type: none"> <li>• Information chart that shows how many cents it costs to use electricity for one hour</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Observation</li> </ul>	4.1 A.1 B.5 4.4 A.1