We Are All Treaty People

Mathematics Resource

Near North District School Board

Math Connections to
We Are All Treaty People

The following resource was created to supplement the Grades 1-8 Teachers Guide. For most lessons in the guide, connections to math strands have been made and the specific expectations that could be found in the activity have been listed. We have changed the examples to match the *We Are All Treaty People* kit where the ministry has provided examples with the expectation. For example, the grade one expectation that states, "read and print in words whole numbers to ten, using meaningful contexts (e.g., storybooks, posters);" was changed to "read and print in words whole numbers to ten, using meaningful contexts (e.g., Write instructions for making a section of the Lego wampum belt);".

The second section is a collection of new lessons that were created using the *We Are All Treaty People* resource. The lessons connect to the chapters of the *We Are All Treaty People* book that are established in the Teachers' Guide and are organized by grade.

Questions about this resource or ideas for additions should be addressed to Doug Robidoux
Douglas.robidoux@nearnorthschools.ca

Math Connections and Extensions for
We are All Treaty People Unit Kit

Grade One (page 10- 15 of Teachers' Guide)

What is a Wampum Belt?

Number Sense and Numeration

represent, compare, and order whole numbers to 50, using a variety of tools (e.g., connecting cubes, ten frames, base ten materials, number lines, hundreds charts) and contexts (e.g., the number of white and purple Lego pieces in sections of the wampum belt);

read and print in words whole numbers to ten, using meaningful contexts (e.g., Write instructions for making a section of the Lego wampum belt);

demonstrate, using concrete materials, the concept of conservation of number (e.g., 5 Lego pieces represent the number 5, regardless whether they are close together or far apart);

estimate the number of objects in a set, and check by counting (e.g.,"I guessed that there were 20 Lego blocks in the pile. I counted them and there were only 17 blocks. 17 is close to 20.");

divide whole objects into parts and identify and describe, through investigation, equal-sized parts of the whole, using fractional names (e.g., halves; fourths or quarters; "I think the purple Lego blocks are one half of this section").

demonstrate, using concrete materials, the concept of one-to-one correspondence between number and objects when counting;

count forward by 1's, 2's, 5's, and 10's to 100, using a variety of tools and strategies (e.g., count Lego blocks by 2's , 5's or 10's);

Measurement

demonstrate an understanding of the use of non-standard units of the same size (e.g., various Lego blocks) for measuring (Sample problem: Measure the length of the wampum belt in different ways; for example, by using several different non-standard units or by starting measurements from opposite ends of the belt. Discuss your findings.);

estimate, measure (i.e., by placing nonstandard units repeatedly, without overlaps or gaps), and record lengths, heights, and distances (e.g., the wampum belt is about 7 paper clips wide; it is about 4 pencils long);

construct, using a variety of strategies, tools for measuring lengths, heights, and distances in non-standard units (e.g., How many Lego blocks long is the wampum belt?; how many wampum belts long is our class?) ;

compare two or three objects using measurable attributes (e.g., length, height, width, area, temperature, mass, capacity), and describe the objects using relative terms (e.g., taller, heavier, faster, bigger, warmer; "I can see the Lego pieces come in different lengths and I can order them from longest to shortest.");

compare and order objects by their linear measurements, using the same non-standard unit (Sample problem: Using a length of string equal to the length of the Lego wampum belt, work with a partner to find other objects that are about the same length.);

describe, through investigation using concrete materials, the relationship between the size of a unit and the number of units needed to measure length (Sample problem: Compare the numbers of paper clips and pencils needed to measure the length of the Lego wampum belt.).

Geometry

See Teachers' Guide page 10

Patterning and Algebra

identify, describe, and extend, through investigation, geometric repeating patterns involving one attribute (e.g., colour, size, shape, thickness, orientation);

identify a rule for a repeating pattern (e.g., "The Lego blocks are in a white, purple, white purple pattern.");

What is a Promise? What is a Promise to Share?

Data Management and Probability

Collect and organize data about what a person in a new land might need to survive

collect and organize primary data (e.g., data collected by the class) that is categorical (i.e., that can be organized into categories based on qualities such as colour or hobby), and display the data using one-to-one correspondence, prepared templates of concrete graphs and pictographs (with titles and labels), and a variety of recording methods (e.g., arranging objects, placing stickers, drawing pictures, making tally marks) (Sample problem: Collect and organize data about what the students think you would need to survive in winter.).

What is a Treaty? Making a Treaty Map

Measurement

estimate, measure (i.e., by placing nonstandard units repeatedly, without overlaps or gaps), and record lengths, heights, and distances (e.g., the string needed to surround the Treaty area is about 8 paper clips long);

Grade Two (page 16 – 19 Teachers' Guide)

What is a Wampum Belt?

Number Sense and Numeration

determine, through investigation using concrete materials, the relationship between the number of fractional parts of a whole and the size of the fractional parts (e.g., a paper plate divided into fourths has larger parts than a paper plate divided into eighths) (Sample problem: Use Lego blocks of the same size to show which is bigger, one half of a square or one fourth of a square.);

regroup fractional parts into wholes, using concrete materials (e.g., combine nine fourths to form two wholes and one fourth);

compare fractions using concrete materials, without using standard fractional notation (e.g., use fraction pieces to show that three fourths are bigger than one half, but smaller than one whole);

count forward by 1's, 2's, 5's, 10's, and 25's to 200, using number lines and hundreds charts, starting from multiples of 1, 2, 5, and 10 (e.g., count by 5's from 15; count by 25's from 125);

represent and explain, through investigation using concrete materials and drawings, multiplication as the combining of equal groups (e.g., use Lego blocks to show that 3 groups of 2 is equal to 2 + 2 + 2 and to 3 x 2);

solve problems involving the addition and subtraction of two-digit numbers, with and without regrouping, using concrete materials (e.g., base ten materials, counters), student-generated algorithms, and standard algorithms; Sample problem: How many more purple blocks are there than white blocks?

Measurement

estimate and measure length, height, and distance, using standard units (i.e., centimetre, metre) and non-standard units;
estimate, measure, and record the distance around objects, using non-standard units (Sample problem: Measure around several different doll beds using string, to see which bed is the longest around.);

estimate, measure, and record area, through investigation using a variety of non-standard units (e.g., determine the number of yellow pattern blocks it takes to cover an outlined shape) (Sample problem: Fill in a purple section of the wampum belt. See if more or less Lego blocks are needed if you turn them in the other direction.);

describe, through investigation, the relationship between the size of a unit of area and the number of units needed to cover a surface (Sample problem: Compare the numbers of W5 Lego blocks with the W11 Lego blocks needed to cover the same space.);

Geometry

See Teachers' Guide page 16

Patterning and Algebra

identify and describe, through investigation, growing patterns and shrinking patterns generated by the repeated addition or subtraction of 1's, 2's, 5's, 10's, and 25's on a number line and on a hundreds chart (e.g., the numbers 90, 80, 70, 60, 50, 40, 30, 20, 10 are in a straight line on a hundreds chart);

identify repeating, growing, and shrinking patterns found in real-life contexts (e.g., a geometric pattern on wallpaper, a rhythm pattern in music, a number pattern when counting dimes);

What is a Treaty? Making a Treaty Map

Geometry and Spatial Sense

describe the relative locations (e.g., beside, two steps to the right of) and the movements of objects on a map (e.g. "The Treaty Map shows that the Williams Treaty is below and to the right of the Robinson – Huron Treaty.) ");

draw simple maps of familiar settings, and describe the relative locations of objects on the maps (Sample problem: On a map of Ontario show some of the different Treaty areas.);

Grade Three (page 20 – 23 Teachers' Guide)

What is a Treaty? Making a Treaty Map

Measurement

estimate, measure, and record length, height, and distance, using standard units (i.e., centimetre, metre, kilometre) (Sample problem: While walking with your class, stop when you think you have travelled one kilometre.);

draw items using a ruler, given specific lengths in centimetres (Sample problem: Cut a length of string that is 15 cm long for your map)

estimate, measure, and record the perimeter of two-dimensional shapes, through investigation using standard units (Sample problem: Estimate, measure, and record the perimeter of your Treaty area.);

compare and order various shapes by area, using congruent shapes (e.g., from a set of pattern blocks or Power Polygons) and grid paper for measuring (Sample problem: Put five of the Treaty areas in order from largest to smallest. Which pattern blocks could you use to measure each area?);

Geometry and Spatial Sense

describe movement from one location to another using a grid map (e.g., to get from the swings to the sandbox, move three squares to the right and two squares down);

Grade Four (page 24-28 Teachers' Guide)

What is a Wampum Belt?

Number Sense and Numeration

represent fractions using concrete materials, words, and standard fractional notation, and explain the meaning of the denominator as the number of the fractional parts of a whole or a set, and the numerator as the number of fractional parts being considered;

compare and order fractions (i.e., halves, thirds, fourths, fifths, tenths) by considering the size and the number of fractional – compare fractions to the benchmarks of 0, is more than parts (e.g., because 4/5 is greater than 3/5 there are more parts in 4/5

demonstrate and explain the relationship between equivalent fractions, using concrete materials (e.g., fraction circles, fraction strips, pattern blocks) and drawings "I can say that 3/6 of my white Lego blocks are white. That's the same as one half."

Measurement

estimate, measure, and record length, height, and distance, using standard units (i.e., millimetre, centimetre, metre, kilometre) (e.g., a pencil that is 75 mm long);

estimate, measure using a variety of tools (e.g., centimetre grid paper, geoboard) and strategies, and record the perimeter and area of polygons;

pose and solve meaningful problems that require the ability to distinguish perimeter and area (e.g.,"I need to know about area when I compare Treaty areas. I need to know about perimeter when I compare the length of the borders.");

Geometry and Spatial Sense

See Teachers' Guide page 24

Patterning and Algebra

extend and create repeating patterns that result from reflections, through investigation using a variety of tools (e.g., pattern blocks, dynamic geometry software, dot paper).

New Settlement in First Nations Territory

Measurement

estimate and determine elapsed time, with and without using a time line, given the durations of events expressed in five-minute intervals, hours, days, weeks, months, or years (Sample problem: How much time had passed from when Cartier first arrived here in 1534 to when they met at "the crooked place"?);

solve problems involving the relationship between years and decades, and between decades and centuries (Sample problem: How many decades old is the Treaty of Niagara?);

Grade Six (page 37 – 45 Teachers' Guide)

Mapping Treaties

Geometry and Spatial Sense

explain how a coordinate system represents location, and plot points in the first quadrant of a Cartesian coordinate plane;

Grade 7 – 8 (page 52 – 53 Teachers' Guide)

The Treaty Relationship Letter to Seven Generations

collect data by conducting a survey or an experiment to do with themselves, their environment, issues in their school or community, or content from another subject and record observations or measurements; (Sample problem: Gather data to determine what the average Canadian knows about Treaties.)

Other Possible Math Lesson Ideas

Cover

Grades 3 - 4

Ask students, “What does this picture make you think of?” “What questions do you have about it?”

Students will have questions about what is happening in the picture like, “What are they doing?” and “Who are the people in the picture?”. These are important questions and should be addressed during the conversation. One question might be, “How many people are in this picture?”

Place the cover on the Smart Board with a document camera or some other projection device like Apple TV so that all students can access the cover. Ask students to investigate how they could calculate the number of people in this picture.

In pairs, get students to estimate the number of people on the cover and to explain their method.

During consolidation, students may talk about how one-to-one counting did not work very well because near the back of the picture many of the figures seem to be blended together and make it hard to count each person. Students can share what estimation strategies they used to arrive at a number.

Chapter 1 (pages 1-8)

Grade 4

On page 3 it talks about how the Anishinnbek eventually migrated from the Atlantic Coast to the Great Lakes Basin. Show these areas on a map of Canada and talk about how they would have traveled that distance (water, land). In pairs, have students investigate how far it is from Halifax to Niagara Falls. As a second question, they can investigate and estimate how long it would take to travel that distance by foot and water.

During consolidation, have students share how they found the total distance and then how they estimated travel time. This, of course can be done over two or even more days if needed.

Grade 4 -5

On page 3 it talks about how the Anishinabek eventually migrated from the Atlantic Coast to the Great Lakes Basin and that this happened about 1000 years ago. It also states that by the late 1600’s they populated and controlled the Great Lakes Basin. In pairs have students determine when the Anishinabek started arriving in the Great Lakes Basin and how long it took from that time to establish control of the area.

During consolidation have students talk about how they calculated the arrival date and how they arrived at their estimate for how long it took.

Chapter 2 (pages 8-15)

Grade 3

On page 14 and 15 there are two wampum belts illustrated. Have students look for symmetry in the designs. Ask them to create their own belt design that has a least one line of symmetry.

Grade 6

On page 14 and 15 there are two wampum belts illustrated. Have students think about the ratio of blue to white beads in each belt. They can also express it as a percent.
During consolidation have students share how they arrived at their ratio. Was counting all the beads necessary?

Grade 6 and possibly some Grade 5 students

On page 13 it says that 2500 chiefs and headmen came to Niagara Falls and that it represented 24 Nations. About how many chiefs and headmen would there be from each Nation if each Nation had equal representation? Have students work through this together showing their thinking.
During consolidation have students share how they arrived at their answer. How did they deal with the "left over".

Chapter 3 (pages 16-29)

Grade 4- 8

On pages 20 and 21 it shows two maps of North America that show how the British Indian Territory was reduced from 1763 to 1783. This following question could be asked to students in grades four to eight but with varying degrees of specificity expected for the answers. Students will need a photocopy of the two pages.
How could you determine the area of the British Indian Territory on pages 20 and 21. Using your measurement, how much land was lost in 20 years?
During consolidation have students share how they measured the areas of the two lands. What measuring tool did they use (i.e. a grid) What unit did they use? Did any students make conversions into hectares or acres? Did any student think of it as percent of the whole area (i.e. in 1763 they had a about 50% of the land but in 1783 it was closer to about 15%).

Grade 7 – 8

On page 23 it says that in 1795, 25 000 square miles of land was sold for $25 000 of trade goods. That is a price of $1/square mile. What would the value of that land be now? How much would 25 000 square miles of land go for now around Greenville, Ohio? $25 000 was a great deal of money is 1795 but was the deal fair?

Grade 7 – 8

On page 27 it states that the Mississaugas received 1200 British pounds for 3 000 000 acres around and including the present day Toronto. In pairs have students calculate how much that is per acre. What would the value of that land be now?

It also states on that page that members in the Robinson Huron Treaty still receive an annual $4 per year payment for land exchanged in that deal. Beneficiaries of the Treaty still receive the annual $4 payment today. The Robinson Huron Treaty was established in 1850. Have students find the value of a dollar in 1850. What could $4 buy in 1850? What would the value of that $4 be now if cost of living allowances and inflation were calculated?

Anishinabek Poster

Grade 8

On the Anishinabek poster there is a circle showing the Seven Grandfather Teachings and the Seven Clans. This graphic creates a seven pointed star in a circle. In pairs, have students try to recreate the seven-pointed star. What are the interior angles of the star? How many degrees apart are each point? What is the area of the star? The circle? The space that is not part of the star?