

Ontario Curriculum Correlation: Grade 1

JUMP Math

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MULTIPLYING POTENTIAL.

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JUMP Math

Toronto, Ontario

www.jumpmath.org

Notes

To ensure that the curriculum is fully covered, use the worksheets with the lessons plans in the Teacher's Guide.

OCUP: Ontario Curriculum Unit Planner

JUMP Math workbook units are represented by:

- NS Number Sense
- PA Patterns and Algebra
- ME Measurement
- G Geometry
- PDM Probability and Data Management

Number Sense and Numeration

Overall Expectations

By the end of Grade 1, students will:

OCUP Code	Overall Expectation
1m8	read, represent, compare, and order whole numbers to 50, and use concrete materials to investigate fractions and money amounts;
1m9	demonstrate an understanding of magnitude by counting forward to 100 and backwards from 20;
1m10	solve problems involving the addition and subtraction of single-digit whole numbers, using a variety of strategies.

Quantity Relationships

By the end of Grade 1, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
1m11	represent, compare, and order whole numbers to 50, using a variety of tools and contexts;	1	NS	1–10, 14
		2	NS	28
1m12	read and print in words whole numbers to ten, using meaningful contexts;	2	NS	24–26, 31, 32
1m13	demonstrate, using concrete materials, the concept of conservation of number;	1	NS	1, 2, 4, 5, 8, 11
		2	NS	27
1m14	relate numbers to the anchors of 5 and 10;	1	NS	9, 10, 15
1m15	identify and describe various coins using coin manipulatives or drawings, and state their value;	2	NS	57, 58
1m16	represent money amounts to 20¢, through investigation using coin manipulatives;	2	NS	59
1m17	estimate the number of objects in a set, and check by counting;	1	NS	20, 21
1m18	compose and decompose numbers up to 20 in a variety of ways, using concrete materials;	2	NS	44, 46, 47
		2	PA	11, 12
1m19	divide whole objects into parts and identify and describe, through investigation, equal-sized parts of the whole, using fractional names.	2	NS	63

Counting

By the end of Grade 1, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
1m20	demonstrate, using concrete materials, the concept of one-to-one correspondence between number and objects when counting;	1	NS	1, 2, 4, 7, 8, 11–14
		2	NS	27–30
1m21	count forward by 1's, 2's, 5's, and 10's to 100, using a variety of tools and strategies;	1	NS	6, 12, 13
		2	NS	29, 30, 52–56
1m22	count backwards by 1's from 20 and any number less than 20, with and without the use of concrete materials and number lines;	2	NS	41, 42
1m23	count backwards from 20 by 2's and 5's, using a variety of tools;	2	NS	56
1m24	use ordinal numbers to thirty-first in meaningful contexts.	1	NS	22
		2	NS	64

Operational Sense

By the end of Grade 1, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
1m25	solve a variety of problems involving the addition and subtraction of whole numbers to 20, using concrete materials and drawings;	1	NS	16–19
		2	NS	31–34, 38–40, 43, 46, 49–51
1m26	solve problems involving the addition and subtraction of single-digit whole numbers, using a variety of mental strategies;	1	NS	18
		2	NS	34–37, 43, 45, 46, 48–51, 61, 62
1m27	add and subtract money amounts to 10¢, using coin manipulatives and drawings.	2	NS	60

Measurement

Overall Expectations

By the end of Grade 1, students will:

OCUP Code	Overall Expectation
1m28	estimate, measure, and describe length, area, mass, capacity, time, and temperature, using non-standard units of the same size
1m29	compare, describe, and order objects, using attributes measured in non-standard units.

Attributes, Units and Measurement Sense

By the end of Grade 1, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
1m30	demonstrate an understanding of the use of non-standard units of the same size for measuring;	1	ME	9–11
		2	ME	23
1m31	estimate, measure (i.e., by placing non-standard units repeatedly, without overlaps or gaps) and record lengths, heights, and distances;	1	ME	5, 8, 9, 11
		2	ME	23
1m32	construct, using a variety of strategies, tools for measuring lengths, heights, and distances in non-standard units;	1	ME	9, 11–13
		2	ME	22, 23
1m33	estimate, measure (i.e., by minimizing overlaps and gaps) and describe area, through investigation using non-standard units;	2	ME	33–38
1m34	estimate, measure, and describe the capacity and/or mass of an object, through investigation using non-standard units;	1	ME	18, 19
1m35	estimate, measure, and describe the passage of time, through investigation using non-standard units;	2	ME	25–28
1m36	read demonstration digital and analogue clocks, and use them to identify benchmark times and to tell and write time to the hour and half-hour in everyday settings;	2	ME	24, 29–31
1m37	name the months of the year in order, and read the date on a calendar;	2	ME	32
1m38	relate temperature to experiences of the seasons.	2	ME	32

Measurement Relationships

By the end of Grade 1, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
1m39	compare two or three objects using measurable attributes and describe the objects using relative terms;	1	ME	1–11, 13, 15–17
		2	ME	22, 23
1m40	compare and order objects by their linear measurements, using the same non-standard unit;	1	ME	6–8
		2	ME	22, 23
1m41	use the metre as a benchmark for measuring length, and compare the metre with non-standard units;	1	ME	5, 12
1m42	describe, through investigation using concrete materials, the relationship between the size of a unit and the number of units needed to measure length.	1	ME	12, 13
		2	ME	22, 23

Geometry and Spatial Sense

Overall Expectations

By the end of Grade 1, students will:

OCUP Code	Overall Expectation
1m43	identify common two-dimensional shapes and three-dimensional figures and sort and classify them by their attributes;
1m44	compose and decompose common two-dimensional shapes and three-dimensional figures;
1m45	describe the relative locations of objects using positional language.

Geometric Properties

By the end of Grade 1, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
1m46	identify and describe common two-dimensional shapes and sort and classify them by their attributes, using concrete materials and pictorial representations;	1	G	1–9
		1	PDM	1–6
1m47	trace and identify the two-dimensional faces of three-dimensional figures, using concrete models;	2	G	17–21
1m48	identify and describe common three-dimensional figures and sort and classify them by their attributes, using concrete materials and pictorial representations;	2	G	15–21
1m49	describe similarities and differences between an everyday object and a three-dimensional figure;	2	G	14–16
1m50	locate shapes in the environment that have symmetry, and describe the symmetry.	1	G	10, 11
		2	G	14, 15

Geometric Relationships

By the end of Grade 1, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
1m51	compose patterns, pictures, and designs, using common two-dimensional shapes;	1	G	8, 9, 12
1m52	identify and describe shapes within other shapes;	1	G	8, 9
1m53	build three-dimensional structures using concrete materials, and describe the two-dimensional shapes the structures contain;	2	G	16, 21–23

Location and Movement

By the end of Grade 1, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
1m55	describe the relative locations of objects or people using positional language;	2	G	22, 23
1m56	describe the relative locations of objects on concrete maps created in the classroom;	2	G	24
1m57	create symmetrical designs and pictures, using concrete materials, and describe the relative locations of the parts.	1	G	12

Patterning and Algebra

Overall Expectations

By the end of Grade 1, students will:

OCUP Code	Overall Expectation
1m58	identify, describe, extend, and create repeating patterns;
1m59	demonstrate an understanding of the concept of equality, using concrete materials and addition and subtraction to 10.

Geometric Properties

By the end of Grade 1, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
1m60	identify, describe, and extend, through investigation, geometric repeating patterns involving one attribute;	1	PA	1–4, 6
1m61	identify and extend, through investigation, numeric repeating patterns;	1	PA	2, 5
1m62	describe numeric repeating patterns in a hundreds chart;	1 2	PA PA	4 8
1m63	identify a rule for a repeating pattern;	1	PA	3, 4
1m64	create a repeating pattern involving one attribute;	1 1	PA PDM	2, 4–6 4
1m65	represent a given repeating pattern in a variety of ways.	1	PA	5

Expressions and Equality

By the end of Grade 1, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
1m66	create a set in which the number of objects is greater than, less than, or equal to the number of objects in a given set;	2	PA	9, 10
1m67	demonstrate examples of equality, through investigation, using a “balance” model;	2	PA	9–12
1m68	determine, through investigation using a “balance” model and whole numbers to 10, the number of identical objects that must be added or subtracted to establish equality.	2	PA	9–12

Data Management and Probability

Overall Expectations

By the end of Grade 1, students will:

OCUP Code	Overall Expectation
1m69	collect and organize categorical primary data and display the data using concrete graphs and pictographs, without regard to the order of labels on the horizontal axis;
1m70	read and describe primary data presented in concrete graphs and pictographs;
1m71	describe the likelihood that everyday events will happen.

Collection and Organization of Data

By the end of Grade 1, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
1m72	demonstrate an ability to organize objects into categories by sorting and classifying objects using one attribute, and by describing informal sorting experiences;	1	PDM	1–6
1m73	collect and organize primary data 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.	2	PDM	7, 8, 10–12

Data Relationships

By the end of Grade 1, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
1m74	read primary data presented in concrete graphs and pictographs, and describe the data using comparative language;	2	PDM	8, 9, 11, 12
1m75	pose and answer questions about collected data.	2	PDM	8, 9, 11, 12

Probability

By the end of Grade 1, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
1m76	describe the likelihood that everyday events will occur, using mathematical language (i.e., impossible, unlikely, less likely, more likely, certain).	2	PDM	13–15

Ontario Curriculum Correlation: Grade 2

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Underlined lesson numbers indicate relevant preparatory exercises.

OCUP: Ontario Curriculum Unit Planner

JUMP Math workbook units are represented by:

- NS Number Sense
- PA Patterns and Algebra
- ME Measurement
- G Geometry
- PDM Probability and Data Management

Number Sense and Numeration

Overall Expectations

By the end of Grade 2, students will:

OCUP Code	Overall Expectation
2m8	read, represent, compare, and order whole numbers to 100, and use concrete materials to represent fractions and money amounts to 100¢;
2m9	demonstrate an understanding of magnitude by counting forward to 200 and backwards from 50, using multiples of various numbers as starting points;
2m10	solve problems involving the addition and subtraction of one- and two-digit whole numbers, using a variety of strategies, and investigate multiplication and division.

Quantity Relationships

By the end of Grade 2, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
2m11	represent, compare, and order whole numbers to 100, including money amounts to 100¢, using a variety of tools;	1 2	NS NS	<u>1–6</u> , <u>11</u> , 21–25 69
2m12	read and print in words whole numbers to twenty, using meaningful contexts;	2	NS	<u>7</u> , 15, 16
2m13	compose and decompose two-digit numbers in a variety of ways, using concrete materials;	1 2	NS NS	21–24 51–54, 69
2m14	determine, using concrete materials, the ten that is nearest to a given two-digit number, and justify the answer;	2	NS	<u>14</u> , 46
2m15	determine, through investigation using concrete materials, the relationship between the number of fractional parts of a whole and the size of the fractional parts;	2	NS	<u>72</u> , 73
2m16	regroup fractional parts into wholes, using concrete materials;	2	NS	74
2m17	compare fractions using concrete materials, without using standard fractional notation;	2	NS	73
2m18	estimate, count, and represent (using the ¢ symbol) the value of a collection of coins with a maximum value of one dollar.	2	NS	<u>47</u> , <u>68</u> , 69

Counting

By the end of Grade 2, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
2m19	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;	1	NS	22
		2	NS	45, 65–67
2m20	count backwards by 1's from 50 and any number less than 50, and count backwards by 10's from 100 and any number less than 100, using number lines and hundreds charts;	2	NS	45
2m21	locate whole numbers to 100 on a number line and on a partial number line.	1	NS	31

Operational Sense

By the end of Grade 2, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
2m22	solve problems involving the addition and subtraction of whole numbers to 18, using a variety of mental strategies;	1	NS	8–13, 17, 35, 36, 40
		2	NS	50, 52–54, 58
2m23	describe relationships between quantities by using whole-number addition and subtraction;	1	NS	17, 32–34, 35, 36
2m24	represent and explain, through investigation using concrete materials and drawings, multiplication as the combining of equal groups;	2	NS	75–77
2m25	represent and explain, through investigation using concrete materials and drawings, division as the sharing of a quantity equally;	2	NS	78, 79
2m26	solve problems involving the addition and subtraction of two-digit numbers, with and without regrouping, using concrete materials, student-generated algorithms, and standard algorithms;	1	NS	37, 41–43
		2	NS	55–57, 59–64
2m27	add and subtract money amounts to 100¢, using a variety of tools and strategies.	2	NS	70, 71

Measurement

Overall Expectations

By the end of Grade 2, students will:

OCUP Code	Overall Expectation
2m28	estimate, measure, and record length, perimeter, area, mass, capacity, time, and temperature, using non-standard units and standard units;
2m29	compare, describe, and order objects, using attributes measured in non-standard units and standard units.

Attributes, Units and Measurement Sense

By the end of Grade 2, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
2m30	choose benchmarks – in this case, personal referents – for a centimetre and a metre to help them perform measurement tasks;	1	ME	16, 18
2m31	estimate and measure length, height, and distance, using standard units (i.e., centimeter, metre) and non-standard units;	1	ME	<u>1–4</u> , 6–9, 12–18
2m32	record and represent measurements of length, height, and distance in a variety of ways;	1	ME	9, 15
2m33	select and justify the choice of a standard unit (i.e., centimeter or metre) or a non-standard unit to measure length;	1	ME	7, 18
2m34	estimate, measure, and record the distance around objects, using non-standard units;	1	ME	<u>5</u> , 10
2m35	estimate, measure, and record area, through investigation using a variety of non-standard units;	2	ME	<u>35</u> , 36–38
2m36	estimate, measure, and record the capacity and/or mass of an object, using a variety of non-standard units;	1 2	ME ME	20–23 44, 45
2m37	tell and write time to the quarter-hour, using demonstration digital and analogue clocks;	2	ME	28–35
2m38	construct tools for measuring time intervals in non-standard units;	2	ME	<u>25</u> , <u>26</u> , 27
2m39	describe how changes in temperature affect everyday experiences;	2	ME	41
2m40	use a standard thermometer to determine whether temperature is rising or falling.	2	ME	41

Measurement Relationships

By the end of Grade 2, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
2m41	describe, through investigation, the relationship between the size of a unit of area and the number of units needed to cover a surface;	1	ME	<u>11</u>
		2	ME	38
2m42	compare and order a collection of objects by mass and/or capacity, using non-standard units;	1	ME	19, 20, <u>21</u> , 22
		2	ME	42–45
2m43	determine, through investigation, the relationship between days and weeks and between months and years.	2	NS	<u>19</u> , <u>20</u>
			ME	39, 40

Geometry and Spatial Sense

Overall Expectations

By the end of Grade 2, students will:

OCUP Code	Overall Expectation
2m44	identify two-dimensional shapes and three-dimensional figures and sort and classify them by their geometric properties;
2m45	compose and decompose two-dimensional shapes and three-dimensional figures;
2m46	describe and represent the relative locations of objects, and represent objects on a map.

Attributes, Units, and Measurement Sense

By the end of Grade 2, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
2m47	distinguish between the attributes of an object that are geometric properties and the attributes that are not geometric properties, using a variety of tools;	1 1	G PDM	1, 3–5 4
2m48	identify and describe various polygons (i.e., triangles, quadrilaterals, pentagons, hexagons, heptagons, octagons) and sort and classify them by their geometric properties (i.e. number of sides or number of vertices), using concrete materials and pictorial representations;	1 1	G PDM	2–5, 7, 8 1–4
2m49	identify and describe various three-dimensional figures (i.e., cubes, prisms, pyramids) and sort and classify them by their geometric properties (i.e. number and shape of faces), using concrete materials;	2	G	15, 17, 18, 21, 23, 24
2m50	create models and skeletons of prisms and pyramids, using concrete materials, and describe their geometric properties (i.e., number and shapes of faces, number of edges);	2	G	17, 18, 24
2m51	locate the line of symmetry in a two-dimensional shape.	1	G	9–11

Geometric Relationships

By the end of Grade 2, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
2m52	compose and describe pictures, designs, and patterns by combining two-dimensional shapes;	1	G	11, 13
2m53	compose and decompose two-dimensional shapes;	1	G	9, 12, 13
2m54	cover an outline puzzle with two dimensional shapes in more than one way;	1	G	13
2m55	build a structure using three-dimensional figures, and describe the two-dimensional shapes and three-dimensional figures in the structure.	2	G	17–20

Location and Movement

By the end of Grade 2, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
2m56	describe the relative locations and the movements of objects on a map;	2	G	25–27
2m57	draw simple maps of familiar settings, and describe the relative locations of objects on the maps;	2	G	26, 27
2m58	create and describe symmetrical designs using a variety of tools.	1	G	11

Patterning and Algebra

Overall Expectations

By the end of Grade 2, students will:

OCUP Code	Overall Expectation
2m59	identify, describe, extend, and create repeating patterns, growing patterns, and shrinking patterns;
2m60	demonstrate an understanding of the concept of equality between pairs of expressions, using concrete materials, symbols, and addition and subtraction to 18.

Patterns and Relationships

By the end of Grade 2, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
2m61	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;	2	PA	9–13
2m62	identify, describe, and create, through investigation, growing patterns and shrinking patterns involving addition and subtraction, with and without the use of calculators;	2	PA	12, 13
2m63	identify repeating, growing, and shrinking patterns found in real-life contexts;	1 2	PA PA	1, 2, 6, 8 9, 10
2m63	represent a given growing or shrinking pattern in a variety of ways;	2	PA	15
2m65	create growing or shrinking patterns;	2	PA	9–11, 15
2m66	create a repeating pattern by combining two attributes;	1	PA	2–4, 6
2m67	demonstrate, through investigation, an understanding that a pattern results from repeating an operation or making a repeated change to an attribute.	1 2	PA PA	2–5, 7 9–13

Expressions and Equality

By the end of Grade 2, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
2m68	demonstrate an understanding of the concept of equality by partitioning whole numbers to 18 in a variety of ways, using concrete materials	2	NS	26, 27
2m69	represent, through investigation with concrete materials and pictures, two number expressions that are equal, using the equal sign;	2	NS	26, 27
2m70	determine the missing number in equations involving addition and subtraction to 18, using a variety of tools and strategies;	2	NS	28, 29, 32, 33
2m71	identify, through investigation, and use the commutative property of addition to facilitate computation with whole numbers;	2	NS	30
2m72	identify, through investigation, the properties of zero in addition and subtraction.	2	NS	10

Data Management and Probability

Overall Expectations

By the end of Grade 2, students will:

OCUP Code	Overall Expectation
2m73	collect and organize categorical or discrete primary data and display the data, using tally charts, concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers, with labels ordered appropriately along horizontal axes, as needed;
2m74	read and describe primary data presented in tally charts, concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers;
2m75	describe probability in everyday situations and simple games.

Collection and Organization of Data

By the end of Grade 2, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
2m76	demonstrate an ability to organize objects into categories, by sorting and classifying objects using two attributes simultaneously;	1	PDM	1–6
2m77	gather data to answer a question, using a simple survey with a limited number of responses;	1 2	PDM PDM	5, 6 11
2m78	collect and organize primary data that is categorical or discrete (i.e. that can be counted, such as the number of students absent), and display the data using one-to-one correspondence in concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers, with appropriate titles and labels and with labels ordered appropriately along horizontal axes, as needed.	1 2	PDM PDM	5, 6 7, 8, 10, 11

Data Relationships

By the end of Grade 2, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
2m79	read primary data presented in concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers, and describe the data using mathematical language;	1	PDM	5, 6
		2	PDM	7–11
2m80	pose and answer questions about class generated data in concrete graphs, pictographs, line plots, simple bar graphs, and tally charts;	2	PDM	7, 9–11
2m81	distinguish between numbers that represent data values and numbers that represent the frequency of an event;	2	PDM	8
2m82	demonstrate an understanding of data displayed in a graph, by comparing different parts of the data and by making statements about the data as a whole.	2	PDM	8–11

Probability

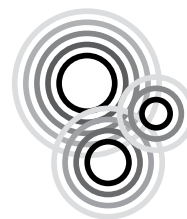
By the end of Grade 2, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
2m83	describe probability as a measure of the likelihood that an event will occur, using mathematical language (i.e. impossible, unlikely, equally likely, more likely, certain);	2	PDM	12–15
2m84	describe the probability that an event will occur, through investigation with simple games and probability experiments and using mathematical language.	2	PDM	12–15

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Notes

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Starred lesson numbers (*) indicate that the curriculum requirement is covered primarily in the lesson plan (possibly in the activities or extensions).

OCUP: Ontario Curriculum Unit Planner

JUMP Math workbook units are represented by:

- NS Number Sense
- PA Patterns and Algebra
- ME Measurement
- G Geometry
- PDM Probability and Data Management

Number Sense and Numeration

Overall Expectations

By the end of Grade 3, students will:

OCUP Code	Overall Expectation
3m8	read, represent, compare, and order whole numbers to 1000, and use concrete materials to represent fractions and money amounts to \$10;
3m9	demonstrate an understanding of magnitude by counting forward and backwards by various numbers and from various starting points;
3m10	solve problems involving the addition and subtraction of single- and multi-digit whole numbers, using a variety of strategies, and demonstrate an understanding of multiplication and division.

Quantity Relationships

By the end of Grade 3, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
3m11	represent, compare, and order whole numbers to 1000, using a variety of tools;	1	NS	1, 2, 5–11
3m12	read and print in words whole numbers to one hundred, using meaningful contexts;	1	NS	3, 4
3m13	identify and represent the value of a digit in a number according to its position in the number;	1	NS	1, 2, 5–11
3m14	compose and decompose three-digit numbers into hundreds, tens, and ones in a variety of ways, using concrete materials;	1	NS	5–7
3m15	round two-digit numbers to the nearest ten, in problems arising from real-life situations;	2	NS	52–56
3m16	represent and explain, using concrete materials, the relationship among the numbers 1, 10, 100, and 1000;	1	ME	9, 10, 15, 16
3m17	divide whole objects and sets of objects into equal parts, and identify the parts using fractional names, without using numbers in standard fractional notation;	2	NS	78–82
3m18	represent and describe the relationships between coins and bills up to \$10;	2	NS	70–74
3m19	estimate, count, and represent (using the \$ symbol) the value of a collection of coins and bills with a maximum value of \$10;	2	NS	70–77
3m20	solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 1000.	1	ME	9, 10

Counting

By the end of Grade 3, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
3m21	count forward by 1's, 2's, 5's, 10's, and 100's to 1000 from various starting points, and by 25's to 1000 starting from multiples of 25, using a variety of tools and strategies;	1	NS	12–18
3m22	count backwards by 2's, 5's, and 10's from 100 using multiples of 2, 5, and 10 as starting points, and count backwards by 100's from 1000 and any number less than 1000, using a variety of tools and strategies.	1	PA	6, 7
		1	NS	12–18

Operational Sense

By the end of Grade 3, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
3m23	solve problems involving the addition and subtraction of two-digit numbers, using a variety of mental strategies;	1	PA	3, 19
		1	NS	19–23, 28, 48
3m24	add and subtract three-digit numbers, using concrete materials, student-generated algorithms, and standard algorithms;	1	NS	24–27
3m25	use estimation when solving problems involving addition and subtraction, to help judge the reasonableness of a solution;	1	NS	52–57
3m26	add and subtract money amounts, using a variety of tools, to make simulated purchases and change for amounts up to \$10;	1	NS	42–48
3m27	relate multiplication of one-digit numbers and division by one-digit divisors to real-life situations, using a variety of tools and strategies;	1	NS	34–41
		2	NS	58–69
3m28	multiply to 7×7 and divide to $49 \div 7$, using a variety of mental strategies.	1	NS	34–41
		2	NS	58–64

Measurement

Overall Expectations

By the end of Grade 3, students will:

OCUP Code	Overall Expectation
3m29	estimate, measure, and record length, perimeter, area, mass, capacity, time, and temperature, using standard units;
3m30	compare, describe, and order objects, using attributes measured in standard units.

Attributes, Units, and Measurement Sense

By the end of Grade 3, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
3m31	estimate, measure, and record length, height, and distance, using standard units (i.e., centimetre, metre, kilometre);	1	ME	1–4, 6–9
3m32	draw items using a ruler, given specific lengths in centimetres;	1	ME	5
3m33	read time using analogue clocks, to the nearest five minutes, and using digital clocks, and represent time in 12-hour notation;	2	ME	18–23
3m34	estimate, read (i.e., using a thermometer), and record positive temperatures to the nearest degree Celsius (i.e., using a number line; using appropriate notation);	1	ME	17*
3m35	identify benchmarks for freezing, cold, cool, warm, hot, and boiling temperatures as they relate to water and for cold, cool, warm, and hot temperatures as they relate to air;	1	ME	17*
3m36	estimate, measure, and record the perimeter of two-dimensional shapes, through investigation using standard units;	1	ME	11–14
3m37	estimate, measure (i.e., using centimetre grid paper, arrays), and record area;	2	ME	29, 30
3m38	choose benchmarks for a kilogram and a litre to help them perform measurement tasks;	1	ME	15, 16
3m39	estimate, measure, and record the mass of objects, using the standard unit of the kilogram or parts of a kilogram;	1	ME	15, 16
3m40	estimate, measure, and record the capacity of containers, using the standard unit of the litre or parts of a litre.	1	ME	16*

Measurement Relationships

By the end of Grade 3, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
3m41	compare standard units of length (i.e., centimetre, metre, kilometre), and select and justify the most appropriate standard unit to measure length;	1	ME	10
3m42	compare and order objects on the basis of linear measurements in centimetres and/or metres in problem-solving contexts;	1	ME	7, 10
3m43	compare and order various shapes by area, using congruent shapes and grid paper for measuring;	2	ME	28, 32
3m44	describe, through investigation using grid paper, the relationship between the size of a unit of area and the number of units needed to cover a surface;	2	ME	28, 32
3m45	compare and order a collection of objects, using standard units of mass (i.e., kilogram) and/or capacity (i.e., litre);	1	ME	15*, 16*
3m46	solve problems involving the relationships between minutes and hours, hours and days, days and weeks, and weeks and years, using a variety of tools.	2	PA	21, 36

Geometry and Spatial Sense

Overall Expectations

By the end of Grade 3, students will:

OCUP Code	Overall Expectation
3m47	compare two-dimensional shapes and three-dimensional figures and sort them by their geometric properties;
3m48	describe relationships between two-dimensional shapes, and between two-dimensional shapes and three-dimensional figures;
3m49	identify and describe the locations and movements of shapes and objects.

Geometric Properties

By the end of Grade 3, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
3m50	use a reference tool to identify right angles and to describe angles as greater than, equal to, or less than a right angle;	1	G	2
3m51	identify and compare various polygons (i.e., triangles, quadrilaterals, pentagons, hexagons, heptagons, octagons) and sort them by their geometric properties (i.e., number of sides; side lengths; number of interior angles; number of right angles);	1 2	G G	1–4, 14–16 42
3m52	compare various angles, using concrete materials and pictorial representations, and describe angles as bigger than, smaller than, or about the same as other angles;	1	G	2*
3m53	compare and sort prisms and pyramids by geometric properties (i.e., number and shape of faces, number of edges, number of vertices), using concrete materials;	2	G	33–35, 38, 40, 41, 43
3m54	construct rectangular prisms, and describe geometric properties (i.e., number and shape of faces, number of edges, number of vertices) of the prisms.	2	G	33–38

Geometric Relationships

By the end of Grade 3, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
3m55	solve problems requiring the greatest or least number of two-dimensional shapes needed to compose a larger shape in a variety of ways;	1	G	5*, 16
3m56	explain the relationships between different types of quadrilaterals;	1	G	4, 14
3m57	identify and describe the two-dimensional shapes that can be found in a three-dimensional figure;	2	G	33–37, 38*, 40
3m58	describe and name prisms and pyramids by the shape of their base;	2	G	33–37
3m59	identify congruent two-dimensional shapes by manipulating and matching concrete materials.	1 2	G G	6–10, 16 38*

Location and Movement

By the end of Grade 3, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
3m60	describe movement from one location to another using a grid map;	2	G	18–20, 23, 24
3m61	identify flips, slides, and turns, through investigation using concrete materials and physical motion, and name flips, slides, and turns as reflections, translations, and rotations;	2	G	20–22, 24, 26–32, 42
3m62	complete and describe designs and pictures of images that have a vertical, horizontal, or diagonal line of symmetry.	1	G	11–13

Patterning and Algebra

Overall Expectations

By the end of Grade 3, students will:

OCUP Code	Overall Expectation
3m63	describe, extend, and create a variety of numeric patterns and geometric patterns;
3m64	demonstrate an understanding of equality between pairs of expressions, using addition and subtraction of one- and two-digit numbers.

Patterns and Relationships

By the end of Grade 3, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
3m65	identify, extend, and create a repeating pattern involving two attributes, using a variety of tools;	1 2	PA PA	8–12 23
3m66	identify and describe, through investigation, number patterns involving addition, subtraction, and multiplication, represented on a number line, on a calendar, and on a hundreds chart;	1 2	PA PA	15, 16 21, 22, 25–29, 31
3m67	extend repeating, growing, and shrinking number patterns;	1 2	PA PA	1–7, 15 20
3m68	create a number pattern involving addition or subtraction, given a pattern represented on a number line or a pattern rule expressed in words;	1 2	PA PA	5 24, 25
3m69	represent simple geometric patterns using a number sequence, a number line, or a bar graph;	1 2	PA PA	14, 17–19 22
3m70	demonstrate, through investigation, an understanding that a pattern results from repeating an action, repeating an operation, using a transformation, or making some other repeated change to an attribute.	1 2 2	PA PA G	8, 9, 10*, 13 23 42

Expressions and Equality

By the end of Grade 3, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
3m71	determine, through investigation, the inverse relationship between addition and subtraction;	1	NS	29, 30
3m72	determine, the missing number in equations involving addition and subtraction of one- and two-digit numbers, using a variety of tools and strategies;	1 2	PA PA	1, 2, 4, 5 33, 34, 35
3m73	identify, through investigation, the properties of zero and one in multiplication (i.e., any number multiplied by zero equals zero; any number multiplied by 1 equals the original number);	1	NS	36*, 41
3m74	identify, through investigation, and use the associative property of addition to facilitate computation with whole numbers. Teachers: If you want your students to discover this property, please refer to the Teacher's Guide for PA2-37.	1	NS	28

Data Management and Probability

Overall Expectations

By the end of Grade 3, students will:

OCUP Code	Overall Expectation
3m75	collect and organize categorical or discrete primary data and display the data using charts and graphs, including vertical and horizontal bar graphs, with labels ordered appropriately along horizontal axes, as needed;
3m76	read, describe, and interpret primary data presented in charts and graphs, including vertical and horizontal bar graphs;
3m77	predict and investigate the frequency of a specific outcome in a simple probability experiment.

Collection and Organization of Data

By the end of Grade 3, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
3m78	demonstrate an ability to organize objects into categories, by sorting and classifying objects using two or more attributes simultaneously;	1	PDM	1, 2
3m79	collect data by conducting a simple survey about themselves, their environment, issues in their school or community, or content from another subject;	1	PDM	11, 12, 13, 14
3m80	collect and organize categorical or discrete primary data and display the data in charts, tables, and graphs (including vertical and horizontal bar graphs), with appropriate titles and labels and with labels ordered appropriately along horizontal axes, as needed, using many-to-one correspondence.	1	PDM	3–12

Data Relationships

By the end of Grade 3, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
3m81	read primary data presented in charts, tables, and graphs (including vertical and horizontal bar graphs), then describe the data using comparative language, and describe the shape of the data;	1	PDM	8, 9
3m82	interpret and draw conclusions from data presented in charts, tables, and graphs;	1	PDM	8, 9, 12, 14

Data Relationships

By the end of Grade 3, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
3m83	demonstrate an understanding of mode, and identify the mode in a set of data.	1	PDM	9

Probability

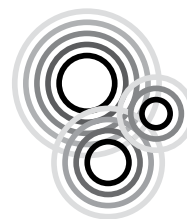
By the end of Grade 3, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
3m84	predict the frequency of an outcome in a simple probability experiment or game, then perform the experiment, and compare the results with the predictions, using mathematical language;	2	PDM	15–19, 21
3m85	demonstrate, through investigation, an understanding of fairness in a game and relate this to the occurrence of equally likely outcomes.	2	PDM	16, 20

JUMP Math

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JUMP Math

Toronto, Ontario

www.jumpmath.org

Notes

To ensure that the curriculum is fully covered, use the worksheets with the lessons plans in the Teacher's Guide.

Starred lesson numbers (*) indicate that the curriculum requirement is covered primarily in the lesson plan (possibly in the activities or extensions).

OCUP: Ontario Curriculum Unit Planner

JUMP Math workbook units are represented by:

- NS Number Sense
- PA Patterns and Algebra
- ME Measurement
- G Geometry
- PDM Probability and Data Management

Number Sense and Numeration

Overall Expectations

By the end of Grade 4, students will:

OCUP Code	Overall Expectation
4m8	read, represent, compare, and order whole numbers to 10 000, decimal numbers to tenths, and simple fractions, and represent money amounts to \$100;
4m9	demonstrate an understanding of magnitude by counting forward and backwards by 0.1 and by fractional amounts;
4m10	solve problems involving the addition, subtraction, multiplication, and division of single- and multi-digit whole numbers, and involving the addition and subtraction of decimal numbers to tenths and money amounts, using a variety of strategies;
4m11	demonstrate an understanding of proportional reasoning by investigating whole-number unit rates.

Quantity Relationships

By the end of Grade 4, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
4m12	represent, compare, and order whole numbers to 10 000, using a variety of tools;	1	NS	1–12
4m13	demonstrate an understanding of place value in whole numbers and decimal numbers from 0.1 to 10 000, using a variety of tools and strategies;	1	NS	1–6
4m14	read and print in words whole numbers to one thousand, using meaningful contexts;	1	NS	3
4m15	found four-digit whole numbers to the nearest ten, hundred, and thousand, in problems arising from real-life situations;	1	NS	39–46
4m16	represent, compare, and order decimal numbers to tenths, using a variety of tools and using standard decimal notation;	2	NS	99–116
4m17	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;	2	NS	70–73, 91
4m18	compare and order fractions (i.e., halves, thirds, fourths, fifths, tenths) by considering the size and the number of fractional parts;	2	NS	74–76, 91

Quantity Relationships (continued)

By the end of Grade 4, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
4m19	compare fractions to the benchmarks of 0, $\frac{1}{2}$, and 1;	2	NS	75*
4m20	demonstrate and explain the relationship between equivalent fractions, using concrete materials and drawings;	2	NS	83–85, 91
4m21	read and represent money amounts to \$100;	2	NS	92–95
4m22	solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 10 000.	1 2 2	ME ME PA	12 42 29

Counting

By the end of Grade 4, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
4m23	count forward by halves, thirds, fourths, and tenths to beyond one whole, using concrete materials and number lines;	2	NS	77–82, 89
4m24	count forward by tenths from any decimal number expressed to one decimal place, using concrete materials and number lines.	2	NS	99–115

Operational Sense

By the end of Grade 4, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
4m25	add and subtract two-digit numbers, using a variety of mental strategies;	1	NS	44–46
4m26	solve problems involving the addition and subtraction of four-digit numbers, using student-generated algorithms and standard algorithms;	1	NS	13–20
4m27	add and subtract decimal numbers to tenths, using concrete materials and student-generated algorithms;	2	NS	99–116

Operational Sense (continued)

By the end of Grade 4, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
4m28	add and subtract money amounts by making simulated purchases and providing change for amounts up to \$100, using a variety of tools;	2	NS	96–98
4m29	multiply to 9×9 and divide to $81 \div 9$, using a variety of mental strategies;	1 2 2	NS NS PA	26–29 62–64 23–26
4m30	solve problems involving the multiplication of one-digit whole numbers, using a variety of mental strategies;	1	NS	26–33
4m31	multiply whole numbers by 10, 100, and 1000, and divide whole numbers by 10 and 100, using mental strategies;	1 2	NS NS	30 117, 119
4m32	multiply two-digit whole numbers by one-digit whole numbers, using a variety of tools, student-generated algorithms, and standard algorithms;	1	NS	30–38
4m33	divide two-digit whole numbers by one-digit whole numbers, using a variety of tools and student-generated algorithms;	2	NS	65, 66
4m34	use estimation when solving problems involving the addition, subtraction, and multiplication of whole numbers, to help judge the reasonableness of a solution.	1	NS	44–46

Proportional Relationships

By the end of Grade 4, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
4m35	describe relationships that involve simple whole-number multiplication;	1	NS	37
4m36	determine and explain, through investigation, the relationship between fractions (i.e., halves, fifths, tenths) and decimals to tenths, using a variety of tools and strategies;	2	NS	100–109
4m37	demonstrate an understanding of simple multiplicative relationships involving unit rates, through investigation using concrete materials and drawings.	1 2	PA NS	13, 14 67

Measurement

Overall Expectations

By the end of Grade 4, students will:

OCUP Code	Overall Expectation
4m38	estimate, measure, and record length, perimeter, area, mass, capacity, volume, and elapsed time, using a variety of strategies;
4m39	determine the relationships among units and measurable attributes, including the area and perimeter of rectangles.

Attributes, Units and Measurement Sense

By the end of Grade 4, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
4m40	estimate, measure, and record length, height, and distance, using standard units (i.e., millimetre, centimetre, metre, kilometre);	1	ME	1, 2, 4, 5, 8, 9, 11, 12
4m41	draw items using a ruler, given specific lengths in millimetres or centimeters;	1	ME	3, 5
4m42	estimate, measure (i.e., using an analogue clock), and represent time intervals to the nearest minute;	1	ME	19–22
4m43	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;	1	ME	23–27
4m44	estimate, measure using a variety of tools and strategies, and record the perimeter and area of polygons;	1 2	ME ME	16–18 30, 32–36
4m45	estimate, measure, and record the mass of objects, using the standard units of the kilogram and the gram;	2	ME	40
4m46	estimate, measure, and record the capacity of containers, using the standard units of the litre and the millilitre;	2	ME	43
4m47	estimate, measure using concrete materials, and record volume, and relate volume to the space taken up by an object.	2	ME	38, 39

Measurement Relationships

By the end of Grade 4, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
4m48	describe, through investigation, the relationship between various units of length (i.e., millimetre, centimetre, decimetre, metre, kilometre);	1	ME	6, 7, 10, 14
4m49	select and justify the most appropriate standard unit (i.e., millimetre, centimetre, decimetre, metre, kilometre) to measure the side lengths and perimeters of various polygons;	1	ME	13, 15, 18
4m50	determine, through investigation, the relationship between the side lengths of a rectangle and its perimeter and area;	1 2	ME ME	16 31, 32, 36
4m51	pose and solve meaningful problems that require the ability to distinguish perimeter and area;	1 2	ME ME	18 35–37
4m52	compare and order a collection of objects, using standard units of mass (i.e., gram, kilogram) and/or capacity (i.e., millilitre, litre);	2	ME	40*, 41*
4m53	determine, through investigation, the relationship between grams and kilograms;	2	ME	40*, 41
4m54	determine, through investigation, the relationship between millilitres and litres;	2	ME	43*
4m55	select and justify the most appropriate standard unit to measure mass (i.e., milligram, gram, kilogram) and the most appropriate standard unit to measure the capacity of a container (i.e., millilitre, litre);	2	ME	40, 43, 44
4m56	solve problems involving the relationship between years and decades, and between decades and centuries;	1	ME	28, 29
4m57	compare, using a variety of tools, two-dimensional shapes that have the same perimeter or the same area.	1 2	ME ME	16 35, 36

Geometry and Spatial Sense

Overall Expectations

By the end of Grade 4, students will:

OCUP Code	Overall Expectation
4m58	identify quadrilaterals and three-dimensional figures and classify them by their geometric properties, and compare various angles to benchmarks;
4m59	construct three-dimensional figures, using two-dimensional shapes;
4m60	identify and describe the location of an object, using a grid map, and reflect two-dimensional shapes.

Geometric Properties

By the end of Grade 4, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
4m61	draw the lines of symmetry of two-dimensional shapes, through investigation using a variety of tools and strategies;	1 2	G G	12–15 40
4m62	identify and compare different types of quadrilaterals (i.e., rectangle, square, trapezoid, parallelogram, rhombus) and sort and classify them by their geometric properties;	1	G	1, 2, 5–8, 16–18
4m63	identify benchmark angles (i.e., straight angle, right angle, half a right angle), using a reference tool, and compare other angles to these benchmarks;	1	G	2, 3
4m64	relate the names of the benchmark angles to their measures in degrees;	1	G	4
4m65	identify and describe prisms and pyramids, and classify them by their geometric properties (i.e., shape of faces, number of edges, number of vertices), using concrete materials.	2	G	32–35, 37

Geometric Relationships

By the end of Grade 4, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
4m66	construct a three-dimensional figure from a picture or model of the figure, using connecting cubes;	2	G	38, 39
4m67	construct skeletons of three-dimensional figures, using a variety of tools, and sketch the skeletons;	2	G	30, 31
4m68	draw and describe nets of rectangular and triangular prisms;	2	G	36
4m69	construct prisms and pyramids from given nets;	2	G	36
4m70	construct three-dimensional figures, using only congruent shapes.	2	G	32

Location and Movement

By the end of Grade 4, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
4m71	identify and describe the general location of an object using a grid system;	2	G	20–25
4m72	identify, perform, and describe reflections using a variety of tools;	2	G	26, 27
4m73	create and analyze symmetrical designs by reflecting a shape, or shapes, using a variety of tools, and identify the congruent shapes in the designs.	1 2	G G	10 26, 40

Patterning and Algebra

Overall Expectations

By the end of Grade 4, students will:

OCUP Code	Overall Expectation
4m74	describe, extend, and create a variety of numeric and geometric patterns, make predictions related to the patterns, and investigate repeating patterns involving reflections;
4m75	demonstrate an understanding of equality between pairs of expressions, using addition, subtraction, and multiplication.

Patterns and Relationships

By the end of Grade 4, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
4m76	extend, describe, and create repeating, growing, and shrinking number patterns;	1	PA	1–8
		2	PA	17*, 18, 27, 28
4m77	connect each term in a growing or shrinking pattern with its term number, and record the patterns in a table of values that shows the term number and the term;	1	PA	11, 12
		2	PA	17*, 21*, 27–29
4m78	create a number pattern involving addition, subtraction, or multiplication, given a pattern rule expressed in words;	1	PA	9, 10
		2	PA	19, 28
4m79	make predictions related to repeating geometric and numeric patterns;	1	PA	12
		2	PA	17, 21*, 28
4m80	extend and create repeating patterns that result from reflections, through investigation using a variety of tools.	2	G	26*, 41

Expressions and Equality

By the end of Grade 4, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
4m81	determine, through investigation, the inverse relationship between multiplication and division;	2	NS	52–59
4m82	determine the missing number in equations involving multiplication of one- and two-digit numbers, using a variety of tools and strategies;	2	PA	30–32
4m83	identify, through investigation, and use the commutative property of multiplication to facilitate computation with whole numbers;	1	NS	26–38
		2	NS	119

Expressions and Equality (continued)

By the end of Grade 4, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
4m84	identify, through investigation, and use the distributive property of multiplication over addition to facilitate computation with whole numbers.	1	NS	26–38

Data Management and Probability

Overall Expectations

By the end of Grade 4, students will:

OCUP Code	Overall Expectation
4m85	collect and organize discrete primary data and display the data using charts and graphs, including stem-and-leaf plots and double bar graphs;
4m86	read, describe, and interpret primary data and secondary data presented in charts and graphs, including stem-and-leaf plots and double bar graphs;
4m87	predict the results of a simple probability experiment, then conduct the experiment and compare the prediction to the results.

Collection and Organization of Data

By the end of Grade 4, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
4m88	collect data by conducting a survey or an experiment to do with themselves, their environment, issues in their school or the community, or content from another subject, and record observations or measurements;	1	PDM	10, 11
4m89	collect and organize discrete primary data and display the data in charts, tables, and graphs (including stem-and-leaf plots and double bar graphs) that have appropriate titles, labels, and scales that suit the range and distribution of the data, using a variety of tools.	1 2	PDM PDM	4–12 15

Data Relationships

By the end of Grade 4, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
4m90	read, interpret, and draw conclusions from primary data and from secondary data, presented in charts, tables, and graphs (including stem-and-leaf plots and double bar graphs);	1 2	PDM PDM	4–12 15
4m91	demonstrate, through investigation, an understanding of median, and determine the median of a set of data;	2	PDM	13
4m92	describe the shape of a set of data across its range of values, using charts, tables, and graphs;	2	PDM	15*
4m93	compare similarities and differences between two related sets of data, using a variety of strategies.	1 2	PDM PDM	9 13–15

Probability

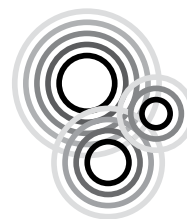
By the end of Grade 4, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
4m94	predict the frequency of an outcome in a simple probability experiment, explaining their reasoning; conduct the experiment; and compare the result with the prediction;	2	PDM	16, 18*, 22, 23
4m95	determine, through investigation, how the number of repetitions of a probability experiment can affect the conclusions drawn.	2	PDM	17*, 18*, 20

JUMP Math

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JUMP Math

Toronto, Ontario

www.jumpmath.org

Notes

To ensure that the curriculum is fully covered, use the worksheets with the lessons plans in the Teacher's Guide.

Starred lesson numbers (*) indicate that the curriculum requirement is covered primarily in the lesson plan (possibly in the activities or extensions).

OCUP: Ontario Curriculum Unit Planner

JUMP Math workbook units are represented by:

- NS Number Sense
- PA Patterns and Algebra
- ME Measurement
- G Geometry
- PDM Probability and Data Management

Number Sense and Numeration

Overall Expectations

By the end of Grade 5, students will:

OCUP Code	Overall Expectation
5m8	read, represent, compare, and order whole numbers to 100 000, decimal numbers to hundredths, proper and improper fractions, and mixed numbers;
5m9	demonstrate an understanding of magnitude by counting forward and backwards by 0.01;
5m10	solve problems involving the multiplication and division of multi-digit whole numbers, and involving the addition and subtraction of decimal numbers to hundredths, using a variety of strategies;
5m11	demonstrate an understanding of proportional reasoning by investigating whole-number rates.

Quantity Relationships

By the end of Grade 5, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
5m12	represent, compare, and order whole numbers and decimal numbers from 0.01 to 100 000, using a variety of tools;	1	NS	1–7
		2	NS	79–88
5m13	demonstrate an understanding of place value in whole numbers and decimal numbers from 0.01 to 100 000, using a variety of tools and strategies;	1	NS	1–7
		2	NS	79–88
5m14	read and print in words whole numbers to ten thousand, using meaningful contexts;	1	NS	2
5m15	round decimal numbers to the nearest tenth, in problems arising from real-life situations;	1	NS	44–46
		2	NS	100
5m16	represent, compare, and order fractional amounts with like denominators, including proper and improper fractions and mixed numbers, using a variety of tools and using standard fractional notation;	2	NS	61–70, 75
5m17	demonstrate and explain the concept of equivalent fractions, using concrete materials;	2	NS	71, 72
5m18	demonstrate and explain equivalent representations of a decimal number, using concrete materials and drawings;	2	NS	82–84
5m19	read and write money amounts to \$1000;	1	NS	55
5m20	solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 100 000.	1	NS	17, 41, 43, 48, 51*
		2	ME	18
		2	PA	34, 39

Counting

By the end of Grade 5, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
5m21	count forward by hundredths from any decimal number expressed to two decimal places, using concrete materials and number lines.	2	NS	99

Operational Sense

By the end of Grade 5, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
5m22	solve problems involving the addition, subtraction, and multiplication of whole numbers, using a variety of mental strategies;	1 1	PA NS	14 8–32
5m23	add and subtract decimal numbers to hundredths, including money amounts, using concrete materials, estimation, and algorithms;	1 2	NS NS	52–60 89–92
5m24	multiply two-digit whole numbers by two-digit whole numbers, using estimation, student-generated algorithms, and standard algorithms;	1	NS	18–32
5m25	divide three-digit whole numbers by one-digit whole numbers, using concrete materials, estimation, student-generated algorithms, and standard algorithms;	1	NS	33–43
5m26	multiply decimal numbers by 10, 100, 1000, and 10 000, and divide decimal numbers by 10 and 100, using mental strategies;	1	NS	49, 93, 94, 96
5m27	use estimation when solving problems involving the addition, subtraction, multiplication, and division of whole numbers, to help judge the reasonableness of a solution.	1	NS	27, 47–51, 60

Proportional Relationships

By the end of Grade 5, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
5m28	describe multiplicative relationships between quantities by using simple fractions and decimals;	2	NS	73*, 88*
5m29	determine and explain, through investigation using concrete materials, drawings, and calculators, the relationship between fractions (i.e., with denominators of 2, 4, 5, 10, 20, 25, 50, and 100) and their equivalent decimal forms;	2	NS	79–86
5m30	demonstrate an understanding of simple multiplicative relationships involving whole-number rates, through investigation using concrete materials and drawings.	2 2	NS ME	102, 103 17, 18

Measurement

Overall Expectations

By the end of Grade 5, students will:

OCUP Code	Overall Expectation
5m31	estimate, measure, and record perimeter, area, temperature change, and elapsed time, using a variety of strategies;
5m32	determine the relationships among units and measurable attributes, including the area of a rectangle and the volume of a rectangular prism.

Attributes, Units and Measurement Sense

By the end of Grade 5, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
5m33	estimate, measure (i.e., using an analogue clock), and represent time intervals to the nearest second;	1	ME	1–3
5m34	estimate and determine elapsed time, with and without using a time line, given the durations of events expressed in minutes, hours, days, weeks, months, or years;	1	ME	4, 6
5m35	measure and record temperatures to determine and represent temperature changes over time;	1	ME	7
5m36	estimate and measure the perimeter and area of regular and irregular polygons, using a variety of tools and strategies.	2	ME	8–10, 19, 20, 22, 23, 26–30

Measurement Relationships

By the end of Grade 5, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
5m37	select and justify the most appropriate standard unit (i.e., millimetre, centimetre, decimetre, metre, kilometre) to measure length, height, width, and distance, and to measure the perimeter of various polygons;	2	ME	10, 11, 16
5m38	solve problems requiring conversion from metres to centimetres and from kilometers to metres;	2	ME	12*, 13, 15, 18, 32, 38
5m39	solve problems involving the relationship between a 12-hour clock and a 24-hour clock;	1	ME	5
5m40	create, through investigation using a variety of tools and strategies, two-dimensional shapes with the same perimeter or the same area;	2	ME	20, 21, 23, 25, 28, 31

Measurement Relationships (continued)

By the end of Grade 5, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
5m41	determine, through investigation using a variety of tools and strategies, the relationships between the length and width of a rectangle and its area and perimeter, and generalize to develop the formulas [i.e., Area = length \times width; Perimeter = (2 \times length) + (2 \times width)];	2	ME	21, 24, 25, 29–31
5m42	solve problems requiring the estimation and calculation of perimeters and areas of rectangles;	2	ME	30–32
5m43	determine, through investigation, the relationship between capacity (i.e., the amount a container can hold) and volume (i.e., the amount of space taken up by an object), by comparing the volume of an object with the amount of liquid it can contain or displace;	2	ME	33, 36, 37
5m44	determine, through investigation using stacked congruent rectangular layers of concrete materials, the relationship between the height, the area of the base, and the volume of a rectangular prism, and generalize to develop the formula [i.e., Volume = area of base \times height];	2	ME	34
5m45	select and justify the most appropriate standard unit to measure mass (i.e., milligram, gram, kilogram, tonne).	2	ME	35

Geometry and Spatial Sense

Overall Expectations

By the end of Grade 5, students will:

OCUP Code	Overall Expectation
5m46	identify and classify two-dimensional shapes by side and angle properties, and compare and sort three-dimensional figures;
5m47	identify and construct nets of prisms and pyramids;
5m48	identify and describe the location of an object, using the cardinal directions, and translate two-dimensional shapes.

Geometric Properties

By the end of Grade 5, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
5m49	distinguish among polygons, regular polygons, and other two-dimensional shapes;	1	G	1, 5, 8, 9, 14–16
5m50	distinguish among prisms, right prisms, pyramids, and other three-dimensional figures;	2	G	30–35, 37
5m51	identify and classify acute, right, obtuse, and straight angles;	1	G	2, 3
5m52	measure and construct angles up to 90° , using a protractor;	1	G	3, 4
5m53	identify triangles (i.e., acute, right, obtuse, scalene, isosceles, equilateral), and classify them according to angle and side properties;	1	G	5, 6
5m54	construct triangles, using a variety of tools given acute or right angles and side measurements.	1	G	7, 13

Geometric Relationships

By the end of Grade 5, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
5m55	identify prisms and pyramids from their nets;	2	G	36
5m56	construct nets of prisms and pyramids, using a variety of tools.	2	G	36*

Location and Movement

By the end of Grade 5, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
5m57	locate an object using the cardinal directions (i.e., north, south, east, west) and a coordinate system;	2	G	18, 19, 23
5m58	compare grid systems commonly used on maps (i.e., the use of numbers and letters to identify an area; the use of a coordinate system based on the cardinal directions to describe a specific location);	2	G	23*
5m59	identify, perform, and describe translations, using a variety of tools;	2	G	20–22, 28, 29
5m60	create and analyse designs by translating and/or reflecting a shape, or shapes, using a variety of tools.	1	G	11–13
		2	G	24–29, 39, 40, 42

Patterning and Algebra

Overall Expectations

By the end of Grade 5, students will:

OCUP Code	Overall Expectation
5m61	determine, through investigation using a table of values, relationships in growing and shrinking patterns, and investigate repeating patterns involving translations;
5m62	demonstrate, through investigation, an understanding of the use of variables in equations.

Patterns and Relationships

By the end of Grade 5, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
5m63	create, identify, and extend numeric and geometric patterns, using a variety of tools;	1	PA	1–7, 12, 17–19
		2	PA	27, 31–33
5m64	build a model to represent a number pattern presented in a table of values that shows the term number and the term;	2	PA	24, 30*, 32*
5m65	make a table of values for a pattern that is generated by adding or subtracting a number (i.e., a constant) to get the next term, or by multiplying or dividing by a constant to get the next term, given either the sequence or the pattern rule in words;	1	PA	6, 8–10
		2	PA	25–34
5m66	make predictions related to growing and shrinking geometric and numeric patterns;	1	PA	11, 13
		2	PA	24, 27*, 30, 32*, 34
5m67	extend and create repeating patterns that result from translations, through investigation using a variety of tools.	2	G	28, 40, 43

Variables, Expressions, and Equations

By the end of Grade 5, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
5m68	demonstrate, through investigation, an understanding of variables as changing quantities, given equations with letters or other symbols that describe relationships involving simple rates;	2	PA	24, 26, 27, 38
5m69	demonstrate, through investigation, an understanding of variables as unknown quantities represented by a letter or other symbol;	2	PA	35–38
5m70	determine the missing number in equations involving addition, subtraction, multiplication, or division and one- or two-digit numbers, using a variety of tools and strategies.	2	PA	35, 36, 38

Data Management and Probability

Overall Expectations

By the end of Grade 5, students will:

OCUP Code	Overall Expectation
5m71	collect and organize discrete or continuous primary data and secondary data and display the data using charts and graphs, including broken-line graphs;
5m72	read, describe, and interpret primary data and secondary data presented in charts and graphs, including broken-line graphs;
5m73	represent as a fraction the probability that a specific outcome will occur in a simple probability experiment, using systematic lists and area models.

Collection and Organization of Data

By the end of Grade 5, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
5m74	distinguish between discrete data (i.e., data organized using numbers that have gaps between them, such as whole numbers, and often used to represent a count, such as the number of times a word is used) and continuous data (i.e., data organized using all numbers on a number line that fall within the range of the data, and used to represent measurements such as heights or ages of trees);	1	PDM	6–8
5m75	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;	1	PDM	9–12
5m76	collect and organize discrete or continuous primary data and secondary data and display the data in charts, tables, and graphs (including broken-line graphs) that have appropriate titles, labels, and scales that suit the range and distribution of the data, using a variety of tools;	1 2	PDM PDM	3–7 16, 18
5m77	demonstrate an understanding that sets of data can be samples of larger populations;	1	PDM	10
5m78	describe, through investigation, how a set of data is collected and explain whether the collection method is appropriate.	1	PDM	9

Data Relationships

By the end of Grade 5, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
5m79	read, interpret, and draw conclusions from primary data and from secondary data, presented in charts, tables, and graphs (including broken-line graphs);	1	PDM	3–8
		2	PDM	16, 18
5m80	calculate the mean for a small set of data and use it to describe the shape of the data set across its range of values, using charts, tables, and graphs;	2	PDM	13–15, 17
5m81	compare similarities and differences between two related sets of data, using a variety of strategies.	2	PDM	17*

Probability

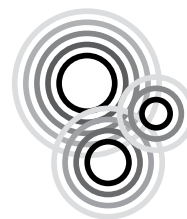
By the end of Grade 5, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
5m82	determine and represent all the possible outcomes in a simple probability experiment; using systematic lists and area models;	2	PDM	19
5m83	represent, using a common fraction, the probability that an event will occur in simple games and probability experiments;	2	PDM	20–22
5m84	pose and solve simple probability problems, and solve them by conducting probability experiments and selecting appropriate methods of recording the results.	2	PDM	23, 24

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JUMP Math workbook units are represented by:

- NS Number Sense
- PA Patterns and Algebra
- ME Measurement
- G Geometry
- PDM Probability and Data Management

Number Sense and Numeration

Overall Expectations

By the end of Grade 6, students will:

OCUP Code	Overall Expectation
6m8	read, represent, compare, and order whole numbers to 1 000 000, decimal numbers to thousandths, proper and improper fractions, and mixed numbers;
6m9	solve problems involving the multiplication and division of whole numbers, and the addition and subtraction of decimal numbers to thousandths, using a variety of strategies;
6m10	demonstrate an understanding of relationships involving percent, ratio, and unit rate.

Quantity Relationships

By the end of Grade 6, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
6m11	represent, compare, and order whole numbers and decimal numbers from 0.001 to 1 000 000, using a variety of tools;	1	NS	4–8
		2	NS	82
6m12	demonstrate an understanding of place value in whole numbers and decimal numbers from 0.001 to 1 000 000, using a variety of tools and strategies;	1	NS	2
		2	NS	72–77, 82
6m13	read and print in words whole numbers to one hundred thousand, using meaningful contexts;	1	NS	3
6m14	represent, compare, and order fractional amounts with unlike denominators, including proper and improper fractions and mixed numbers, using a variety of tools and using standard fractional notation;	2	NS	54–56, 58–66
6m15	estimate quantities using benchmarks of 10%, 25%, 50%, 75%, and 100%;	2	NS	107
6m16	solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 1 000 000;	1	NS	8*, 43*
		2	PA	26, 35
		1	ME	13
		2	ME	29, 34
6m17	identify composite numbers and prime numbers, and explain the relationship between them.	1	NS	16–19

Operational Sense

By the end of Grade 6, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
6m18	use a variety of mental strategies to solve addition, subtraction, multiplication, and division problems involving whole numbers;	1	NS	9–15, 20–38, 48
6m19	solve problems involving the multiplication and division of whole numbers (four-digit by two-digit), using a variety of tools and strategies;	1	NS	20, 30, 35–43, 49–51
6m20	add and subtract decimal numbers to thousandths, using concrete materials, estimation, algorithms, and calculators;	2	NS	82–85, 91
6m21	multiply and divide decimal numbers to tenths by whole numbers, using concrete materials, estimation, algorithms, and calculators;	2	NS	86–90
6m22	multiply whole numbers by 0.1, 0.01, and 0.001 using mental strategies;	2	NS	88*
6m23	multiply and divide decimal numbers by 10, 100, 1000, and 10 000 using mental strategies;	2	NS	86, 87, 89
6m24	use estimation when solving problems involving the addition and subtraction of whole numbers and decimals, to help judge the reasonableness of a solution;	1 2	NS NS	48–51 83–85, 92
6m25	explain the need for a standard order for performing operations, by investigating the impact that changing the order has when performing a series of operations.	2	NS	112*

Proportional Relationships

By the end of Grade 6, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
6m26	represent ratios found in real-life contexts, using concrete materials, drawings, and standard fractional notation;	2	NS	96–100
6m27	determine and explain, through investigation using concrete materials, drawings, and calculators, the relationships among fractions, decimal numbers, and percents;	2	NS	101–108
6m28	represent relationships using unit rates.	2	NS	95

Measurement

Overall Expectations

By the end of Grade 6, students will:

OCUP Code	Overall Expectation
6m29	estimate, measure, and record quantities, using the metric measurement system;
6m30	determine the relationships among units and measurable attributes, including the area of a parallelogram, the area of a triangle, and the volume of a triangular prism.

Attributes, Units and Measurement Sense

By the end of Grade 6, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
6m31	demonstrate an understanding of the relationship between estimated and precise measurements, and determine and justify when each kind is appropriate;	1	ME	9, 13, 14*
6m32	estimate, measure, and record length, area, mass, capacity, and volume, using the metric measurement system.	1 2	ME ME	1–3, 8–10 22–24, 33*

Measurement Relationships

By the end of Grade 6, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
6m33	select and justify the appropriate metric unit (i.e., millimetre, centimetre, decimetre, metre, decametre, kilometre) to measure length or distance in a given real-life situation;	1	ME	13
6m34	solve problems requiring conversion from larger to smaller metric units;	1 2	ME ME	1*, 11, 12, 14, 15* 33*
6m35	construct a rectangle, a square, a triangle, and a parallelogram, using a variety of tools, given the area and/or perimeter;	1 2	ME ME	18*, 19 23*, 27, 30*
6m36	determine, through investigation using a variety of tools and strategies, the relationship between the area of a rectangle and the areas of parallelograms and triangles, by decomposing and composing;	2	ME	27, 30, 31
6m37	develop the formulas for the area of a parallelogram and the area of a triangle, using the area relationships among rectangles, parallelograms, and triangles;	2	ME	30, 31

Measurement Relationships (continued)

By the end of Grade 6, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
6m38	solve problems involving the estimation and calculation of the areas of triangles and the areas of parallelograms;	2	ME	24*, 33*
6m39	determine, using concrete materials, the relationship between units used to measure area (i.e., square centimetre, square metre), and apply the relationship to solve problems that involve conversions from square metres to square centimetres;	2	ME	22*, 29
6m40	determine, through investigation using a variety of tools and strategies, the relationship between the height, the area of the base, and the volume of a triangular prism, and generalize to develop the formula;	2	ME	33*
6m41	determine, through investigation using a variety of tools and strategies, the surface area of rectangular and triangular prisms;	2	G	36*
6m42	solve problems involving the estimation and calculation of the surface area and volume of triangular and rectangular prisms.	2 2	ME G	33 36*

Geometry and Spatial Sense

Overall Expectations

By the end of Grade 6, students will:

OCUP Code	Overall Expectation
6m43	classify and construct polygons and angles;
6m44	sketch three-dimensional figures, and construct three-dimensional figures from drawings;
6m45	describe location in the first quadrant of a coordinate system, and rotate two-dimensional shapes.

Geometric Properties

By the end of Grade 6, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
6m46	sort and classify quadrilaterals by geometric properties related to symmetry, angles, and sides, through investigation using a variety of tools and strategies;	1	G	1, 10–12, 13*, 17, 18
6m47	sort polygons according to the number of lines of symmetry and the order of rotational symmetry, through investigation using a variety of tools;	1	G	14, 16–19
6m48	measure and construct angles up to 180° using a protractor, and classify them as acute, right, obtuse, or straight angles;	1	G	2–5
6m49	construct polygons using a variety of tools, given angle and side measurements.	1	G	6

Geometric Relationships

By the end of Grade 6, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
6m50	build three-dimensional models using connecting cubes, given isometric sketches or different views (i.e., top, side, front) of the structure;	2	G	42*, 43, 44
6m51	sketch, using a variety of tools, isometric perspectives and different views (i.e., top, side, front) of three-dimensional figures built with interlocking cubes.	2	G	42–44

Location and Movement

By the end of Grade 6, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
6m52	explain how a coordinate system represents location, and plot points in the first quadrant of a Cartesian coordinate plane;	2	G	21, 22, 25
6m53	identify, perform, and describe, through investigation using a variety of tools, rotations of 180° and clockwise and counterclockwise rotations of 90° , with the centre of rotation inside or outside the shape;	2	G	27–32
6m54	create and analyze designs made by reflecting, translating, and/or rotating a shape, or shapes, by 90° or 180° .	2	G	23, 24, 26, 29–32, 41

Patterning and Algebra

Overall Expectations

By the end of Grade 6, students will:

OCUP Code	Overall Expectation
6m55	describe and represent relationships in growing and shrinking patterns (where the terms are whole numbers), and investigate repeating patterns involving rotations;
6m56	use variables in simple algebraic expressions and equations to describe relationships.

Patterns and Relationships

By the end of Grade 6, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
6m57	identify geometric patterns, through investigation using concrete materials or drawings, and represent them numerically;	1 2	PA PA	6, 8, 16, 18 34
6m58	make tables of values, for growing patterns given pattern rules, in words, then list the ordered pairs (with the first coordinate representing the term number and the second coordinate representing the term) and plot the points in the first quadrant, using a variety of tools;	1 2	PA PA	5–7 31, 32
6m59	determine the term number of a given term in a growing pattern that is represented by a pattern rule in words, a table of values, or a graph;	1 2	PA PA	7 31*
6m60	describe pattern rules (in words) that generate patterns by adding or subtracting a constant, or multiplying or dividing by a constant, to get the next term, then distinguish such pattern rules from pattern rules, given in words, that describe the general term by referring to the term number;	1 2	PA PA	3, 4, 12, 15, 17–21 24*
6m61	determine a term, given its term number, by extending growing and shrinking patterns that are generated by adding or subtracting a constant, or multiplying or dividing by a constant, to get the next term;	1 2	PA PA	1, 2, 7, 9, 21 22, 34
6m62	extend and create repeating patterns that result from rotations, through investigation using a variety of tools.	2	G	41

Variables, Expressions, and Equations

By the end of Grade 6, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
6m63	demonstrate an understanding of different ways in which variables are used;	1	PA	15
		2	PA	28, 30
6m64	identify, through investigation, the quantities in an equation that vary and those that remain constant;	1	PA	15*
6m65	solve problems that use two or three symbols or letters as variables to represent different unknown quantities;	1	PA	15*
		2	PA	27, 28, 30
6m66	determine the solution to a simple equation with one variable, through investigation using a variety of tools and strategies.	2	PA	27–30

Data Management and Probability

Overall Expectations

By the end of Grade 6, students will:

OCUP Code	Overall Expectation
6m67	collect and organize discrete or continuous primary data and secondary data and display the data using charts and graphs, including continuous line graphs;
6m68	read, describe, and interpret data, and explain relationships between sets of data;
6m69	determine the theoretical probability of an outcome in a probability experiment, and use it to predict the frequency of the outcome.

Collection and Organization of Data

By the end of Grade 6, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
6m70	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;	1	PDM	18–20
6m71	collect and organize discrete or continuous primary data and secondary data and display the data in charts, tables, and graphs (including continuous line graphs) that have appropriate titles, labels, and scales that suit the range and distribution of the data, using a variety of tools;	1	PDM	2–10
6m72	select an appropriate type of graph to represent a set of data, graph the data using technology, and justify the choice of graph; (i.e., from types of graphs already studied, such as pictographs, horizontal or vertical bar graphs, stem-and-leaf plots, double bar graphs, stem-and-leaf plots, broken-line graphs, and continuous line graphs)	1	PDM	16
6m73	determine, through investigation, how well a set of data represents a population, on the basis of the method that was used to collect the data.	1	PDM	18, 19

Data Relationships

By the end of Grade 6, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
6m74	read, interpret, and draw conclusions from primary data and from secondary data, presented in charts, tables, and graphs (including continuous line graphs);	1 2	PDM PA	16–20 32
6m75	compare, through investigation, different graphical representations of the same data;	1	PDM	16
6m76	explain how different scales used on graphs can influence conclusions drawn from the data;	1	PDM	2, 3
6m77	demonstrate an understanding of mean, and use the mean to compare two sets of related data, with and without the use of technology;	1	PDM	11–15
6m78	demonstrate, through investigation, an understanding of how data from charts, tables, and graphs can be used to make inferences and convincing arguments.	1	PDM	4*, 5, 6*, 7, 8*, 9, 10, 13*, 15, 16

Probability

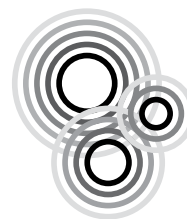
By the end of Grade 6, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
6m79	express theoretical probability as a ratio of the number of favourable outcomes to the total number of possible outcomes, where all outcomes are equally likely;	2	PDM	21–23, 27
6m80	represent the probability of an event (i.e., the likelihood that the event will occur), using a value from the range of 0 (never happens or impossible) to 1 (always happens or certain);	2	PDM	22, 23, 25
6m81	predict the frequency of an outcome of a simple probability experiment or game, by calculating and using the theoretical probability of that outcome.	2	PDM	24, 26

JUMP Math

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JUMP Math

Toronto, Ontario

www.jumpmath.org

Notes

To ensure that the curriculum is fully covered, use the worksheets with the lessons plans in the Teacher's Guide.

Underlined lesson numbers indicate relevant preparatory exercises.

OCUP: Ontario Curriculum Unit Planner

JUMP Math workbook units are represented by:

- NS Number Sense
- PA Patterns and Algebra
- ME Measurement
- G Geometry
- PDM Probability and Data Management

Number Sense and Numeration

Overall Expectations

By the end of Grade 7, students will:

OCUP Code	Overall Expectation
7m8	represent, compare, and order numbers, including integers;
7m9	demonstrate an understanding of addition and subtraction of fractions and integers, and apply a variety of computational strategies to solve problems involving whole numbers and decimal numbers;
7m10	demonstrate an understanding of proportional relationships using percent, ratio, and rate.

Quantity Relationships

By the end of Grade 7, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
7m11	represent, compare, and order decimals to hundredths and fractions, using a variety of tools;	1	5:NS	<u>32–36</u> , 37, 38
		2	1:NS	55, 56, 59
7m12	generate multiples and factors, using a variety of tools and strategies;	1	3:NS	9–11
7m13	identify and compare integers found in real-life contexts;	2	6:NS	<u>86</u> , <u>87</u> , 88, 89
7m14	represent and order integers, using a variety of tools;	2	6:NS	<u>86</u> , 87–89
7m15	select and justify the most appropriate representation of a quantity (i.e., fraction, decimal, percent) for a given context;	2	1:NS	55, 68, 69
7m16	represent perfect squares and square roots, using a variety of tools;	1	3:NS	12
7m17	explain the relationship between exponential notation and the measurement of area and volume.	1	3:NS	12
		2	2:ME	22

Operational Sense

By the end of Grade 7, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
7m18	divide whole numbers by simple fractions and by decimal numbers to hundredths, using concrete materials;	1	5:NS	52, 53
		1	6:ME	2
		2	1:NS	79–81
7m19	use a variety of mental strategies to solve problems involving the addition and subtraction of fractions and decimals;	1	5:NS	<u>45–48</u> , 49, 50, 54
		1	6:ME	2
		1	2:PA	<u>15</u>
		2	1:NS	78, 80–83
7m20	solve problems involving the multiplication and division of decimal numbers to thousandths by one-digit whole numbers, using a variety of tools and strategies;	1	5:NS	<u>45–48</u> , 49–54
7m21	solve multi-step problems arising from real-life contexts and involving whole numbers and decimals, using a variety of tools and strategies;	1	5:NS	<u>40</u> , <u>41</u> , 54
		2	1:NS	82, 83
7m22	use estimation when solving problems involving operations with whole numbers, decimals, and percents, to help judge the reasonableness of a solution;	1	5:NS	<u>39</u> , <u>42</u> , <u>43</u> , 44, 54
		2	1:NS	67, 82, 83
7m23	evaluate expressions that involve whole numbers and decimals, including expressions that contain brackets, using order of operations;	1	1:NS	<u>2</u>
		1	6:ME	8–10
7m24	add and subtract fractions with simple like and unlike denominators, using a variety of tools and algorithms;	1	3:NS	27–31
		2	1:NS	56, 78
7m25	demonstrate, using concrete materials, the relationship between the repeated addition of fractions and the multiplication of that fraction by a whole number;	1	3:NS	22
7m26	add and subtract integers, using a variety of tools.	2	6:NS	90–94

Proportional Relationships

By the end of Grade 7, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
7m27	determine, through investigation, the relationships among fractions, decimals, percents, and ratios;	1	5:NS	<u>32–36</u> , 38
		1	6:ME	11–14
		2	1:NS	57, 59, 75–77, 84, 85
7m28	solve problems that involve determining whole number percents, using a variety of tools;	2	1:NS	70–77
7m29	demonstrate an understanding of rate as a comparison, or ratio, of two measurements with different units;	1	6:ME	15–17
7m30	solve problems involving the calculation of unit rates.	1	6:ME	15–17

Measurement

Overall Expectations

By the end of Grade 7, students will:

OCUP Code	Overall Expectation
7m31	report on research into real-life applications of area measurements;
7m32	determine the relationships among units and measurable attributes, including the area of a trapezoid and the volume of a right prism.

Attributes, Units and Measurement Sense

By the end of Grade 7, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
7m33	research and report on real-life applications of area measurements.	1	6:ME	7

Measurement Relationships

By the end of Grade 7, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
7m34	sketch different polygonal prisms that share the same volume;	2	2:ME	23
7m35	solve problems that require conversion between metric units of measure;	1	6:ME	1
		2	1:NS	84, 85
7m36	solve problems that require conversion between metric units of area (i.e., square centimetres, square metres);	1	6:ME	3
7m37	determine, through investigation using a variety of tools and strategies, the relationship for calculating the area of a trapezoid, and generalize to develop the formula [i.e., $\text{Area} = (\text{sum of lengths of parallel sides} \times \text{height}) \div 2$];	1	6:ME	8, 9
7m38	solve problems involving the estimation and calculation of the area of a trapezoid;	1	6:ME	8, 9
7m39	estimate and calculate the area of composite two-dimensional shapes by decomposing into shapes with known area relationships;	1	6:ME	8, 10

Measurement Relationships (continued)

By the end of Grade 7, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
7m40	determine, through investigation using a variety of tools and strategies, the relationship between the height, the area of the base, and the volume of right prisms with simple polygonal bases and generalize to develop the formula (i.e., Volume = area of base x height);	2	2:ME	24, 25
7m41	determine, through investigation using a variety of tools, the surface area of right prisms;	2	2:ME	26–28
7m42	solve problems that involve the surface area and volume of right prisms and that require conversion between metric measures of capacity and volume (i.e., millilitres and cubic centimetres).	2	2:ME	28

Geometry and Spatial Sense

Overall Expectations

By the end of Grade 7, students will:

OCUP Code	Overall Expectation
7m43	construct related lines, and classify triangles, quadrilaterals, and prisms;
7m44	develop an understanding of similarity, and distinguish similarity and congruence;
7m45	describe location in the four quadrants of a coordinate system, dilate two-dimensional shapes, and apply transformations to create and analyse designs.

Geometric Properties

By the end of Grade 7, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
7m46	construct related lines (i.e., parallel; perpendicular; intersecting at 30° , 45° , and 60°), using angle properties and a variety of tools and strategies;	1	6:ME	<u>18</u>
		1	4:G	3, 4, 6, 7
		2	5:G	<u>16</u> , 21–24
7m47	sort and classify triangles and quadrilaterals by geometric properties related to symmetry, angles, and sides, through investigation using a variety of tools and strategies;	1	4:G	7–11
		2	5:G	17
7m48	construct angle bisectors and perpendicular bisectors, using a variety of tools and strategies, and represent equal angles and equal lengths using mathematical notation;	1	4:G	5, 8–10
		2	5:G	16, 18–20
7m49	investigate, using concrete materials, the angles between the faces of a prism, and identify right prisms.	2	2:ME	23

Geometric Relationships

By the end of Grade 7, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
7m50	identify, through investigation, the minimum side and angle information (i.e., side-side-side; side-angle-side; angle-side-angle) needed to describe a unique triangle;	2	5:G	15, 17, 18
7m51	determine, through investigation using a variety of tools, relationships among area, perimeter, corresponding side lengths, and corresponding angles of congruent shapes;	2	5:G	13–15

Geometric Relationships (continued)

By the end of Grade 7, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
7m52	demonstrate an understanding that enlarging or reducing two-dimensional shapes creates similar shapes;	2	7:G	37, 38
7m53	distinguish between and compare similar shapes and congruent shapes, using a variety of tools and strategies.	2	5:G	15
		2	7:G	36–38

Location and Movement

By the end of Grade 7, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
7m54	plot points using all four quadrants of the Cartesian coordinate plane;	2	7:G	25, 26
7m55	identify, perform, and describe dilatations (i.e., enlargements and reductions), through investigation using a variety of tools;	2	7:G	<u>27</u> , 37, 38
7m56	create and analyse designs involving translations, reflections, dilatations, and/or simple rotations of two-dimensional shapes, using a variety of tools and strategies;	2	7:G	<u>27</u> , <u>29</u> , <u>31</u> , 34, 35, 37, 38
7m57	determine, through investigation using a variety of tools, polygons or combinations of polygons that tile a plane, and describe the transformation(s) involved.	2	7:G	<u>27</u> , <u>29</u> , <u>31</u> , 34, 35

Patterning and Algebra

Overall Expectations

By the end of Grade 7, students will:

OCUP Code	Overall Expectation
7m58	represent linear growing patterns (where the terms are whole numbers) using concrete materials, graphs, and algebraic expressions;
7m59	model real-life linear relationships graphically and algebraically, and solve simple algebraic equations using a variety of strategies, including inspection and guess and check.

Patterns and Relationships

By the end of Grade 7, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
7m60	represent linear growing patterns, using a variety of tools and strategies;	2	4:PA	16–28
7m61	make predictions about linear growing patterns, through investigation with concrete materials;	2	4:PA	16, 22, 23, 27, 28
7m62	develop and represent the general term of a linear growing pattern, using algebraic expressions involving one operation;	2	4:PA	16, 24–26
7m63	compare pattern rules that generate a pattern by adding or subtracting a constant, or multiplying or dividing by a constant, to get the next term with pattern rules that use the term number to describe the general term.	2	4:PA	19, 20, 22, 23, 25

Variables, Expressions, and Equations

By the end of Grade 7, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
7m64	model real-life relationships involving constant rates where the initial condition starts at 0, through investigation using tables of values and graphs;	2	4:PA	21, 27, 28
7m65	model real-life relationships involving constant rates, using algebraic equations with variables to represent the changing quantities in the relationship;	1	2:PA	5
		2	4:PA	16, 21, 25
7m66	translate phrases describing simple mathematical relationships into algebraic expressions, using concrete materials;	1	2:PA	14
7m67	evaluate algebraic expressions by substituting natural numbers for the variables;	1	2:PA	5
7m68	make connections between evaluating algebraic expressions and determining the term in a pattern using the general term;	2	4:PA	22, 23
7m69	solve linear equations of the form $ax = c$ or $c = ax$ and $ax + b = c$ or variations such as $b + ax = c$ and $c = bx + a$ (where a , b , and c are natural numbers) by modelling with concrete materials, by inspection, or by guess and check, with and without the aid of a calculator.	1	2:PA	6–11, 14

Data Management and Probability

Overall Expectations

By the end of Grade 7, students will:

OCUP Code	Overall Expectation
7m70	collect and organize categorical, discrete, or continuous primary data and secondary data and display the data using charts and graphs, including relative frequency tables and circle graphs;
7m71	make and evaluate convincing arguments, based on the analysis of data;
7m72	compare experimental probabilities with the theoretical probability of an outcome involving two independent events.

Collection and Organization of Data

By the end of Grade 7, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
7m73	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;	2	3:PDM	16
7m74	collect and organize categorical, discrete, or continuous primary data and secondary data and display the data in charts, tables, and graphs (including relative frequency tables and circle graphs) that have appropriate titles, labels, and scales that suit the range and distribution of the data, using a variety of tools;	1	6:ME	<u>18</u>
		2	3:PDM	7, 8, 16
7m75	select an appropriate type of graph to represent a set of data, graph the data using technology, and justify the choice of graph (i.e., from types of graphs already studied);	2	3:PDM	<u>6</u> , 8, 14, 16
7m76	distinguish between a census and a sample from a population;	2	3:PDM	15
7m77	identify bias in data collection methods.	2	3:PDM	15

Data Relationships

By the end of Grade 7, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
7m78	read, interpret, and draw conclusions from primary data and from secondary data presented in charts, tables, and graphs (including relative frequency tables and circle graphs);	2	3:PDM	6–13
7m79	identify, through investigation, graphs that present data in misleading ways;	2	3:PDM	6, 8, 11, 12
7m80	determine, through investigation, the effect on a measure of central tendency (i.e., mean, median, and mode) of adding or removing a value or values;	1	7:PDM	2–5
		2	3:PDM	13
7m81	identify and describe trends, based on the distribution of the data presented in tables and graphs, using informal language;	2	3:PDM	8
7m82	make inferences and convincing arguments that are based on the analysis of charts, tables, and graphs.	2	3:PDM	8

Probability

By the end of Grade 7, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
7m83	research and report on real-world applications of probabilities expressed in fraction, decimal, and percent form;	2	8:PDM	22, 23
7m84	make predictions about a population when given a probability;	2	8:PDM	22, 23
7m85	represent in a variety of ways all the possible outcomes of a probability experiment involving two independent events (i.e., one event does not affect the other event), and determine the theoretical probability of a specific outcome involving two independent events;	2	8:PDM	19–23
7m86	perform a simple probability experiment involving two independent events, and compare the experimental probability with the theoretical probability of a specific outcome.	2	8:PDM	21

JUMP Math

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JUMP Math workbook units are represented by:

- NS Number Sense
- PA Patterns and Algebra
- ME Measurement
- G Geometry
- PDM Probability and Data Management

Number Sense and Numeration

Overall Expectations

By the end of Grade 8, students will:

OCUP Code	Overall Expectation
8m8	represent, compare, and order equivalent representations of numbers, including those involving positive exponents;
8m9	solve problems involving whole numbers, decimal numbers, fractions, and integers, using a variety of computational strategies;
8m10	solve problems by using proportional reasoning in a variety of meaningful contexts.

Quantity Relationships

By the end of Grade 8, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
8m11	express repeated multiplication using exponential notation;	2	5:NS	104, 105
8m12	represent whole numbers in expanded form using powers of ten;	2	5:NS	106
8m13	represent, compare, and order rational numbers (i.e., positive and negative fractions and decimals to thousandths);	1	1:NS	<u>35</u> , <u>36</u> , <u>38</u> , 39, 57
		2	1:NS	85–87
		2	5:NS	110
8m14	translate between equivalent forms of a number (i.e., decimals, fractions, percents);	1	1:NS	<u>34</u> , <u>37</u> , 39
		2	1:NS	75, 76, 85–87, 96
		2	5:NS	110
8m15	determine common factors and common multiples using the prime factorization of numbers.	1	1:NS	<u>1–4</u> , 5, 6

Operational Sense

By the end of Grade 8, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
8m16	solve multi-step problems arising from real-life contexts and involving whole numbers and decimals, using a variety of tools and strategies;	1	1:NS	57
8m17	solve problems involving percents expressed to one decimal place and whole-number percents greater than 100;	2	1:NS	91–95
8m18	use estimation when solving problems involving operations with whole numbers, decimals, percents, integers, and fractions, to help judge the reasonableness of a solution;	1	1:NS	25, 26, 30, 33, 43–45, 50–57
		2	1:NS	85–89, 94, 95, 103
8m19	represent the multiplication and division of fractions, using a variety of tools and strategies;	1	1:NS	23–33
8m20	solve problems involving addition, subtraction, multiplication, and division with simple fractions;	1	1:NS	19, 21, 22, 24, 26, 29–33
8m21	represent the multiplication and division of integers, using a variety of tools;	1	7:NS	72–74
8m22	solve problems involving operations with integers, using a variety of tools;	1	7:NS	72–74
8m23	evaluate expressions that involve integers, including expressions that contain brackets and exponents, using order of operations;	2	5:NS	107–109
8m24	multiply and divide decimal numbers by various powers of ten;	1	1:NS	46–52, 56
		2	6:ME	15
8m25	estimate, and verify using a calculator, the positive square roots of whole numbers, and distinguish between whole numbers that have whole-number square roots (i.e., perfect square numbers) and those that do not.	1	3:NS	58–63

Proportional Relationships

By the end of Grade 8, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
8m26	identify and describe real-life situations involving two quantities that are directly proportional;	2	1:NS	98, 99, 101–103
8m27	solve problems involving proportions, using concrete materials, drawings, and variables;	1	6:ME	3, 4
		2	1:NS	90, 92, 97–99
8m28	solve problems involving percent that arise from real-life contexts;	2	1:NS	85–89, 92–95
8m29	solve problems involving rates.	2	1:NS	101–103

Measurement

Overall Expectations

By the end of Grade 8, students will:

OCUP Code	Overall Expectation
8m30	research, describe, and report on applications of volume and capacity measurement;
8m31	determine the relationships among units and measurable attributes, including the area of a circle and the volume of a cylinder.

Attributes, Units, and Measurement Sense

By the end of Grade 8, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
8m32	research, describe, and report on applications of volume and capacity measurement.	2	6:ME	14

Measurement Relationships

By the end of Grade 8, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
8m33	solve problems that require conversions involving metric units of area, volume, and capacity (i.e., square centimetres and square metres; cubic centimetres and cubic metres; millilitres and cubic centimetres);	2	6:ME	15
8m34	measure the circumference, radius, and diameter of circular objects, using concrete materials;	1	6:ME	5, 6
8m35	determine, through investigation using a variety of tools and strategies, the relationships for calculating the circumference and the area of a circle, and generalize to develop the formulas [i.e., Circumference of a circle = $\pi \times \text{diameter}$; Area of a circle = $\pi \times (\text{radius})^2$];	1	6:ME	6, 7
8m36	solve problems involving the estimation and calculation of the circumference and the area of a circle;	1	6:ME	7, 8

Measurement Relationships (continued)

By the end of Grade 8, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
8m37	determine, through investigation using a variety of tools and strategies, the relationship between the area of the base and height and the volume of a cylinder, and generalize to develop the formula (i.e., Volume = area of base x height);	2	6:ME	13
8m38	determine, through investigation using concrete materials, the surface area of a cylinder;	2	6:ME	17, 18
8m39	solve problems involving the surface area and the volume of cylinders, using a variety of strategies.	2	6:ME	14, 17, 18

Geometry and Spatial Sense

Overall Expectations

By the end of Grade 8, students will:

OCUP Code	Overall Expectation
8m40	demonstrate an understanding of the geometric properties of quadrilaterals and circles and the applications of geometric properties in the real world;
8m41	develop geometric relationships involving lines, triangles, and polyhedra, and solve problems involving lines and triangles;
8m42	represent transformations using the Cartesian coordinate plane, and make connections between transformations and the real world.

Geometric Properties

By the end of Grade 8, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
8m43	sort and classify quadrilaterals by geometric properties, including those based on diagonals, through investigation using a variety of tools;	2	3:G	28, 29, 32
8m44	construct a circle, given its centre and radius, or its centre and a point on the circle, or three points on the circle;	1	6:ME	5
8m45	investigate and describe applications of geometric properties in the real world.	1	6:ME	5

Geometric Relationships

By the end of Grade 8, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
8m46	determine, through investigation using a variety of tools, relationships among area, perimeter, corresponding side lengths, and corresponding angles of similar shapes;	2	3:G	34, 35
8m47	determine, through investigation using a variety of tools and strategies, the angle relationships for intersecting lines and for parallel lines and transversals, and the sum of the angles of a triangle;	2	3:G	18–29
8m48	solve angle-relationship problems involving triangles, intersecting lines, and parallel lines and transversals;	2	3:G	19–31, 36
8m49	determine the Pythagorean relationship, through investigation using a variety of tools and strategies;	1	5:G	3, 5
8m50	solve problems involving right triangles geometrically, using the Pythagorean relationship;	1 1	5:G 6:ME	4, 6, 7 5, 8
8m51	determine, through investigation using concrete materials, the relationship between the numbers of faces, edges, and vertices of a polyhedron (i.e., number of faces + number of vertices = number of edges + 2).	2	7:G	37

Location and Movement

By the end of Grade 8, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
8m52	graph the image of a point, or set of points, on the Cartesian coordinate plane after applying a transformation to the original point(s) (i.e., translation; reflection in the x-axis, the y-axis, or the angle bisector of the axes that passes through the first and third quadrants; rotation of 90°, 180°, or 270° about the origin);	1	8:G	9–14
8m53	identify, through investigation, real-world movements that are translations, reflections, and rotations.	1	8:G	14

Patterning and Algebra

Overall Expectations

By the end of Grade 8, students will:

OCUP Code	Overall Expectation
8m54	represent linear growing patterns (where the terms are whole numbers) using graphs, algebraic expressions, and equations;
8m55	model linear relationships graphically and algebraically, and solve and verify algebraic equations, using a variety of strategies, including inspection, guess and check, and using a “balance” model.

Patterns and Relationships

By the end of Grade 8, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
8m56	represent, through investigation with concrete materials, the general term of a linear pattern, using one or more algebraic expressions;	2	4:PA	20–22, 24, <u>31</u> , 32
8m57	represent linear patterns graphically (i.e., make a table of values that shows the term number and the term, and plot the coordinates on a graph), using a variety of tools;	2	4:PA	25–30
8m58	determine a term, given its term number, in a linear pattern that is represented by a graph or an algebraic equation.	2	4:PA	20–22, 24, 28–30

Variables, Expressions, and Equations

By the end of Grade 8, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
8m59	describe different ways in which algebra can be used in real-life situations;	1	2:PA	5, 9
		2	4:PA	28–30
8m60	model linear relationships using tables of values, graphs, and equations, through investigation using a variety of tools;	2	4:PA	20, 23, 24, 26–30
8m61	translate statements describing mathematical relationships into algebraic expressions and equations;	1	2:PA	6, 11, 15
		2	4:PA	23
8m62	evaluate algebraic expressions with up to three terms, by substituting fractions, decimals, and integers for the variables;	1	2:PA	6
		2	4:PA	16–19
8m63	make connections between solving equations and determining the term number in a pattern, using the general term;	2	4:PA	21–24
8m64	solve and verify linear equations involving a one-variable term and having solutions that are integers, by using inspection, guess and check, and a “balance” model.	1	2:PA	7–9, 11, 15
		2	4:PA	17–19

Data Management and Probability

Overall Expectations

By the end of Grade 8, students will:

OCUP Code	Overall Expectation
8m65	collect and organize categorical, discrete, or continuous primary data and secondary data and display the data using charts and graphs, including frequency tables with intervals, histograms, and scatter plots;
8m66	apply a variety of data management tools and strategies to make convincing arguments about data;
8m67	use probability models to make predictions about real-life events.

Collection and Organization of Data

By the end of Grade 8, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
8m68	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;	2	8:PDM	26–28
8m69	organize into intervals a set of data that is spread over a broad range;	1	4:PDM	1
		2	2:PDM	12, 13
8m70	collect and organize categorical, discrete, or continuous primary data and secondary data, and display the data in charts, tables, and graphs (including histograms and scatter plots) that have appropriate titles, labels, and scales that suit the range and distribution of the data, using a variety of tools;	1	4:PDM	1, 2
		2	2:PDM	10–14
8m71	select an appropriate type of graph to represent a set of data, graph the data using technology, and justify the choice of graph (i.e., from types of graphs already studied, including histograms and scatter plots);	1	4:PDM	3, 5
		2	2:PDM	6, 9, 11, 12, 14
		2	8:PDM	28
8m72	explain the relationship between a census, a representative sample, sample size, and a population.	2	8:PDM	26–28

Data Relationships

By the end of Grade 8, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
8m73	read, interpret, and draw conclusions from primary data and from secondary data, presented in charts, tables, and graphs (including frequency tables with intervals, histograms, and scatter plots);	1	4:PDM	1–4
		2	2:PDM	<u>6</u> , 7–9
8m74	determine, through investigation, the appropriate measure of central tendency (i.e., mean, median, or mode) needed to compare sets of data;	2	8:PDM	16, 17
8m75	demonstrate an understanding of the appropriate uses of bar graphs and histograms by comparing their characteristics;	2	2:PDM	12, 13
8m76	compare two attributes or characteristics, using a scatter plot, and determine whether or not the scatter plot suggests a relationship;	2	2:PDM	10
8m77	identify and describe trends, based on the rate of change of data from tables and graphs, using informal language;	1	4:PDM	4, 5
		2	2:PDM	12, 13
8m78	make inferences and convincing arguments that are based on the analysis of charts, tables, and graphs;	1	4:PDM	1–3, 5
		2	2:PDM	7, 9
8m79	compare two attributes or characteristics, using a variety of data management tools and strategies (i.e., pose a relevant question, then design an experiment or survey, collect and analyse the data, and draw conclusions).	2	8:PDM	<u>27</u> , 28

Probability

By the end of Grade 8, students will:

ONTARIO CURRICULUM EXPECTATION		JUMP MATH WORKBOOK		
OCUP Code	Specific Expectation	Part	Unit	Lesson
8m80	compare, through investigation, the theoretical probability of an event (i.e., the ratio of the number of ways a favourable outcome can occur compared to the total number of possible outcomes) with experimental probability, and explain why they might differ;	2	8:PDM	24, 26
8m81	determine, through investigation, the tendency of experimental probability to approach theoretical probability as the number of trials in an experiment increases, using class-generated data and technology-based simulation models;	1	4:PDM	3
		2	8:PDM	24, 26
8m82	identify the complementary event for a given event, and calculate the theoretical probability that a given event will not occur.	2	8:PDM	25, 26