Coded Expectations, Locally Developed Compulsory Credit Course, Mathematics, Grade 9, MAT1L

Developing and Consolidating Money Sense

Overall Expectations

By the end of this course, students will:

DMSV.01 • interpret, write, and round decimal numbers with understanding in everyday money situations;

DMSV.02 • solve problems involving money, drawn from everyday situations;

DMSV.03 • communicate information about money concepts;

DMSV.04 • use literacy skills (reading, writing, listening, and speaking) to obtain and communicate information about money sense.

Specific Expectations

Understanding and Using Decimals

By the end of this course, students will:

DMS1.01 – read and interpret money values given in words and symbols, using the correct place value (e.g., $25 million is $25 000 000; $43K is $43 000), found in everyday contexts;

DMS1.02 – write money values, using correct units (e.g., 79 cents may be written as 79¢ or $0.79);

DMS1.03 – round money values to stated accuracies (e.g., the nearest cent, the nearest dollar, the nearest ten dollars, the nearest hundred dollars, the nearest thousand dollars, and the nearest million dollars), in applications drawn from everyday situations;

DMS1.04 – use estimation strategies involving addition, subtraction, multiplication, and division to round money values appropriately within a given context (e.g., I am shopping and have $40 with me. I will round prices up when estimating, to make sure that my total is less than $40.);

DMS1.05 – interpret numerical information drawn from the media or through conversation and explain its significance, using familiar references (e.g., I read in the newspaper that an athlete earned $250 000 last year. How many hours would you need to work to earn that much money?);

DMS1.06 – enter decimal numbers correctly on a numerical key pad (e.g., calculator, computer, ATM, cash register) and read and interpret decimal numbers correctly from a display (e.g., 16.5 means $16.50, not $16.05);

DMS1.07 – demonstrate the effective use of a calculator in operations with decimals;

DMS1.08 – estimate the change for a transaction (e.g., for a transaction of $13.72, the change from a $20 bill should be a little more than $6.00);

DMS1.09 – represent a given coin or bill as a combination of other coins or bills (e.g., $5 could be given as one $5 bill, as five loonies, or as two toonies and one loonie);

DMS1.10 – identify different combinations of coins and bills that would result in a given amount of money (e.g., What are possible ways to make $27.48, using coins and bills?);

DMS1.11 – judge the reasonableness of calculations involving decimals, through estimation, using mental mathematics, where appropriate.

Solving Problems Involving Money

By the end of this course, students will:

DMS2.01 – make the correct change for an offered amount with and without concrete materials, (e.g., change from a $5 bill for an item costing $4.77);

DMS2.02 – solve problems involving estimating the totals of money values found in real contexts (e.g., the total of a transaction, the total cost of several items on a restaurant menu, the total cost of several items in a newspaper advertisement);

DMS2.03 – solve problems requiring estimating and calculating the cost of projects that require the purchase of multiples of the same item (e.g., 18 sheets of Bristol board and 9 glue sticks);

DMS2.04 – solve problems by exploring the cost of several items (e.g., collect data through reading newspapers, catalogues, and online sources) and produce an organized list, using technology as appropriate;

DMS2.05 – identify, record, and monitor daily purchases to determine personal weekly expenditures.

Communicating Information about Money

By the end of this course, students will:

DMS3.01 – verbalize their observations and reflections regarding money sense and ask questions to clarify their understanding (e.g., talk about their own and other students' solutions to problems);

DMS3.02 – explain their reasoning used in problem solving and in judging reasonableness;

DMS3.03 – communicate, orally and in writing, the solutions to money problems and the results of investigations, using appropriate terminology, symbols, and form.

Developing and Consolidating Concepts in Measurement

Overall Expectations

By the end of this course, students will:

DCMV.01 • estimate and measure length, capacity, and mass, in order to consolidate understanding of the metric system;

DCMV.02 • estimate and measure length, using the imperial system;

DCMV.03 • solve problems, carry out investigations, estimate, and measure, using metric units, to consolidate understanding of perimeter, area, and volume;

DCMV.04 • communicate information about measurement concepts;

DCMV.05 • use literacy skills (reading, writing, listening, and speaking) to obtain and communicate information about measurement concepts.

Specific Expectations

Understanding and Using the Metric System

By the end of this course, students will:

DCM1.01 – investigate, discuss, and describe applications from everyday life and the workplace that would involve the measurement of length in commonly used metric units (millimetre, centimetre, metre, and kilometre);

DCM1.02 – investigate, discuss, and describe applications from everyday life and the workplace that would involve the measurement of mass in commonly used metric units (milligram, gram, and kilogram);

DCM1.03 – investigate, discuss, and describe applications from everyday life and the workplace that would involve the measurement of capacity in commonly used metric units (millilitre, litre, and kilolitre);

DCM1.04 – explain and use correctly prefixes in the metric system;

DCM1.05 – convert between metric units commonly used in everyday applications (e.g., 260 cm is 2.6 m or 2 m 60 cm);

DCM1.06 – demonstrate accuracy in measuring length, capacity, and mass in everyday applications, using teacher-selected tools, and record the measurements using the correct abbreviations for metric units;

DCM1.07 – investigate, identify, and use personal referents to aid in the estimation of length, capacity, area, and mass in everyday situations (e.g., a small paper clip has a mass of about 1 g; the width of my baby finger is about 1 cm; the area of a room is about 10 square metres; the length of my walking stride is about 60 cm; a can of juice contains about 350 mL);

DCM1.08 – estimate and use measurements of length, capacity, and mass in everyday applications (e.g., the distance from the school to the skating rink is about 1 km; the cups in the cafeteria hold about 350 mL; one protein bar has a mass of about 85 g).

Understanding and Using the Imperial System

By the end of this course, students will:

DCM2.01 – investigate, discuss, and describe applications from everyday life and the workplace that would involve the measurement of length in feet and inches;

DCM2.02 – measure length in feet and inches, to an accuracy of $\frac{1}{4}$ inch, using tape measures and 12-inch rulers;

DCM2.03 – record measurements, using commonly accepted abbreviations for the chosen units (e.g., 5 inches could be written as 5 in. or 5"; 7 feet could be written as 7 ft. or 7');

DCM2.04 – investigate, identify, and use personal referents to aid in the estimation of length in feet and inches (e.g., 1" is about the distance from the tip of my thumb to the first knuckle);

DCM2.05 – estimate and use measurements of lengths in feet and inches in everyday situations (e.g., the length of a car is about 10').

Understanding and Applying Perimeter, Area, and Volume

By the end of this course, students will:

DCM3.01 – explore and describe situations from everyday life and the workplace that require calculation or measurement of perimeter (e.g., fencing, wall paper borders, the baseboard around a room, the distance around a track or a baseball diamond);

DCM3.02 – estimate, measure, and calculate perimeters drawn from applications in everyday life and the workplace;

DCM3.03 – explain and illustrate how to determine the perimeter of any figure bounded by straight line segments;

DCM3.04 – explore and describe situations from everyday life and the workplace that require calculating and measuring area (e.g., buying wallpaper, floor tiles, sod, patio slabs);

DCM3.05 – investigate the areas of a variety of rectangles and triangles, using concrete materials (e.g., square tiles, interlocking cubes, rectangular and triangular pattern blocks, triangle models, grid paper);

DCM3.06 – estimate, measure, and record rectangular areas found in everyday life and the workplace, using uniform non-standard units (e.g., floor tiles, ceiling tiles, square pattern blocks);

DCM3.07 – predict and explain, from experiences involving concrete materials, that the area of any rectangle can be found by multiplying its length by its width;

DCM3.08 – estimate and calculate the areas of rectangles and triangles, drawn from applications in everyday life and the workplace;

DCM3.09 – estimate and calculate the areas of regions that can be broken into rectangles (e.g., L-shaped floor plan, a garden, a roof);

DCM3.10 – explore and describe situations from everyday life and the workplace that require calculation or measurement of volume (e.g., the size of a package, the amount of soil to purchase, the volume of air in a room, the amount of liquid medication);

DCM3.11 – investigate and calculate the volumes of a variety of prisms whose bases involve rectangular regions (e.g., rectangular, T-shaped, L-shaped), by building the prisms using concrete materials (e.g., interlocking cubes);

DCM3.12 – predict and explain, from investigations involving the building of prisms, that the volume of a prism is given by multiplying the area of its base by its height;

DCM3.13 – estimate and calculate the volumes of rectangular prisms drawn from applications in everyday life and the workplace;

DCM3.14 – select the most appropriate standard unit to measure the perimeter, area, or volume of a figure (e.g., use centimetres squared or cm^2 to measure the area of a book cover, but use metres squared or m^2 to measure the area of a wall);

DCM3.15 – explain, using examples drawn from their everyday experiences, why length is measured in linear units, why area is measured in square units, and why volume is measured in cubic units;

DCM3.16 – solve problems involving perimeter, area, and volume in applications drawn from everyday situations.

Communicating Information about Measurement

By the end of this course, students will:

DCM4.01 – organize measurement information, using a simple framework (e.g., template, form, graphic organizer, chart, electronic spreadsheet); draw conclusions from this data; and make decisions based on it;

DCM4.02 – verbalize their observations and reflections regarding measurements and ask questions to clarify their understanding (e.g., talk about their own and other students' solutions to problems);

DCM4.03 – explain their reasoning used in problem solving and in judging reasonableness;

DCM4.04 – communicate, orally and in writing, the solutions to measurement problems and the results of investigations, using appropriate terminology, symbols, and form.

Developing Concepts in Proportional Reasoning

Overall Expectations

By the end of this course, students will:

DPRV.01 • determine relationships among fractions, percentages, ratios, and rates by constructing diagrams, building models, and estimating measurements;

DPRV.02 • solve problems drawn from everyday situations involving percent, ratio, rate, and fractions;

DPRV.03 • communicate information about proportional reasoning;

DPRV.04 • use literacy skills (reading, writing, listening, and speaking) to obtain and communicate information about proportional reasoning.