

GRADE 6

The Ontario Curriculum

Expectations for Grade 6

Parents' Guide



Durham District
School Board

▶ These curriculum expectations have been taken directly from the **Ontario Curriculum, Grades 1-8**; as of **June 2010**, published by the Ministry of Education. The expectations are separated by grade to offer parents easy access to this information.

▶ The achievement charts identify four categories of knowledge and skills. The achievement chart is a standard province-wide guide to be used by teachers to guide the development of assessment tasks and tools, help teachers to plan instruction and assist in providing meaningful feedback to students. Level 3 is the provincial standard.

Dear Parents and Guardians:

At the Durham District School Board we believe that parents and guardians are partners in learning and we value involvement in your children's education. To support you, and in turn our students, we have prepared this clear and concise version of the curriculum expectations. This publication offers you a complete guide to the new Ontario Curriculum's learning expectations for Grade One.

The curriculum implemented in Durham District School Board schools includes general and specific expectations of knowledge and skills required of students in Grade One through to Grade Eight. There are eight separate publications, covering the expectations for each grade. By being familiar with the curriculum expectations, you can see what your child is learning in each grade and work with teachers to improve your child's academic success.

We also welcome you in our schools and encourage you to participate in parent-teacher conferences and school events, and to be active on school councils. Most of all, we urge you to provide your children with encouragement and support to be successful in school.

It is our hope that you will find the grade-by-grade curriculum guides helpful. Parents can also find further information on the Board's Website, www.durham.edu.on.ca in the "Parents" menu.

If you have questions or if you would like to discuss the curriculum expectations, we encourage you to contact your child's teacher or the school principal. Together, we can work in cooperation to ensure student success.

Sincerely,

A handwritten signature in black ink, appearing to read 'Martyn Beckett'.

*Martyn Beckett
Director of Education*

The Importance of Literacy and Language

Language development is central to students' intellectual, social, and emotional growth, and must be seen as a key element of the curriculum. When students learn to use language in the elementary grades, they do more than master the basic skills. They learn to value the power of language and to use it responsibly. They learn to express feelings and opinions and, as they mature, to support their opinions with sound arguments and research. They become aware of the many purposes for which language is used and the diverse forms it can take to appropriately serve particular purposes and audiences.

They develop an awareness of how language is used in different formal and informal situations. In sum, they come to appreciate language both as an important medium for communicating ideas and information and as a source of enjoyment.

The expectations for Grades 4 to 6 focus on students' ability to use their knowledge and skills in listening, speaking, reading, writing, viewing, and representing to understand, critically analyse, and communicate a broad range of information and ideas from and about their multicultural, multimedia environment.

Getting Involved

Encourage your child to talk about books they have enjoyed or disliked and foster thoughtful critical thinking and comments.

- ✓ Play Boggle, Scrabble, Pictionary, and other word games with the whole family.

Overall Expectations

By the end of Grade 6, students will:

- ▶ listen in order to understand and respond appropriately in a variety of situations for a variety of purposes

Specific Expectations

By the end of Grade 6, students will:

Listen to Understand

Purpose

- identify a range of purposes for listening in a variety of situations, formal and informal, and set goals related to specific listening tasks

Active Listening Strategies

- demonstrate an understanding of appropriate listening behaviour by adapting active listening strategies to suit a variety of situations, including work in groups

Comprehension Strategies

- identify a variety of listening comprehension strategies and use them appropriately before, during, and after listening in order to understand and clarify the meaning of increasingly complex oral texts

Demonstrating Understanding

- demonstrate an understanding of the information and ideas in increasingly complex oral texts in a variety of ways

Making Inferences/Interpreting Texts

- interpret oral texts by using stated and implied ideas from the texts

Extending Understanding

- extend understanding of oral texts by connecting, comparing, and contrasting the ideas and information in them to their own knowledge, experience, and insights; to other texts, including print and visual texts; and to the world around them

Analysing Texts

- analyse oral texts in order to evaluate how well they communicate ideas, opinions, themes, and information

Point of View

- identify the point of view presented in oral texts, determine whether they agree with the point of view, and suggest other possible perspectives

Presentation Strategies

- identify a variety of presentation strategies used in oral texts and analyse their effect on the audience

Overall Expectations

By the end of Grade 6, students will:

- ▶ use speaking skills and strategies appropriately to communicate with different audiences for a variety of purposes

Specific Expectations

By the end of Grade 6, students will:

Speak to Communicate

Purpose

- identify a variety of purposes for speaking and explain how the purpose and intended audience influence the choice of form

Interactive Strategies

- demonstrate an increasingly sophisticated understanding of appropriate speaking behaviour in a variety of situations, including paired sharing, dialogue, and small- and large-group discussions

Clarity and Coherence

- communicate orally in a clear, coherent manner, using appropriate organizing strategies and formats to link and sequence ideas and information

Appropriate Language

- use appropriate words and phrases from the full range of their vocabulary including inclusive and non-discriminatory language, and stylistic devices appropriate to the purpose and context, to communicate their meaning accurately and engage the interest of their intended audience

Vocal Skills and Strategies

- identify a range of vocal effects, including tone, pace, pitch, volume, and a variety of sound effects, and use them appropriately and with sensitivity towards cultural differences to help communicate their meaning

Non-Verbal Cues

- identify a variety of non-verbal cues, including facial expression, gestures, and eye contact, and use them in oral communications, appropriately and with sensitivity towards cultural differences, to help convey their meaning

Visual Aids

- use a variety of appropriate visual aids

Overall Expectations

By the end of Grade 6, students will:

- ▶ reflect on and identify their strengths as listeners and speakers, areas for improvement, and the strategies they found most helpful in oral communication situations

Specific Expectations

By the end of Grade 6, students will:

Reflect on Oral Communication Skills and Strategies

Metacognition

- identify, in conversation with the teacher and peers, what strategies they found most helpful before, during, and after listening and speaking and what steps they can take to improve their oral communication skills

Interconnected Skills

- identify, in conversation with the teacher and peers, how their skills as viewers, representers, readers, and writers help them improve their oral communication skills

Reading: Grade 6

Overall Expectations

By the end of Grade 6, students will:

- ▶ read and demonstrate an understanding of a variety of literary, graphic, and informational texts, using a range of strategies to construct meaning

Specific Expectations

By the end of Grade 6, students will:

Read for Meaning

Variety of Texts

- read a wide variety of texts from diverse cultures, including literary texts

Purpose

- identify a variety of purposes for reading and choose reading materials appropriate for those purposes

Comprehension Strategies

- identify a variety of reading comprehension strategies and use them appropriately before, during, and after reading to understand increasingly complex texts

Demonstrating Understanding

- demonstrate understanding of increasingly complex texts by summarizing and explaining important ideas and citing relevant supporting details

Making Inferences/Interpreting Texts

- develop interpretations about texts using stated and implied ideas to support their interpretations

Extending Understanding

- extend understanding of texts by connecting, comparing, and contrasting the ideas in them to their own knowledge, experience, and insights, to other familiar texts, and to the world around them

Analysing Texts

- analyse increasingly complex texts and explain how the different elements in them contribute to meaning

Responding to and Evaluating Texts

- make judgements and draw conclusions about ideas in texts and cite stated or implied evidence from the text to support their views

Point of View

- identify the point of view presented in texts; determine whether they can agree with the view, in whole or in part; and suggest some other possible perspectives

Overall Expectations

By the end of Grade 6, students will:

- ▶ recognize a variety of text forms, text features, and stylistic elements and demonstrate understanding of how they help communicate meaning

Specific Expectations

By the end of Grade 6, students will:

Understand Form and Style

Text Forms

- analyse a variety of text forms and explain how their particular characteristics help communicate meaning, with a focus on literary texts such as a myth

Text Patterns

- identify a variety of organizational patterns in a range of texts and explain how they help readers understand the texts

Text Features

- identify a variety of text features and explain how they help readers understand texts

Overall Expectations

By the end of Grade 6, students will:

- ▶ use knowledge of words and cueing systems to read fluently

Specific Expectations

By the end of Grade 6, students will:

Read with Fluency

Reading Familiar Words

- automatically read and understand most words in a range of reading contexts

Reading Unfamiliar Words

- predict the meaning of and rapidly solve unfamiliar words using different types of cues, including:
 - semantic (meaning) cues
 - syntactic (language structure) cues
 - graphophonic (phonological and graphic) cues

Reading Fluently

- read appropriate texts with expression and confidence, adjusting reading strategies and reading rate to match the form and purpose

Overall Expectations

By the end of Grade 6, students will:

- ▶ reflect on and identify their strengths as readers, areas for improvement, and the strategies they found most helpful before, during, and after reading

Specific Expectations

By the end of Grade 6, students will:

Reflect on Reading Skills and Strategies

Metacognition

- identify the strategies they found most helpful before, during, and after reading and explain, in conversation with the teacher and/or peers, or in a reader's notebook, how they can use these and other strategies to improve as readers

Interconnected Skills

- explain, in conversation with the teacher and/or peers or in a reader's notebook, how their skills in listening, speaking, writing, viewing, and representing help them make sense of what they read

Writing: Grade 6

Overall Expectations

By the end of Grade 6, students will:

- ▶ generate, gather, and organize ideas and information to write for an intended purpose and audience

Specific Expectations

By the end of Grade 6, students will:

Develop and Organize Content

Purpose and Audience

- identify the topic, purpose, and audience for a variety of writing forms

Developing Ideas

- generate ideas about a potential topic and identify those most appropriate for the purpose

Research

- gather information to support ideas for writing, using a variety of strategies and a range of print and electronic resources

Classifying Ideas

- sort and classify information for their writing in a variety of ways that allow them to view information from different perspectives and make connections between ideas

Organizing Ideas

- identify and order main ideas and supporting details and group them into units that could be used to develop a structured, multi-paragraph piece of writing, using a variety of strategies

Review

- determine whether the ideas and information they have gathered are relevant, appropriate, and adequate for the purpose, and do more research if necessary

Overall Expectations

By the end of Grade 6, students will:

- ▶ draft and revise their writing, using a variety of informational, literary, and graphic forms and stylistic elements appropriate for the purpose and audience

Specific Expectations

By the end of Grade 6, students will:

Use Knowledge of Form and Style in Writing

Form

- write longer and more complex texts using a wide range of forms

Voice

- establish a distinctive voice in their writing appropriate to the subject and audience

Word Choice

- use some vivid and/or figurative language and innovative expressions to enhance interest

Sentence Fluency

- create complex sentences by combining phrases, clauses, and/or simple sentences

Point of View

- identify their point of view and other possible points of view; determine, when appropriate, if their own view is balanced and supported by the evidence; and adjust their thinking and expression if appropriate

Preparing for Revision

- identify elements in their writing that need improvement, selectively using feedback from the teacher and peers, with a focus on supporting details and precise language

Revision

- make revisions to improve the content, clarity, and interest of their written work, using a variety of strategies

Producing Drafts

- produce revised draft pieces of writing to meet identified criteria based on the expectations

Overall Expectations

By the end of Grade 6, students will:

- ▶ use editing, proofreading, and publishing skills and strategies, and knowledge of language conventions, to correct errors, refine expression, and present their work effectively

Specific Expectations

By the end of Grade 6, students will:

Apply Knowledge of Language Conventions and Present Written Work Effectively

Spelling Familiar Words

- spell familiar words correctly

Spelling Unfamiliar Words

- spell unfamiliar words using a variety of strategies that involve understanding sound-symbol relationships, word structures, word meanings, and generalizations about spelling

Vocabulary

- confirm spellings and word meanings or word choice using a variety of resources appropriate for the purpose

Punctuation

- use punctuation appropriately to communicate their intended meaning in longer and more complex sentences, with a focus on the use of: commas to separate words in a list or after an introductory word or phrase; quotation marks in dialogue; and some uses of the colon, semi-colon, and brackets

Grammar

- use parts of speech correctly to communicate their meaning clearly, with a focus on the use of: personal subject and object pronouns (*e.g., I, me*) indefinite pronouns

Proofreading

- proofread and correct their writing using guidelines developed with peers and the teacher

Publishing

- use a range of appropriate elements of effective presentation in the finished product, including print, script, different fonts, graphics, and layout

Producing Finished Works

- produce pieces of published work to meet identified criteria based on the expectations

Overall Expectations

By the end of Grade 6, students will:

- ▶ reflect on and identify their strengths as writers, areas for improvement, and the strategies they found most helpful at different stages in the writing process

Specific Expectations

By the end of Grade 6, students will:

Reflect on Writing Skills and Strategies

Metacognition

- identify a variety of strategies they used before, during, and after writing, explain which ones were most helpful, and suggest further steps they can take to improve as writers

Interconnected Skills

- describe how their skills in listening, speaking, reading, viewing, and representing help in their development as writers

Portfolio

- select pieces of writing that they think reflect their growth and competence as writers and explain the reasons for their choices

Media Literacy: Grade 6

Overall Expectations

By the end of Grade 6, students will:

- ▶ demonstrate an understanding of a variety of media texts

Specific Expectations

By the end of Grade 6, students will:

Understand Media Texts

Purpose and Audience

- explain how a variety of media texts address their intended purpose and audience

Making Inferences/Interpreting Messages

- interpret media texts, using overt and implied messages as evidence for their interpretations

Responding to and Evaluating Texts

- evaluate the effectiveness of the presentation and treatment of ideas, information, themes, opinions, issues, and/or experiences in media texts

Audience Responses

- explain why different audiences

Point of View

identify whose point of view is presented in a media text, identify missing or alternative points of view, and, where appropriate, determine whether the chosen view achieves a particular goal

Production Perspectives

identify who produces various media texts, the reason for their production, how they are produced, and how they are funded

Overall Expectations

By the end of Grade 6, students will:

- ▶ identify some media forms and explain how the conventions and techniques associated with them are used to create meaning

Specific Expectations

By the end of Grade 6, students will:

Understand Media Forms, Conventions and Techniques

Form

- describe in detail the main elements of some media forms

Conventions and Techniques

- identify the conventions and techniques used in some familiar media forms and explain how they help convey meaning and influence or engage the audience

Overall Expectations

By the end of Grade 6, students will:

- ▶ create a variety of media texts for different purposes and audiences, using appropriate forms, conventions, and techniques

Specific Expectations

By the end of Grade 6, students will:

Create Media Texts

Purpose and Audience

- describe in specific detail the topic, purpose, and audience for media texts they plan to create, and identify challenges they may face in achieving their purpose

Form

- identify an appropriate form to suit the specific purpose and audience for a media text they plan to create, and explain why it is an appropriate choice

Conventions and Techniques

- identify conventions and techniques appropriate to the form chosen for a media text they plan to create, and explain how they will use the conventions and techniques to help communicate their message

Producing Media Texts

- produce a variety of media texts for specific purposes and audiences, using appropriate forms, conventions, and techniques

Overall Expectations

By the end of Grade 6, students will:

- ▶ reflect on and identify their strengths as media interpreters and creators, areas for improvement, and the strategies they found most helpful in understanding and creating media texts

Specific Expectations

By the end of Grade 6, students will:

Reflect on Media Literacy Skills and Strategies

Metacognition

- identify what strategies they found most helpful in making sense of and creating media texts, and explain how these and other strategies can help them improve as media viewers/listeners/producers

Interconnected Skills

- explain how their skills in listening, speaking, reading, and writing help them to make sense of and produce media texts

Achievement Chart - Language, Grades 1-8

Categories	Level 1	Level 2	Level 3	Level 4
Knowledge and Understanding <i>Subject-specific content acquired in each grade (knowledge), and the comprehension of its meaning and significance (understanding)</i>				
The student:				
Knowledge of content <i>(e.g., forms of text; strategies associated with reading, writing, speaking, and listening; elements of style; terminology; conventions)</i>	→ demonstrates limited knowledge of content	→ demonstrates some knowledge of content	→ demonstrates considerable knowledge of content	→ demonstrates thorough knowledge of content
Understanding of content <i>(e.g., concepts, ideas, opinions; relationships among facts, ideas, concepts, themes)</i>	→ demonstrates limited understanding of content	→ demonstrates some understanding of content	→ demonstrates considerable understanding of content	→ demonstrates thorough understanding of content
Thinking <i>The use of critical and creative thinking skills and/or processes</i>				
The student:				
Use of planning skills <i>(e.g., generating ideas gathering information, focusing research, organizing information)</i>	→ uses planning skills with limited effectiveness	→ uses planning skills with some effectiveness	→ uses planning skills with considerable effectiveness	→ uses planning skills with a high degree of effectiveness
Use of processing skills <i>(e.g., making inferences, interpreting, analysing, detecting bias, synthesizing, evaluating, forming conclusions)</i>	→ uses processing skills with limited effectiveness	→ uses processing skills with some effectiveness	→ uses processing skills with considerable effectiveness	→ uses processing skills with a high degree of effectiveness
Use of critical/creative thinking processes <i>(e.g., reading process, writing process, oral discourse, research, critical/creative analysis, critical literacy, metacognition, invention)</i>	→ uses critical/creative thinking processes with limited effectiveness	→ uses critical/creative thinking processes with some effectiveness	→ uses critical/creative thinking processes with considerable effectiveness	→ uses critical/creative thinking processes with a high degree of effectiveness

Categories	Level 1	Level 2	Level 3	Level 4
Communication <i>The conveying of meaning through various forms</i>				
The student:				
Expressing and organization of ideas and information (e.g., clear expression, logical organization) in oral, visual, and written forms including media forms	→ expresses and organizes ideas and information with limited effectiveness	→ expresses and organizes ideas and information with some effectiveness	→ expresses and organizes ideas and information with considerable effectiveness	→ expresses and organizes ideas and information with a high degree of effectiveness
Communication for different audiences and purposes (e.g., use of appropriate style, voice, point of view, tone) in oral, visual, and written forms including media forms	→ communicates for different audiences and purposes with limited effectiveness	→ communicates for different audiences and purposes with some effectiveness	→ communicates for different audiences and purposes with considerable effectiveness	→ communicates for different audiences and purposes with a high degree of effectiveness
Use of conventions (e.g., grammar, spelling, punctuation, usage) vocabulary, and terminology of the discipline in oral, visual, and written forms including media forms	→ uses conventions, vocabulary, and terminology of the discipline with limited effectiveness	→ uses conventions, vocabulary, and terminology of the discipline with some effectiveness	→ uses conventions, vocabulary, and terminology of the discipline with considerable effectiveness	→ uses conventions, vocabulary, and terminology of the discipline with a high degree of effectiveness
Application <i>The use of knowledge and skills to make connections within and between various contexts</i>				
The student:				
Application of knowledge and skills (e.g., concepts, strategies, processes) in familiar contexts	→ applies knowledge and skills in familiar contexts with limited effectiveness	→ applies knowledge and skills in familiar contexts with some effectiveness	→ applies knowledge and skills in familiar contexts with considerable effectiveness	→ applies knowledge and skills in familiar contexts with a high degree of effectiveness
Transfer of knowledge and skills (e.g., concepts, strategies, processes) to new contexts	→ transfers knowledge and skills to new contexts with limited effectiveness	→ transfers knowledge and skills to new contexts with some effectiveness	→ transfers knowledge and skills to new contexts with considerable effectiveness	→ transfers knowledge and skills to new contexts with a high degree of effectiveness
Making connections within and between various contexts (e.g., between the text and personal knowledge or experience, other texts, and the world outside the school; between disciplines)	→ makes connections within and between various contexts with limited effectiveness	→ makes connections within and between various contexts with some effectiveness	→ makes connections within and between various contexts with considerable effectiveness	→ makes connections within and between various contexts with a high degree of effectiveness

The Importance of Mathematics

Since mathematics is a key element of the curriculum, parents, students, and teachers need to understand why mathematics is important. When students learn mathematics, they do more than master basic skills; they acquire a concise and powerful means of analysis, problem solving, and communication.

Competence using mathematical language, structures, and operations within mathematical processes will help students to reason, justify their conclusions, and express ideas clearly. Students need to be able to use mathematics in connection with technology, their daily lives and eventually, in the workplace.

Mathematics is an essential learning tool. As students identify relationships between mathematical concepts and everyday situations, and make connections between mathematics and other subjects, they gain the ability to extend and apply their knowledge in other curriculum areas (such as science, music and language).

Grade 6: Mathematical Process Expectations

The mathematical process expectations are to be integrated into student learning associated with all the strands.

Throughout Grade 6, students will:

- Problem Solving** ▶ develop, select, and apply problem-solving strategies as they pose and solve problems and conduct investigations, to help deepen their mathematical understanding;
- Reasoning and Proving** ▶ develop and apply reasoning skills (e.g., classification, recognition of relationships, use of counter-examples) to make and investigate conjectures and construct and defend arguments;
- Reflecting** ▶ demonstrate that they are reflecting on and monitoring their thinking to help clarify their understanding as they complete an investigation or solve a problem (e.g., by comparing and adjusting strategies used, by explaining why they think their results are reasonable, by recording their thinking in a math journal);
- Selecting Tools and Computational Strategies** ▶ select and use a variety of concrete, visual, and electronic learning tools and appropriate computational strategies to investigate mathematical ideas and to solve problems;
- Connecting** ▶ make connections among simple mathematical concepts and procedures, and relate mathematical ideas to situations or phenomena drawn from other contexts (e.g., other curriculum areas, daily life, sports);
- Representing** ▶ create a variety of representations of mathematical ideas (e.g., using physical models, pictures, numbers, variables, diagrams, graphs, onscreen dynamic representations), make connections among them, and apply them to solve problems;
- Communicating** ▶ communicate mathematical thinking orally, visually, and in writing, using everyday language, a basic mathematical vocabulary, and a variety of representations, and observing basic mathematical conventions.

Getting Involved

- ✓ Ask your child to explain the answer to $10 \div \frac{1}{2}$.
- ✓ Ask probing questions until you both understand why the answer makes sense.

Number Sense and Numeration: Grade 6

Overall Expectations

By the end of Grade 6, students will:

- ▶ read, represent, compare, and order whole numbers to 1 000 000, decimal numbers to thousandths, proper and improper fractions, and mixed numbers;
- ▶ 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;
- ▶ demonstrate an understanding of relationships involving percent, ratio, and unit rate.

Specific Expectations

By the end of Grade 6, students will:

Quantity Relationships

- ▶ represent, compare, and order whole numbers and decimal numbers from 0.001 to 1 000 000, using a variety of tools (e.g., number lines with appropriate increments, base ten materials for decimals);
- ▶ demonstrate an understanding of place value in whole numbers and decimal numbers from 0.001 to 1 000 000, using variety of tools and strategies (e.g. use base ten materials to represent the relationship between 1, 0.1, 0.01, and 0.001) (**Sample problem:** How many thousands cubes would be needed to make a base ten block for 1 000 000?);
- ▶ read and print in words whole numbers to one hundred thousand, using meaningful contexts (e.g., the Internet, reference books);
- ▶ represent, compare, and order fractional amounts with unlike denominators, including proper and improper fractions and mixed numbers, using a variety of tools (e.g., fraction circles, Cuisenaire rods, drawings, number lines, calculators) and using standard fractional notation (**Sample problem:** Use fraction strips to show that $1\frac{1}{2}$ is greater than $\frac{5}{4}$);
- ▶ estimate quantities using benchmarks of 10%, 25%, 50%, 75%, and 100% (e.g., the container is about 75% full; approximately 50% of our students walk to school);
- ▶ solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 1 000 000 (**Sample problem:** How would you determine if a person could live to be 1 000 000 hours old? Show your work.);

- identify composite numbers and prime numbers, and explain the relationship between them (i.e., any composite number can be factored into prime factors) (e.g., $42 = 2 \times 3 \times 7$).

Operational Sense

- use a variety of mental strategies to solve addition, subtraction, multiplication, and division problems involving whole numbers (e.g., use the commutative property: $4 \times 16 \times 5 = 4 \times 5 \times 16$, which gives $20 \times 16 = 320$; use the distributive property: $(500 + 15) \div 5 = 500 \div 5 + 15 \div 5$, which gives $100 + 3 = 103$);
- solve problems involving the multiplication and division of whole numbers (four digit by two-digit), using a variety of tools (e.g., concrete materials, drawings, calculators) and strategies (e.g., estimation, algorithms);
- add and subtract decimal numbers to thousandths, using concrete materials, estimation, algorithms, and calculators;
- multiply and divide decimal numbers to tenths by whole numbers, using concrete materials, estimation, algorithms, and calculators (e.g., calculate 4×1.4 using base ten materials; calculate $5.6 \div 4$ using base ten materials);
- multiply whole numbers by 0.1, 0.01, and 0.001 using mental strategies (e.g., use a calculator to look for patterns and generalize to develop a rule);
- multiply and divide decimal numbers by 10, 100, 1000, and 10 000 using mental strategies (e.g., “To convert 0.6 m^2 to square centimetres, I calculated in my head $0.6 \times 10\ 000$ and got 6000 cm^2 .”) (**Sample problem:** Use a calculator to help you generalize a rule for multiplying numbers by 10 000.);
- use estimation when solving problems involving the addition and subtraction of whole numbers and decimals, to help judge the reasonableness of a solution;
- 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 (**Sample problem:** Calculate and compare the answers to $3 + 2 \times 5$ using a basic four-function calculator and using a scientific calculator.);

Proportional Relationships

- represent ratios found in real-life contexts, using concrete materials, drawings, and standard fractional notation (**Sample problem:** In a classroom of 28 students, 12 are female. What is the ratio of male students to female students?);

- determine and explain, through investigation using concrete materials, drawings, and calculators, the relationships among fractions (i.e., with denominators of 2, 4, 5, 10, 20, 25, 50, and 100), decimal numbers, and percents (e.g., use a 10×10 grid to show that $\frac{1}{4} = 0.25$ or 25%);
- represent relationships using unit rates (**Sample problem:** If 5 batteries cost \$4.75, what is the cost of 1 battery?).

Measurement: Grade 6

Overall Expectations

By the end of Grade 6, students will:

- ▶ estimate, measure, and record quantities, using the metric measurement system;
- ▶ 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.

Specific Expectations

By the end of Grade 6, students will:

Attributes, Units, and Measurement Sense

- ▶ demonstrate an understanding of the relationship between estimated and precise measurements, and determine and justify when each kind is appropriate (**Sample problem:** You are asked how long it takes you to travel a given distance. How is the method you use to determine the time related to the precision of the measurement?);
- ▶ estimate, measure, and record length, area, mass, capacity, and volume, using the metric measurement system.

Measurement Relationships

- ▶ 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 (**Sample problem:** Select and justify the unit that should be used to measure the perimeter of the school.);
- ▶ solve problems requiring conversion from larger to smaller metric units (e.g., metres to centimetres, kilograms to grams, litres to millilitres) (**Sample problem:** How many grams are in one serving if 1.5 kg will serve six people?);
- ▶ construct a rectangle, a square, a triangle, and a parallelogram, using a variety of tools (e.g., concrete materials, geoboard, dynamic geometry software, grid paper), given the area;

- perimeter (**Sample problem:** Create two different triangles with an area of 12 square units, using a geoboard.);
- determine, through investigation using a variety of tools (e.g., pattern blocks, Power Polygons, dynamic geometry software, grid paper) and strategies (e.g., paper folding, cutting, and rearranging), the relationship between the area of a rectangle and the areas of parallelograms and triangles, by decomposing (e.g., cutting up a parallelogram into a rectangle and two congruent triangles) and composing (e.g., combining two congruent triangles to form a parallelogram) (**Sample problem:** Decompose a rectangle and rearrange the parts to compose a parallelogram with the same area. Decompose a parallelogram into two congruent triangles, and compare the area of one of the triangles with the area of the parallelogram.);
 - develop the formulas for the area of a parallelogram (i.e., $\text{Area of parallelogram} = \text{base} \times \text{height}$) and the area of a triangle [i.e., $\text{Area of triangle} = (\text{base} \times \text{height}) \div 2$], using the area relationships among rectangles, parallelograms, and triangles (**Sample problem:** Use dynamic geometry software to show that parallelograms with the same height and the same base all have the same area.);
 - solve problems involving the estimation and calculation of the areas of triangles and the areas of parallelograms (**Sample problem:** Calculate the areas of parallelograms that share the same base and the same height, including the special case where the parallelogram is a rectangle.);
 - 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 (**Sample problem:** Describe the multiplicative relationship between the number of square centimetres and the number of square metres that represent an area. Use this relationship to determine how many square centimetres fit into half a square metre.);
 - determine, through investigation using a variety of tools and strategies (e.g., decomposing rectangular prisms into triangular prisms; stacking congruent triangular layers of concrete materials to form a triangular prism), the relationship between the height, the area of the base, and the volume of a triangular prism, and generalize to develop the formula (i.e., $\text{Volume} = \text{area of base} \times \text{height}$) (**Sample problem:** Create triangular prisms by splitting rectangular prisms in half. For each prism, record the area of the base, the height, and the volume on a chart. Identify relationships.);

- determine, through investigation using a variety of tools (e.g., nets, concrete materials, dynamic geometry software, Polydrons) and strategies, the surface area of rectangular and triangular prisms;
- solve problems involving the estimation and calculation of the surface area and volume of triangular and rectangular prisms (**Sample problem:** How many square centimetres of wrapping paper are required to wrap a box that is 10 cm long, 8 cm wide, and 12 cm high?).

Geometry & Spatial Sense: Grade 6

Overall Expectations

By the end of Grade 6, students will:

- ▶ classify and construct polygons and angles;
- ▶ sketch three-dimensional figures, and construct three-dimensional figures from drawings;
- ▶ describe location in the first quadrant of a coordinate system, and rotate two-dimensional shapes.

Specific Expectations

By the end of Grade 6, students will:

Geometric Properties

- ▶ sort and classify quadrilaterals by geometric properties related to symmetry, angles, and sides, through investigation using a variety of tools (e.g., geoboard, dynamic geometry software) and strategies (e.g., using charts, using Venn diagrams);
- ▶ sort polygons according to the number of lines of symmetry and the order of rotational symmetry, through investigation using a variety of tools (e.g., tracing paper, dynamic geometry software, Mira);
- ▶ measure and construct angles up to 180° using a protractor, and classify them as acute, right, obtuse, or straight angles;
- ▶ construct polygons using a variety of tools, given angle and side measurements (**Sample problem:** Use dynamic geometry software to construct trapezoids with a 45° angle and a side measuring 11 cm.).

Geometric Relationships

- ▶ build three-dimensional models using connecting cubes, given isometric sketches or different views (i.e., top, side, front) of the structure (**Sample problem:** Given the top, side, and front views of a structure, build it using the

- sketch, using a variety of tools (e.g., isometric dot paper, dynamic geometry software), isometric perspectives and different views (i.e., top, side, front) of three-dimensional figures built with interlocking cubes.

Location and Movement

- explain how a coordinate system represents location, and plot points in the first quadrant of a Cartesian coordinate plane;
- identify, perform, and describe, through investigation using a variety of tools (e.g., grid paper, tissue paper, protractor, computer technology), rotations of 180° and clockwise and counterclockwise rotations of 90° , with the centre of rotation inside or outside the shape;
- create and analyse designs made by reflecting, translating, and/or rotating a shape, or shapes, by 90° or 180° (**Sample problem:** Identify rotations of 90° or 180° that map congruent shapes, in a given design, onto each other.).

Patterning & Algebra: Grade 6

Overall Expectations

By the end of Grade 6, students will:

- ▶ describe and represent relationships in growing and shrinking patterns (where the terms are whole numbers), and investigate repeating patterns involving rotations;
- ▶ use variables in simple algebraic expressions and equations to describe relationships.

Specific Expectations

By the end of Grade 6, students will:

Patterns and Relationships

- ▶ identify geometric patterns, through investigation using concrete materials or drawings, and represent them numerically;
- ▶ make tables of values, for growing patterns given pattern rules, in words (e.g., start with 3, then double each term and add 1 to get the next term), 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 (e.g., graph paper, calculators, dynamic statistical software);

- 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 (**Sample problem:** For the pattern rule “start with 1 and add 3 to each term to get the next term”, use graphing to find the term number when the term is 19.);
- 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 (e.g., for 1, 3, 5, 7, 9, ..., the pattern rule is “start with 1 and add 2 to each term 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 (e.g., for 2, 4, 6, 8, ..., the pattern rule for the general term is “double the term number”);
- 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 (**Sample problem:** For the pattern 5000, 4750, 4500, 4250, 4000, 3750, ..., find the 15th term. Explain your reasoning.);
- extend and create repeating patterns that result from rotations, through investigation using a variety of tools (e.g., pattern blocks, dynamic geometry software, geoboards, dot paper).

Variables, Expressions, and Equations

- demonstrate an understanding of different ways in which variables are used (e.g., variable as an unknown quantity; variable as a changing quantity);
- identify, through investigation, the quantities in an equation that vary and those that remain constant (e.g., in the formula for the area of a triangle, $A = \frac{b \times h}{2}$, the number 2 is a constant, whereas b and h can vary and may change the value of A);
- solve problems that use two or three symbols or letters as variables to represent different unknown quantities (**Sample problem:** If $n + 1 = 15$ and $n + 1 + s = 19$, what value does the s represent?);
- determine the solution to a simple equation with one variable, through investigation using a variety of tools and strategies (e.g., modelling with concrete materials, using guess and check with and without the aid of a calculator) (**Sample problem:** Use the method of your choice to determine the value of the variable in the equation $2 \times n + 3 = 11$. Is there more than one possible solution? Explain your reasoning.).

Data Management & Probability: Grade 6

Overall Expectations

By the end of Grade 6, students will:

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

Specific Expectations

By the end of Grade 6, students will:

Collection and Organization of Data

- collect data by conducting a survey (e.g., use an Internet survey tool) 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;
- collect and organize discrete or continuous primary data and secondary data (e.g., electronic data from websites such as E-Stat or Census At Schools) and display the data in charts, tables, and graphs (including continuous line graphs) that have appropriate titles, labels (e.g., appropriate units marked on the axes), and scales (e.g., with appropriate increments) that suit the range and distribution of the data, using a variety of tools (e.g., graph paper, spreadsheets, dynamic statistical software);
- 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, broken-line graphs, and continuous line graphs);
- 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 (**Sample problem:** Would the results of a survey of primary students about their favourite television shows represent the favourite shows of students in the entire school? Why or why not?).

Data Relationships

- read, interpret, and draw conclusions from primary data (e.g., survey results, measurements, observations) and from secondary data (e.g., sports data in the newspaper, data from the Internet about movies), presented in charts, tables, and graphs (including continuous line graphs);
- compare, through investigation, different graphical representations of the same data (**Sample problem:** Use technology to help you compare the different types of graphs that can be created to represent a set of data about the number of runs or goals scored against each team in a tournament. Describe the similarities and differences that you observe.);
- explain how different scales used on graphs can influence conclusions drawn from the data;
- demonstrate an understanding of mean (e.g., *mean* differs from *median* and *mode* because it is a value that “balances” a set of data – like the centre point or fulcrum in a lever), and use the mean to compare two sets of related data, with and without the use of technology (**Sample problem:** Use the mean to compare the masses of backpacks of students from two or more Grade 6 classes.);
- demonstrate, through investigation, an understanding of how data from charts, tables, and graphs can be used to make inferences and convincing arguments (e.g., describe examples found in newspapers and magazines).

Probability

- 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 (e.g., the theoretical probability of rolling an odd number on a six-sided number cube is $\frac{3}{6}$ because, of six equally likely outcomes, only three are favourable – that is, the odd numbers 1, 3, 5);
- 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);
- predict the frequency of an outcome of a simple probability experiment or game, by calculating and using the theoretical probability of that outcome (e.g., “The theoretical probability of spinning red is $\frac{1}{4}$ since there are four different-coloured areas that are equal. If I spin my spinner 100 times, I predict that red should come up about 25 times.”). (**Sample problem:** Create a spinner that has rotational symmetry. Predict how often the spinner will land on the same sector after 25 spins. Perform the experiment and compare the prediction to the results.).

Achievement Chart - Mathematics, Grades 1-8

Categories	Level 1	Level 2	Level 3	Level 4
Knowledge and Understanding <i>Subject-specific content acquired in each grade (knowledge), and the comprehension of its meaning and significance (understanding)</i>				
The student:				
Knowledge of content (e.g., facts, terms, procedural skills, use of tools)	→ demonstrates limited knowledge of content	→ demonstrates some knowledge of content	→ demonstrates considerable knowledge of content	→ demonstrates thorough knowledge of content
Understanding of mathematical concepts	→ demonstrates limited understanding of concepts	→ demonstrates some understanding of concepts	→ demonstrates considerable understanding of concepts	→ demonstrates thorough understanding of concepts
Thinking <i>The use of critical and creative thinking skills and/or processes*</i>				
The student:				
Use of planning skills ▶ understanding the problem (e.g., formulating and interpreting the problem, making conjectures) ▶ making a plan for solving the problem	→ uses planning skills with limited effectiveness	→ uses planning skills with some effectiveness	→ uses planning skills with considerable effectiveness	→ uses planning skills with a high degree of effectiveness
Use of processing skills* ▶ carrying out a plan (e.g., collecting data, questioning, testing, revising, modelling, solving, inferring, forming conclusions) ▶ looking back at the solution (e.g., evaluating reasonableness, making convincing arguments, reasoning, justifying, proving, reflecting)	→ uses processing skills with limited effectiveness	→ uses processing skills with some effectiveness	→ uses processing skills with considerable effectiveness	→ uses processing skills with a high degree of effectiveness
Use of critical/creative thinking processes* (e.g., problem solving, inquiry)	→ uses of critical/creative thinking process with limited effectiveness	→ uses of critical/creative thinking process with some effectiveness	→ uses of critical/creative thinking process with considerable effectiveness	→ uses of critical/creative thinking process with a high degree of effectiveness

* The processing skills and critical/creative thinking processes in the Thinking category include some but not all aspects of the *mathematical processes* described in the Ministry document. Some aspects of the mathematical processes relate to the other categories of the achievement chart.

Categories	Level 1	Level 2	Level 3	Level 4
Communication <i>The conveying of meaning through various forms</i>				
The student:				
Expression and organization of ideas and mathematical thinking (e.g., clarity of expression, logical organization), using oral, visual, and written forms (e.g., pictorial, graphic, dynamic, numeric, algebraic forms; concrete materials)	→ expresses and organizes mathematical thinking with limited effectiveness	→ expresses and organizes mathematical thinking with some effectiveness	→ expresses and organizes mathematical thinking with considerable effectiveness	→ expresses and organizes mathematical thinking with a high degree of effectiveness
Communication for different audiences (e.g., peers, teachers) and purposes (e.g., to present data, justify a solution, express a mathematical argument) in oral, visual, and written forms	→ communicates for different audiences and purposes with limited effectiveness	→ communicates for different audiences and purposes with some effectiveness	→ communicates for different audiences and purposes with considerable effectiveness	→ communicates for different audiences and purposes with a high degree of effectiveness
Use of conventions, vocabulary, and terminology of the discipline (e.g., terms, symbols) in oral, visual, and written forms	→ uses conventions, vocabulary, and terminology of the discipline with limited effectiveness	→ uses conventions, vocabulary, and terminology of the discipline with some effectiveness	→ uses conventions, vocabulary, and terminology of the discipline with considerable effectiveness	→ uses conventions, vocabulary, and terminology of the discipline with a high degree of effectiveness
Application <i>The use of knowledge and skills to make connections within and between various contexts</i>				
The student:				
Application of knowledge and skills in familiar contexts	→ applies knowledge and skills in familiar contexts with limited effectiveness	→ applies knowledge and skills in familiar contexts with some effectiveness	→ applies knowledge and skills in familiar contexts with considerable effectiveness	→ applies knowledge and skills in familiar contexts with a high degree of effectiveness
Transfer of knowledge and skills to new contexts	→ transfers knowledge and skills to new contexts with limited effectiveness	→ transfers knowledge and skills to new contexts with some effectiveness	→ transfers knowledge and skills to new contexts with considerable effectiveness	→ transfers knowledge and skills to new contexts with a high degree of effectiveness
Making connections within and between various contexts (e.g., connections between concepts, representations, and forms within mathematics; connections involving use of prior knowledge and experience; connections between mathematics, other disciplines, and the real world)	→ makes connections within and between various contexts with limited effectiveness	→ makes connections within and between various contexts with some effectiveness	→ makes connections within and between various contexts with considerable effectiveness	→ makes connections within and between various contexts with a high degree of effectiveness

The Importance of French As a Second Language

The ability to communicate in French is a valuable skill, because French is one of Canada's two official languages and is also widely used around the world. Second-language learning in general is valuable for a number of reasons. Research confirms that knowledge of a second language strengthens first-language skills, and that the ability to speak two or more languages generally enhances problem-solving and reasoning skills, the capacity for creative thinking and the ability to respect and understand other cultures. Second-language learning strengthens students' ability to communicate and participate effectively in the workplace and the global community. It also increases their ability to understand themselves and other people, and helps them to appreciate the power of words and the many different uses of language.

Overall Expectations

By the end of Grade 6, students will:

- ▶ participate in dialogues about familiar topics, and listen to and talk about short oral texts;
- ▶ read a variety of classroom and simple authentic materials, 150 to 200 words long, containing familiar and new vocabulary, and demonstrate understanding;
- ▶ communicate ideas and facts in writing for specific purposes;
- ▶ identify and use the vocabulary and the grammar and language conventions appropriate for this grade level.

Getting Involved

- ✓ Encourage your child to read to you in French.
- ✓ Practice new vocabulary by asking your child for the French equivalent.
- ✓ Encourage your child to watch a cartoon on television in French.
- ✓ Listen to music on a French radio station with your child.

The Goals of the Science and Technology Program

A scientifically and technologically literate person is one who can read and understand common media reports about science and technology, critically evaluate the information presented, and confidently engage in discussions and decision-making activities that involve science and technology.

Science Co-ordinators' and Consultants' Association of Ontario (SCCAO) and Science Teachers' Association of Ontario (STAO/APSO), "Position Paper: The Nature of Science" (2006), p. 1

During the twentieth century, science and technology played an increasingly important role in the lives of all Canadians. Science and technology underpin much of what we take for granted, including clean water, the places in which we live and work, and the ways in which we communicate with others. The impact of science and technology on our lives will continue to grow. Consequently, scientific and technological literacy for all has become the overarching objective of science and technology education throughout the world.

Achievement of both excellence and equity underlies the three major goals of the science and technology program at the elementary level. Accordingly, The Ontario Curriculum, Grades 1–8: Science and Technology, 2007 outlines the skills and knowledge that students will develop, as well as the attitudes that they need to develop in order to use their knowledge and skills responsibly. The three goals are the following:

1. to relate science and technology to society and the environment
2. to develop the skills, strategies, and habits of mind required for scientific inquiry and technological problem solving
3. to understand the basic concepts of science and technology

Fundamental Concepts

Fundamental concepts are key ideas that provide a framework for the acquisition of all scientific and technological knowledge. They also help students to integrate scientific and technological knowledge with knowledge in other subject areas, such as mathematics and social studies.

These fundamental concepts are described in the following chart.

Fundamental Concepts	
Matter	Matter is anything that has mass and occupies space. Matter has particular structural and behavioural characteristics.
Energy	Energy comes in many forms, and can change forms. It is required to make things happen (to do work). Work is done when a force causes movement.
Systems and Interactions	A system is a collection of living and/or non-living things and processes that interact to perform some function. A system includes inputs, out-puts, and relationships among system components. Natural and human systems develop in response to, and are limited by, a variety of environmental factors.
Structure and Function	This concept focuses on the interrelationship between the function or use of a natural or human-made object and the form that the object takes.
Sustainability and Stewardship	Sustainability is the concept of meeting the needs of the present without compromising the ability of future generations to meet their needs. Stewardship involves understanding that we need to use and care for the natural environment in a responsible way and making the effort to pass on to future generations no less than what we have access to ourselves. Values that are central to responsible stewardship are: using non-renewable resources with care; reusing and recycling what we can; switching to renewable resources where possible.
Change and Continuity	Change is the process of becoming different over time, and can be quantified. Continuity represents consistency and connectedness within and among systems over time. Interactions within and among systems result in change and variations in consistency.

Understanding Life Systems

Biodiversity

Fundamental Concepts	Big Ideas
<p>Systems and Interactions</p> <p>Sustainability and Stewardship</p>	<p>Biodiversity includes diversity of individuals, species, and ecosystems. <i>(Overall expectations 2 and 3)</i></p> <p>Classification of the components within a diverse system is a beginning point for understanding the interrelationships among the components. <i>(Overall expectations 2 and 3)</i></p> <p>Because all living things are connected, maintaining diversity is critical to the health of the planet. <i>(Overall expectations 1 and 3)</i></p> <p>Humans make choices that can have an impact on biodiversity. <i>(Overall expectation 1)</i></p>

Understanding Life Systems - Biodiversity: Grade 6

Overall Expectations

By the end of Grade 6, students will:

1. assess human impacts on biodiversity, and identify ways of preserving biodiversity;
2. investigate the characteristics of living things, and classify diverse organisms according to specific characteristics;
3. demonstrate an understanding of biodiversity, its contributions to the stability of natural systems, and its benefits to humans.

Specific Expectations

By the end of Grade 6, students will:

Relating Science and Technology to Society and the Environment

- 1.1 analyse a local issue related to biodiversity (e.g., the effects of human activities on urban biodiversity, flooding of traditional Aboriginal hunting and gathering areas as a result of dam construction), taking different points of view into consideration (e.g., the points of view of members of the local community, business owners, people concerned about the environment, mine owners, local First Nations, Métis, Inuit), propose action that can be taken to preserve biodiversity, and act on the proposal

- 1.2 assess the benefits that human societies derive from biodiversity (e.g., thousands of products such as food, clothing, medicine, and building materials come from plants and animals) and the problems that occur when biodiversity is diminished (e.g., monocultures are more vulnerable to pests and diseases)

Specific Expectations

By the end of Grade 6, students will:

Developing Investigation and Communication Skills

- 2.1 follow established safety procedures for outdoor activities and field work (e.g., stay with a partner when exploring habitats; wash hands after exploring a habitat)
- 2.2 investigate the organisms found in a specific habitat and classify them according to a classification system
- 2.3 use scientific inquiry/research skills to compare the characteristics of organisms within the plant or animal kingdoms (e.g., compare the characteristics of a fish and a mammal, of coniferous and deciduous trees, of ferns and flowering plants)
- 2.4 use appropriate science and technology vocabulary, including classification, biodiversity, natural community, interrelationships, vertebrate, invertebrate, stability, characteristics, and organism, in oral and written communication
- 2.5 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., use a graphic organizer to show comparisons between organisms in various communities)

Specific Expectations

By the end of Grade 6, students will:

Understanding Basic Concepts

- 3.1 identify and describe the distinguishing characteristics of different groups of plants and animals (e.g., invertebrates have no spinal column; insects have three basic body parts; flowering plants produce flowers and fruits), and use these characteristics to further classify various kinds of plants and animals (e.g., invertebrates – arthropods – insects; vertebrates – mammals – primates; seed plants – flowering plants – grasses)
- 3.2 demonstrate an understanding of biodiversity as the variety of life on earth, including variety within each species of plant and animal, among species of plants and animals in communities, and among communities and the physical landscapes that support them
- 3.3 describe ways in which biodiversity within species is important for maintaining the resilience of those species (e.g., because of genetic differences, not all squirrels are affected equally by infectious diseases such as mange; some species of bacteria have become resistant to antibiotics because resistant individuals have survived and reproduced)
- 3.4 describe ways in which biodiversity within and among communities is important for maintaining the resilience of these communities (e.g., having a variety of species of wheat allows for some part of the crop to survive adverse conditions)

3.5 describe interrelationships within species (e.g., wolves travel in packs to defend their territory, raise their cubs, and hunt large prey), between species (e.g., the brightly-coloured anemone fish protects its eggs by laying them among the poisonous tentacles of the sea anemone, and in return the fish's bright colours attract prey for the anemone to eat; birds and bees take sustenance from plants

and carry pollen between plants), and between species and their environment (e.g., algae and water lilies compete for sunlight in a pond), and explain how these interrelationships sustain biodiversity

3.6 identify everyday products that come from a diversity of organisms (e.g., traditional pain relievers are derived from the bark of the white willow tree; tofu is

made from soybeans; silk is made from silkworm cocoons; nutritional supplements, shampoos, toothpastes, and deodorants contain pollen collected by bees)

3.7 explain how invasive species (e.g., zebra mussel, Asian longhorned beetle, purple loosestrife) reduce biodiversity in local environments

Understanding Structures and Mechanisms Flight

Fundamental Concepts	Big Ideas
<p>Structure and Function</p> <p>Matter</p>	<p>Flight occurs when the characteristics of structures take advantage of certain properties of air. (Overall expectations 1, 2, and 3)</p> <p>Air has many properties that can be used for flight and for other purposes. (Overall expectations 1, 2, and 3)</p>

Understanding Structures and Mechanisms - Flight: Grade 6

Overall Expectations

By the end of Grade 6, students will:

1. assess the societal and environmental impacts of flying devices that make use of properties of air
2. investigate ways in which flying devices make use of properties of air;
3. explain ways in which properties of air can be applied to the principles of flight and flying devices.

Specific Expectations

By the end of Grade 6, students will:

Relating Science and Technology to Society and the Environment

1.1 assess the benefits and costs of aviation technology for society and the environment, taking different social and economic perspectives into account (e.g., the perspectives of farmers, airline workers, doctors, home owners, tour operators)

Specific Expectations

By the end of Grade 6, students will:

Developing Investigation and Communication Skills

2.1 follow established safety procedures for using tools and materials and operating

flying devices (e.g., aim flying devices away from each other when launching them; fly kites and airplanes a safe distance from overhead hydro wires)

2.2 use scientific inquiry/experimentation skills to investigate the properties of air (e.g., air takes up space, has mass, can be compressed)

2.3 investigate characteristics and adaptations that enable living things to fly (e.g., a bat's wings are made up of long, thin bones covered with a very light membrane that forms an airfoil surface; insects can twist and turn their wings, which helps them to hover in the air or even fly backwards; some seeds, such as the keys of a maple tree or dandelion seeds, have parachutes or wings like a glider that allow them to be carried by the wind)

2.4 use technological problem-solving skills to design, build, and test a flying device (e.g., a kite, a paper airplane, a hot air balloon)

2.5 use appropriate science and technology vocabulary, including aerodynamics, compress, flight, glide, propel, drag, thrust, and lift, in oral and written communication

2.6 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., using technological conventions, make a drawing of the flying device they constructed)

Specific Expectations

By the end of Grade 6, students will:

Understanding Basic Concepts

3.1 identify the properties of air that make flight possible (e.g., air takes up space, has mass, expands, can exert a force when compressed)

3.2 identify common applications of the properties of air, such as its compressibility and insulating qualities (e.g., home insulation, tires, sleeping bags, layered clothing)

3.3 identify and describe the four forces of flight – lift, weight, drag, and thrust

3.4 describe, in qualitative terms, the relationships between the forces of lift, weight, thrust, and drag that are required for flight (e.g., lift must be greater than weight for a plane to take off; thrust must be greater than drag for a plane to take off; lift must be less than weight for a plane to land; thrust must be less than drag for a plane to land)

3.5 describe ways in which flying devices or living things use unbalanced forces to control their flight (e.g., a plane can be steered up or down by tilting the elevators on the tail; when a bird flaps its wings, the wings develop lift as well as forward and upward force, thus causing it to take off)

3.6 describe ways in which the four forces off light can be altered (e.g., increasing the angle of attack increases the lift; lightweight materials help to keep the overall mass of the plane down, so that it can fly with smaller lift force; jet engines can vary the amount of thrust, which enables the plane to move forward; using the flaps on airplane wings changes the amount of drag, which reduces the speed of the plane)

Understanding Matter and Energy

Electricity and Electrical Devices

Fundamental Concepts	Big Ideas
<p>Energy</p> <p>Systems and Interactions</p> <p>Sustainability and Stewardship</p>	<p>Electrical energy can be transformed into other forms of energy. (Overall expectations 2 and 3)</p> <p>Other forms of energy can be transformed into electrical energy. (Overall expectations 2 and 3)</p> <p>Electrical energy plays a significant role in society, and its production has an impact on the environment. (Overall expectation 1)</p> <p>Society must find ways to minimize the impact of energy production on the environment. (Overall expectation 1)</p>

Understanding Matter and Energy - Electricity and Electrical Devices: Grade 6

Overall Expectations

By the end of Grade 6, students will:

1. evaluate the impact of the use of electricity on both the way we live and the environment;
2. investigate the characteristics of static and current electricity, and construct simple circuits;
3. demonstrate an understanding of the principles of electrical energy and its transformation into and from other forms of energy.

Specific Expectations

By the end of Grade 6, students will:

Relating Science and Technology to Society and the Environment

1.1 assess the short- and long-term environmental effects of the different ways in which electricity is generated in Canada (e.g., hydro, thermal, nuclear, wind, solar), including the effect of each method on natural resources and living things in the environment

1.2 assess opportunities for reducing electricity consumption at home or at school that could affect the use of non-renewable resources in a positive way or reduce the impact of electricity generation on the environment

Specific Expectations

By the end of Grade 6, students will:

Developing Investigation and Communication Skills

2.1 follow established safety procedures for

working with electricity (e.g., ensure hands are completely dry when working with electricity; be aware of electrical hazards at home, at school, and in the community)

2.2 design and build series and parallel circuits, draw labelled diagrams identifying the components used in each, and describe the role of each component in the circuit

2.3 use scientific inquiry/experimentation skills to investigate the characteristics of static electricity

2.4 design, build, and test a device that produces electricity (e.g., a battery built from a lemon or potato; a wind turbine)

2.5 use technological problem-solving skills to design, build, and test a device that transforms electrical energy into another form of energy in order to perform a function (e.g., a device that makes a sound, that moves, that lights up)

2.6 use appropriate science and technology vocabulary, including current, battery, circuit, transform, static, electrostatic, and energy, in oral and written communication

2.7 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., using scientific and technological conventions, create a labelled diagram showing the component parts of the device they created to transform electrical energy into another form of energy and perform a function)

Specific Expectations

By the end of Grade 6, students will:

Understanding Basic Concepts

3.1 distinguish between current and static electricity

3.2 use the principles of static electricity to explain common electrostatic phenomena (e.g., the attraction of hairs to a comb that has been rubbed on a piece of wool; the attraction of small pieces of paper to a plastic ruler that has

been rubbed with a rag; the attraction of pieces of clothing to each other when they come out of a clothes dryer)

3.3 identify materials that are good conductors of electricity (e.g., copper, gold, silver, aluminum, water [when it has a high mineral content]) and good insulators (e.g., glass, plastic, rubber, ceramics)

3.4 describe how various forms of energy can be transformed into electrical energy (e.g., batteries use chemical energy; hydroelectric plants use water power; nuclear generating stations use nuclear energy; wind turbines use wind power; solar panels use energy from the sun; wave power stations use energy from ocean waves)

3.5 identify ways in which electrical energy is transformed into other forms of energy (e.g., electrical energy is transformed into heat energy in a toaster, light and sound energy in a television, mechanical energy in a blender)

3.6 explain the functions of the components of a simple electrical circuit (e.g., a battery is the power source; a length of wire is the conductor that carries the electrical current to the load; a light bulb or motor is the load)

3.7 describe series circuits (components connected in a daisy chain) and parallel circuits (components connected side by side like the rungs of a ladder), and identify where each is used (e.g., some strings of patio lights are in series circuits when one light burns out, the whole string goes out; parallel circuits are used for wiring lighting and electrical outlets in your house when one light burns out, the others keep burning)

3.8 describe ways in which the use of electricity by society, including the amount of electrical energy used, has changed over time (e.g., drying clothes in a dryer instead of using a clothesline; playing video games instead of playing board games; using electric lights instead of candles)

Understanding Earth and Space Systems

Space

Fundamental Concepts	Big Ideas
Systems and Interactions	<p>Earth is a part of a large interrelated system. (Overall expectations 2 and 3)</p> <p>Technological and scientific advances that enable humans to study space affect our lives. (Overall expectations 1 and 2)</p>

Understanding Earth and Space Systems - Space: Grade 6

Overall Expectations

By the end of Grade 6, students will:

1. assess the impact of space exploration on society and the environment;
2. investigate characteristics of the systems of which the earth is a part and the relationship between the earth, the sun, and the moon;
3. demonstrate an understanding of components of the systems of which the earth is a part, and explain the phenomena that result from the movement of different bodies in space.

Specific Expectations

By the end of Grade 6, students will:

Relating Science and Technology to Society and the Environment

- 1.1 assess the contributions of Canadians (e.g., astronauts Marc Garneau and Roberta Bondar; astronomers Richard Bond, David Levy, and Helen Hogg; Spar Aerospace Limited's development of the Canadarm; the University of British Columbia's development of the "Humble" space telescope) to the exploration and scientific understanding of space
- 1.2 evaluate the social and environmental costs and benefits of space exploration, taking different points of view into account

(e.g., the point of view of health care workers and workers in other agencies that compete with space programs for public money; astronauts and their families; the general public; scientists)

Specific Expectations

By the end of Grade 6, students will:

Developing Investigation and Communication Skills

- 2.1 follow established safety procedures for handling tools and materials and observing the sun (e.g., use appropriate eye protection when testing a sundial)
- 2.2 use technological problem-solving skills to design, build, and test devices (e.g., a sundial, a model of the earth's rotation around the sun) for investigating the motions of different bodies in the solar system
- 2.3 use scientific inquiry/research skills to investigate scientific and technological advances that allow humans to adapt to life in space
- 2.4 use appropriate science and technology vocabulary, including axis, tilt, rotation, revolution, planets, moons, comets, and asteroids, in oral and written communication
- 2.5 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., use a graphic organizer to identify and order main ideas and supporting details for a report about how science and technology can help humans adapt to life in space)

Specific Expectations

By the end of Grade 6, students will:

Understanding Basic Concepts

- 3.1 identify components of the solar system, including the sun, the earth, and other planets, natural satellites, comets, asteroids, and meteoroids, and describe their physical characteristics in qualitative terms (e.g., The earth's surface is very young; much of it is covered with water. The moon is the earth's only natural satellite. Comets are the largest objects in our solar system; their centres contain rock particles trapped in frozen liquid; their tails are made up of gas and dust.)
- 3.2 identify the bodies in space that emit light (e.g., stars) and those that reflect light (e.g., moons and planets)
- 3.3 explain how humans meet their basic biological needs in space (e.g., obtaining air, water, and food and managing bodily functions)
- 3.4 identify the technological tools and devices needed for space exploration (e.g., telescopes, spectroscopes, spacecraft, life-support systems)
- 3.5 describe the effects of the relative positions and motions of the earth, moon, and sun (e.g., use models or simulations to show solar and lunar eclipses, phases of the moon, tides)

Achievement Chart - Science and Technology, - Grades 1-8

Categories	Level 1	Level 2	Level 3	Level 4
Knowledge and Understanding <i>Subject-specific content acquired in each grade (knowledge), and the comprehension of its meaning and significance (understanding)</i>				
The student:				
Knowledge of content <i>(e.g., facts; terminology; definitions; safe use of tools, equipment, and materials)</i>	→ demonstrates limited knowledge of content	→ demonstrates some knowledge of content	→ demonstrates considerable knowledge of content	→ demonstrates thorough knowledge of content
Understanding of content <i>(e.g., concepts, ideas, theories, principles, procedures, processes)</i>	→ demonstrates limited understanding of content	→ demonstrates some understanding of content	→ demonstrates considerable understanding of content	→ demonstrates thorough understanding of content
Thinking and Investigation - <i>The use of critical and creative thinking skills and inquiry and problem solving skills and/or processes</i>				
The student:				
Use of initiating and planning skills and strategies <i>(e.g., formulating questions, identifying the problem, developing hypotheses, scheduling, selecting strategies and resources, developing plans)</i>	→ uses initiating and planning skills and strategies with limited effectiveness	→ uses initiating and planning skills and strategies with some effectiveness	→ uses initiating and planning skills and strategies with considerable effectiveness	→ uses initiating and planning skills and strategies with a high degree of effectiveness
Use of processing skills and strategies <i>(e.g., performing and recording, gathering evidence and data, observing, manipulating materials and using equipment safely, solving equations, proving)</i>	→ uses processing skills and strategies with limited effectiveness	→ uses processing skills and strategies with some effectiveness	→ uses processing skills and strategies with considerable effectiveness	→ uses processing skills and strategies with a high degree of effectiveness
Use of critical/creative thinking processes, skills, and strategies <i>(e.g., analysing, interpreting, problem solving, evaluating, forming and justifying conclusions on the basis of evidence)</i>	→ uses critical/creative thinking processes, skills, and strategies with limited effectiveness	→ uses critical/creative thinking processes, skills, and strategies with some effectiveness	→ uses critical/creative thinking processes, skills, and strategies with considerable effectiveness	→ uses critical/creative thinking processes, skills, and strategies with a high degree of effectiveness
Communication <i>The conveying of meaning through various forms</i>				
The student:				
Expression and organization of ideas and information <i>(e.g., clear expression, logical organization) in oral, visual, and/or written forms</i> <i>(e.g., diagrams, models)</i>	→ expresses and organizes ideas and information with limited effectiveness	→ expresses and organizes ideas and information with some effectiveness	→ expresses and organizes ideas and information with considerable effectiveness	→ expresses and organizes ideas and information with a high degree of effectiveness

Categories	Level 1	Level 2	Level 3	Level 4
Communication (continued)				
The student:				
Communication for different audiences (e.g., peers, adults) and purposes (e.g., to inform, to persuade) in oral, visual, and/or written forms	→ communicates for different audiences and purposes with limited effectiveness	→ communicates for different audiences and purposes with some effectiveness	→ communicates for different audiences and purposes with considerable effectiveness	→ communicates for different audiences and purposes with a high degree of effectiveness
Use of conventions, vocabulary, and terminology of the discipline in oral, visual, and/or written forms (e.g., symbols, formulae, scientific notation, SI units)	→ uses conventions, vocabulary, and terminology of the discipline with limited effectiveness	→ uses conventions, vocabulary, and terminology of the discipline with some effectiveness	→ uses conventions, vocabulary, and terminology of the discipline with considerable effectiveness	→ uses conventions, vocabulary, and terminology of the discipline with a high degree of effectiveness
Application <i>The use of knowledge and skills to make connections within and between various contexts</i>				
The student:				
Application of knowledge and skills (e.g., concepts and processes, safe use of equipment and technology, investigation skills) in familiar contexts	→ applies knowledge and skills in familiar contexts with limited effectiveness	→ applies knowledge and skills in familiar contexts with some effectiveness	→ applies knowledge and skills in familiar contexts with considerable effectiveness	→ applies knowledge and skills in familiar contexts with a high degree of effectiveness
Transfer of knowledge and skills (e.g., concepts and processes, safe use of equipment and technology, investigation skills) to unfamiliar contexts	→ transfers knowledge and skills to unfamiliar contexts with limited effectiveness	→ transfers knowledge and skills to unfamiliar contexts with some effectiveness	→ transfers knowledge and skills to unfamiliar contexts with considerable effectiveness	→ transfers knowledge and skills to unfamiliar contexts with a high degree of effectiveness
Making connections between science, technology, society, and the environment (e.g., assessing the impact of science and technology on people, other living things, and the environment)	→ makes connections between science, technology, society, and the environment with limited effectiveness	→ makes connections between science, technology, society, and the environment with some effectiveness	→ makes connections between science, technology, society, and the environment with considerable effectiveness	→ makes connections between science, technology, society, and the environment with a high degree of effectiveness
Proposing courses of practical action to deal with problems relating to science, technology, society, and the environment	→ proposes courses of practical action of limited effectiveness	→ proposes courses of practical action of some effectiveness	→ makes connections between science, technology, society, and the environment with considerable effectiveness	→ makes connections between science, technology, society, and the environment with a high degree of effectiveness

The Importance of Social Studies

Students, their parents, friends, teachers and all citizens are part of a variety of communities from local to global in scale. Social studies courses allow students to discover and appreciate the various heritages and nature of citizenship within these communities. Through the year, students gain a knowledge of key social studies concepts, including change, culture, environment, power and basic economic forces within the marketplace. They learn about Canada and the role of citizens in a democratic society and its connections around the globe. This social studies course also helps students acquire skills of inquiry and communication through field studies, research projects, the use of maps, globes and models, and the consideration of various forms of historical evidence. Students apply these skills to develop an understanding of Canadian identity and democratic values, to evaluate different points of view, and to examine information critically in order to solve problems and make decisions on issues that are relevant to their lives.

Heritage & Citizenship: First Nation Peoples & European Explorers: Grade 6

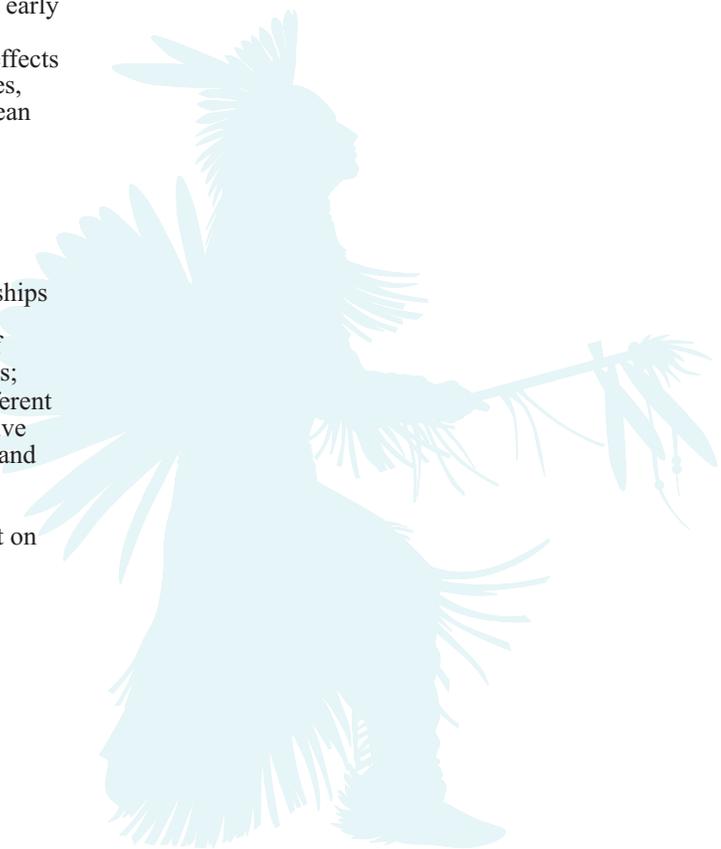
Overview:

Students learn about the main characteristics of North American First Nation cultures, including the close relationship of the First Nation peoples with the natural environment. They investigate the motivating factors for early European exploration and the prevailing attitudes of the explorers. They also examine the positive and negative effects of interactions between European and First Nation peoples, from first Viking contact to the time of permanent European settlement in the early seventeenth century.

Overall Expectations

By the end of Grade 6, students will:

- ▶ describe characteristics of pre-contact First Nation cultures across Canada, including their close relationships with the natural environment; the motivations and attitudes of the European explorers; and the effects of contact on both the receiving and the incoming groups;
- ▶ use a variety of resources and tools to investigate different historical points of view about the positive and negative effects of early contact between First Nation peoples and European explorers;
- ▶ analyse examples of interaction between First Nation peoples and European explorers to identify and report on the effects of cooperation and the reasons for disagreements between the two groups.



Canada & World Connections: Canada's Links To The World: Grade 6

Overview:

Students identify and describe Canada's economic, political, social, and physical links with the United States and other regions of the world. They use a variety of inquiry methods and research tools to investigate the importance of international connections for Canada's well-being and influence in the world. Students identify current international issues that concern Canada, and describe Canada's response to them.

Overall Expectations:

By the end of Grade 6, students will:

- ▶ identify and describe Canada's economic, political, social, and physical links with the United States and other regions of the world;
- ▶ use a variety of resources and tools to gather, process, and communicate information about the domestic and international affects of Canada's links with the United States and other areas of the world;
- ▶ explain the relevance to Canada of current global issues and influences.



Getting Involved

- ✓ Encourage your child to ask questions about the world.
- ✓ Stimulate your child's interest in current events and issues.
- ✓ Become familiar with the course expectations to better discuss your child's work.
- ✓ Communicate regularly with your child's teacher.
- ✓ Encourage your child to participate in activities that develop responsible citizenship.

Achievement Chart for Social Studies, History, and Geography - Grades 1-8

Categories	Level 1	Level 2	Level 3	Level 4
Knowledge and Understanding <i>Subject-specific content acquired in each grade (knowledge), and the comprehension of its meaning and significance (understanding)</i>				
The student:				
Knowledge of content (e.g., facts, terms, definitions)	→ demonstrates limited knowledge of content	→ demonstrates some knowledge of content	→ demonstrates considerable knowledge of content	→ demonstrates thorough knowledge of content
Understanding of content (e.g., concepts, ideas, theories, procedures, processes, methodologies, and/or technologies)	→ demonstrates limited understanding of content	→ demonstrates some understanding of content	→ demonstrates considerable understanding of content	→ demonstrates thorough understanding of content
Thinking <i>The use of critical and creative thinking skills and/or processes</i>				
The student:				
Use of planning skills (e.g., focusing research, gathering information, organizing an inquiry, asking questions, setting goals)	→ uses planning skills with limited effectiveness	→ uses planning skills with some effectiveness	→ uses planning skills with considerable effectiveness	→ uses planning skills with a high degree of effectiveness
Use of processing skills (e.g., analyzing, generating, integrating, synthesizing, evaluating, detecting point of view and bias)	→ uses processing skills with limited effectiveness	→ uses processing skills with some effectiveness	→ uses processing skills with considerable effectiveness	→ uses processing skills with a high degree of effectiveness
Use of critical/creative thinking processes (e.g., inquiry process, problem-solving process, decision-making process, research process)	→ uses critical/creative thinking processes with limited effectiveness	→ uses critical/creative thinking processes with some effectiveness	→ uses critical/creative thinking processes with considerable effectiveness	→ uses critical/creative thinking processes with a high degree of effectiveness
Communication <i>The conveying of meaning through various forms</i>				
The student:				
Expression and organization of ideas and information (e.g., clear expression, logical organization) in oral, visual, and written forms	→ expresses and organizes ideas and information with limited effectiveness	→ expresses and organizes ideas and information with some effectiveness	→ expresses and organizes ideas and information with considerable effectiveness	→ expresses and organizes ideas and information with a high degree of effectiveness

Categories	Level 1	Level 2	Level 3	Level 4
Communication <i>The conveying of meaning through various forms</i>				
The student:				
Communication for different audiences (e.g., peers, adults) and purposes (e.g., to inform, to persuade) in oral, visual, and written forms	→ communicates for different audiences and purposes with limited effectiveness	→ communicates for different audiences and purposes with some effectiveness	→ communicates for different audiences and purposes with considerable effectiveness	→ communicates for different audiences and purposes with a high degree of effectiveness
Use of conventions (e.g., conventions of form, map conventions), vocabulary, and terminology of the discipline in oral, visual, and written forms	→ uses conventions, vocabulary, and terminology of the discipline with limited effectiveness	→ uses conventions, vocabulary, and terminology of the discipline with some effectiveness	→ uses conventions, vocabulary, and terminology of the discipline with considerable effectiveness	→ uses conventions, vocabulary, and terminology of the discipline with a high degree of effectiveness
Application <i>The use of knowledge and skills to make connections within and between various contexts</i>				
The student:				
Application of knowledge and skills (e.g., concepts, procedures, processes, and/or technologies) in familiar contexts	→ applies knowledge and skills in familiar contexts with limited effectiveness	→ applies knowledge and skills in familiar contexts with some effectiveness	→ applies knowledge and skills in familiar contexts with considerable effectiveness	→ applies knowledge and skills in familiar contexts with a high degree of effectiveness
Transfer of knowledge and skills (e.g., concepts, procedures, methodologies, technologies) to new contexts	→ transfers knowledge and skills to new contexts with limited effectiveness	→ transfers knowledge and skills to new contexts with some effectiveness	→ transfers knowledge and skills to new contexts with considerable effectiveness	→ transfers knowledge and skills to new contexts with a high degree of effectiveness
Making connections within and between various contexts (e.g., past, present, and future; environment; social; cultural; spatial; personal; multidisciplinary)	→ makes connections within and between various contexts with limited effectiveness	→ makes connections within and between various contexts with some effectiveness	→ makes connections within and between various contexts with considerable effectiveness	→ makes connections within and between various contexts with a high degree of effectiveness

The Importance of Health & Physical Education in the Curriculum

The health and physical education curriculum helps students develop an understanding of what they need in order to make a commitment to lifelong healthy, active living and develop the capacity to live satisfying, productive lives. Healthy, active living benefits both individuals and society in many ways – for example, by increasing productivity and readiness for learning, improving morale, decreasing absenteeism, reducing health-care costs, decreasing anti-social behaviour such as bullying and violence, promoting safe and healthy relationships, and heightening personal satisfaction. Research has shown a connection between increased levels of physical activity and better academic achievement, better concentration, better classroom behaviour, and more focused learning. Other benefits include improvements in psychological well-being, physical capacity, self-concept, and the ability to cope with stress. The expectations that make up this curriculum also provide the opportunity for students to develop social skills and emotional well-being. This practical, balanced approach will help students move successfully through elementary and secondary school and beyond. In health and physical education, students will learn the skills needed to be successful in life as active, socially responsible citizens.

Living Skills: Grade 6

Overall Expectations:

By the end of Grade 6, students will:

- ▶ demonstrate personal and interpersonal skills and the use of critical and creative thinking processes as they acquire knowledge and skills in connection with the expectations in the Active Living, Movement Competence, and Healthy Living strands for this grade.

Specific Expectations:

By the end of Grade 6, students will:

Personal Skills:

- ▶ use self-awareness and self-monitoring skills to help them understand their strengths and needs, take responsibility for their actions, recognize sources of stress, and monitor their own progress, as they participate in physical activities, develop movement competence, and acquire knowledge and skills related to healthy living
- ▶ use adaptive, management, and coping skills to help them respond to the various challenges they encounter as they participate in physical activities, develop movement competence, and acquire knowledge and skills related to healthy living

Interpersonal Skills:

- ▶ communicate effectively, using verbal or non-verbal means, as appropriate, and interpret information accurately as they participate in physical activities, develop movement competence, and acquire knowledge and skills related to healthy living
- ▶ apply relationship and social skills as they participate in physical activities, develop movement competence, and acquire knowledge and skills related to healthy living to help them interact positively with others, build healthy relationships, and become effective team members

Critical and Creative Thinking:

- ▶ use a range of critical and creative thinking skills and processes to assist them in making connections, planning and setting goals, analysing and solving problems, making decisions, and evaluating their choices in connection with learning in health and physical education

Active Living: Grade 6

Overall Expectations:

By the end of Grade 6, students will:

- ▶ participate actively and regularly in a wide variety of physical activities, and demonstrate an understanding of factors that encourage lifelong participation in physical activity;
- ▶ demonstrate an understanding of the importance of being physically active, and apply physical fitness concepts and practices that contribute to healthy, active living;
- ▶ demonstrate responsibility for their own safety and the safety of others as they participate in physical activities.

Specific Expectations:

By the end of Grade 6, students will:

Active Participation:

- ▶ actively participate in a wide variety of program activities, according to their capabilities, while applying behaviours that enhance their readiness and ability to take part
- ▶ demonstrate an understanding of factors that contribute to their personal enjoyment of being active as they participate in a wide variety of individual and small-group activities and lead-up games
- ▶ describe factors that motivate them to participate in physical activity every day, at school and during leisure time, and that influence their choice of activities

Physical Fitness:

- ▶ Daily physical activity (DPA): participate in sustained moderate to vigorous physical activity, with appropriate warm-up and cool-down activities, to the best of their ability for a minimum of twenty minutes each day
- ▶ explain how participation in physical activities affects personal health-related fitness
- ▶ assess their level of health-related fitness as they participate in various physical activities, and monitor changes in their physical fitness over time
- ▶ develop and implement plans of action based on both their assessments of their health-related components of fitness and their interests, in order to achieve personal fitness goals

Safety:

- ▶ demonstrate behaviours and apply procedures that maximize their safety and that of others during physical activity
- ▶ describe appropriate methods for treating minor injuries that may occur while participating in physical activity

Movement Competence: Skills, Concepts, and Strategies: Grade 6

Overall Expectations:

By the end of Grade 6, students will:

- ▶ perform movement skills, demonstrating an understanding of the basic requirements of the skills and applying movement concepts as appropriate, as they engage in a variety of physical activities;
- ▶ apply movement strategies appropriately, demonstrating an understanding of the components of a variety of physical activities, in order to enhance their ability to participate successfully in those activities.

Specific Expectations:

By the end of Grade 6, students will:

Movement Skills and Concepts:

- ▶ perform smooth transfers of weight in relation to others and equipment in a variety of situations involving static and dynamic balance
- ▶ perform a wide variety of locomotor movements, in combination, at different speeds, in different directions, and using different pathways, while moving around others and/or equipment
- ▶ send and receive a variety of objects, adjusting for speed and distance, while applying basic principles of movement
- ▶ retain objects in a variety of situations while travelling in different pathways and at different speeds in relation to others and equipment

Movement Strategies:

- ▶ demonstrate an understanding of the basic components of physical activities, and apply this understanding as they participate in a variety of physical activities
- ▶ describe common features of specific categories of physical activities*, and describe strategies that they found effective while participating in a variety

of physical activities in different categories

- ▶ apply a variety of tactical solutions to increase their chances of success as they participate in physical activities

Healthy Living: Grade 6

Overall Expectations:

By the end of Grade 6, students will:

- ▶ demonstrate an understanding of factors that contribute to healthy development;
- ▶ demonstrate the ability to apply health knowledge and living skills to make reasoned decisions and take appropriate actions relating to their personal health and well-being;
- ▶ demonstrate the ability to make connections that relate to health and well-being – how their choices and behaviours affect both themselves and others, and how factors in the world around them affect their own and others' health and well-being.

Specific Expectations:

By the end of Grade 6, students will:

Substance Use, Addictions, and Related Behaviours:

- ▶ describe the range of effects associated with using cannabis and other illicit drugs
- ▶ identify people and community resources that can provide support when dealing with choices or situations involving substance use and addictive behaviours

Making Healthy Choices:

Healthy Eating

- ▶ apply their knowledge of medical, emotional, practical, and societal factors that influence eating habits and food choices
- ▶ apply their recognition of internal hunger and thirst cues and their knowledge of physical factors that influence the desire to eat and drink

Personal Safety and Injury Prevention

- ▶ apply personal skills and interpersonal skills to promote positive interaction and avoid or manage conflict in social situations

Substance Use, Addictions, and Related Behaviours

- ▶ use decision-making strategies and skills and an understanding of factors influencing drug use to make safe personal choices about the use of drugs such as alcohol, tobacco, and cannabis

Making Connections for Healthy Living:

Healthy Eating

- ▶ explain how healthy eating and active living work together to improve a person's general health and well-being and how the benefits of both can be promoted to others

Personal Safety and Injury Prevention

- ▶ recognize the responsibilities and risks associated with caring for themselves and others, and demonstrate an understanding of related safety practices and appropriate procedures for responding to dangerous situations



Achievement Chart for Health and Physical Education - Grades 1-8

Categories	Level 1	Level 2	Level 3	Level 4
Knowledge and Understanding <i>Subject-specific content acquired in each grade (knowledge), and the comprehension of its meaning and significance (understanding)</i>				
The student:				
Knowledge of content (e.g., facts, definitions, skills, principles and strategies, safe practices and procedures)	→ demonstrates limited knowledge of content	→ demonstrates some knowledge of content	→ demonstrates considerable knowledge of content	→ demonstrates thorough knowledge of content
Understanding of content (e.g., processes, techniques, ideas, relationships between concepts)	→ demonstrates limited understanding of content	→ demonstrates some understanding of content	→ demonstrates considerable understanding of content	→ demonstrates thorough understanding of content
Thinking <i>The use of critical and creative thinking skills and/or processes</i>				
The student:				
Use of planning skills (e.g., identifying the problem, formulating questions and ideas, gathering and organizing information; developing fitness plans; selecting strategies)	→ uses planning skills with limited effectiveness	→ uses planning skills with some effectiveness	→ uses planning skills with considerable effectiveness	→ uses planning skills with a high degree of effectiveness
Use of processing skills (e.g., synthesizing information, evaluating risk and determining appropriate safety measures, revising fitness goals, detecting bias)	→ uses processing skills with limited effectiveness	→ uses processing skills with some effectiveness	→ uses processing skills with considerable effectiveness	→ uses processing skills with a high degree of effectiveness
Use of critical/creative thinking processes (e.g., goal setting, decision making, problem solving; analysing movement skills, strategizing, reflecting on learning and determining steps for improvement, critiquing)	→ uses critical/creative thinking processes with limited effectiveness	→ uses critical/creative thinking processes with some effectiveness	→ uses critical/creative thinking processes with considerable effectiveness	→ uses critical/creative thinking processes with a high degree of effectiveness
Communication <i>The conveying of meaning through various forms</i>				
The student:				
Expression and organization of ideas and information in oral, visual, and/or written forms (e.g., demonstrations, role plays, conferences, presentations, posters, pamphlets, journals)	→ expresses and organizes ideas and information with limited effectiveness	→ expresses and organizes ideas and information with some effectiveness	→ expresses and organizes ideas and information with considerable effectiveness	→ expresses and organizes ideas and information with a high degree of effectiveness
Communication for different audiences (e.g., peers, teammates, adults) and purposes (e.g., to inform, instruct, promote) and in oral, visual, and/or written forms	→ communicates for different audiences and purposes with limited effectiveness	→ communicates for different audiences and purposes with some effectiveness	→ communicates for different audiences and purposes with considerable effectiveness	→ communicates for different audiences and purposes with a high degree of effectiveness

Categories	Level 1	Level 2	Level 3	Level 4
Communication <i>The conveying of meaning through various forms</i>				
<p>The student:</p> <p>Use of health and physical education conventions, vocabulary, and terminology (e.g., using and interpreting signals and body language; using correct terminology to discuss parts of the body, health-related components of fitness, phases of movement [preparation, execution, follow-through]) in oral, visual and/or written forms</p>	<p>→ uses conventions, vocabulary, and terminology with limited effectiveness</p>	<p>→ uses conventions, vocabulary, and terminology with some effectiveness</p>	<p>→ uses conventions, vocabulary, and terminology with considerable effectiveness</p>	<p>→ uses conventions, vocabulary, and terminology with a high degree of effectiveness</p>
Application <i>The use of knowledge and skills to make connections within and between various contexts</i>				
<p>The student:</p> <p>Application of knowledge and skills (e.g., movement skills, concepts, principles, strategies; training principles; health concepts; safe practices; personal and interpersonal skills, including teamwork, fair play, etiquette, leadership) in familiar contexts (e.g., physical activities, healthy living discussions)</p> <p>Transfer of knowledge and skills to new contexts (e.g., transfer of movement skills, strategies, and tactics from a familiar physical activity to a new activity, transfer of planning skills to contexts such as fitness, healthy eating, healthy sexuality)</p> <p>Making connections within and between various contexts (e.g., between active participation, learning in the health and physical education program, and healthy, active living; between health and physical education, other subjects, and personal experiences in and beyond school)</p>	<p>→ applies knowledge and skills in familiar contexts with limited effectiveness</p> <p>→ applies knowledge and skills in familiar contexts with a high degree of effectiveness</p> <p>→ makes connections within and between various contexts with limited effectiveness</p>	<p>→ applies knowledge and skills in familiar contexts with some effectiveness</p> <p>→ transfers knowledge and skills to new contexts with some effectiveness</p> <p>→ makes connections within and between various contexts with some effectiveness</p>	<p>→ applies knowledge and skills in familiar contexts with considerable effectiveness</p> <p>→ transfers knowledge and skills to new contexts with considerable effectiveness</p> <p>→ makes connections within and between various contexts with considerable effectiveness</p>	<p>→ applies knowledge and skills in familiar contexts with a high degree of effectiveness</p> <p>→ transfers knowledge and skills to new contexts with a high degree of effectiveness</p> <p>→ makes connections within and between various contexts with a high degree of effectiveness</p>

Physical Literacy

Individuals who are physically literate move with competence in a wide variety of physical activities that benefit the development of the whole person.

Health Literacy

Health literacy involves the skills needed to get, understand and use information to make good decisions for health. The Canadian Public Health Association’s Expert Panel on Health Literacy defines it as the ability to access, understand, evaluate and communicate information as a way to promote, maintain and improve health in a variety of settings across the life-course.



Health and Physical Education: Strands, Subgroups, and Living Skills

Living Skills

Personal Skills

- Self-awareness and self-monitoring skills
- Adaptive, management, and coping skills

Interpersonal Skills

- Communication skills
- Relationship and social skills

Critical and Creative Thinking

- Planning
- Processing
- Drawing conclusions/presenting results
- Reflecting/evaluating

Active Living

Active Participation

- Regular participation, variety, lifelong activity
- Enjoyment, motivation

Physical Fitness

- Fitness development through daily physical activity, personal fitness plans

Safety

- Personal safety and safety of others during physical activity

Movement Competence: Skills, Concepts, Strategies

Movement Skills and Concepts

- Movement skills – stability, locomotion, manipulation
- Movement concepts – body awareness, effort, spatial awareness, relationships
- Movement principles

Movement Strategies

- Components of physical activities
- Strategies and tactics in all physical activities

Healthy Living

Understanding Health Concepts

- Understanding the factors that contribute to healthy growth and development

Making Healthy Choices

- Applying health knowledge, making decisions about personal health and well-being

Making Connections for Healthy Living

- Making connections to link personal health and well-being to others and the world around them

Expectations in the Healthy Living strand focus on the following four health topics. Positive behaviours in relation to each topic area contribute to overall mental health and emotional well-being.

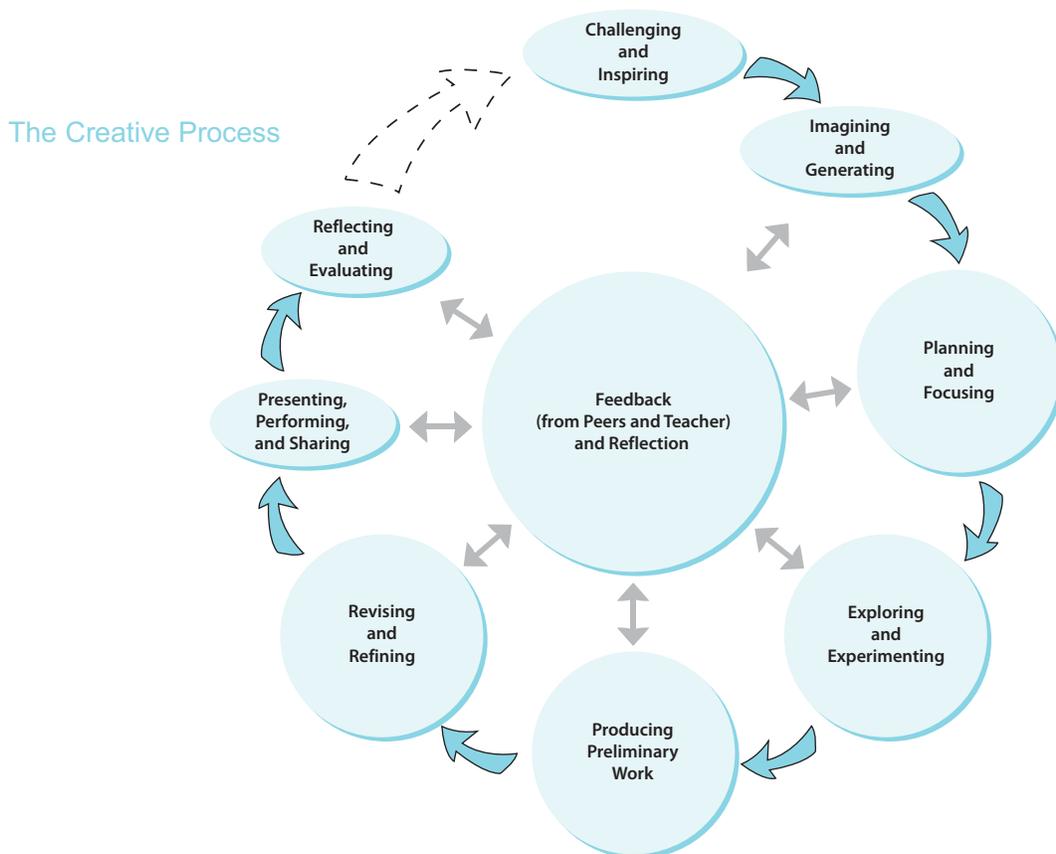
- Healthy Eating
- Personal Safety and Injury Prevention
- Substance Use, Addictions, and Related Behaviours
- Human Development and Sexual Health

Mental Health and Emotional Well-being

The Importance of the Arts

Education in the arts is essential to students' intellectual, social, physical, and emotional growth and well-being. Experiences in the arts – in dance, drama, music, and visual arts – play a valuable role in helping students to achieve their potential as learners and to participate fully in their community and in society as a whole. The arts provide a natural vehicle through which students can explore and express themselves and through which they can discover and interpret the world around them. Participation in the arts contributes in important ways to students' lives and learning – it involves intense engagement, development of motivation and confidence, and the use of creative and

dynamic ways of thinking and knowing. It is well documented that the intellectual and emotional development of children is enhanced through study of the arts. Through the study of dance, drama, music, and visual arts, students develop the ability to think creatively and critically. The arts nourish and stimulate the imagination, and provide students with an expanded range of tools, techniques, and skills to help them gain insights into the world around them and to represent their understandings in various ways. Study of the arts also provides opportunities for differentiation of both instruction and learning environments.



Achievement Chart - The Arts, Grades 1–8

Categories	Level 1	Level 2	Level 3	Level 4
Knowledge and Understanding <i>Subject-specific content acquired in each grade (knowledge), and the comprehension of its meaning and significance (understanding)</i>				
The student:				
Knowledge of content <i>(e.g., facts, genres, terms, definitions, techniques, elements, principles, forms, structures, conventions)</i>	- demonstrates limited knowledge of content	- demonstrates some knowledge of content	- demonstrates considerable knowledge of content	- demonstrates thorough knowledge of content
Understanding of content <i>(e.g., concepts, ideas, procedures, processes, themes, relationships among elements, informed opinions)</i>	- demonstrates limited understanding of content	- demonstrates some understanding of content	- demonstrates considerable understanding of content	- demonstrates thorough understanding of content
Thinking <i>The use of critical and creative thinking skills and/or processes</i>				
The student:				
Use of planning skills <i>(e.g., formulating questions, generating ideas, gathering information, focusing research, outlining, organizing an arts presentation or project, brainstorming/bodystorming, blocking, sketching, using visual organizers, listing goals in a rehearsal log, inventing notation)</i>	- uses planning skills with limited effectiveness	- uses planning skills with some effectiveness	- uses planning skills with considerable effectiveness	- uses planning skills with a high degree of effectiveness
Use of processing skills <i>(e.g., analysing, evaluating, inferring, interpreting, editing, revising, refining, forming conclusions, detecting bias, synthesizing)</i>	- uses processing skills with limited effectiveness	- uses processing skills with some effectiveness	- uses processing skills with considerable effectiveness	- uses processing skills with a high degree of effectiveness
Use of critical/creative thinking processes <i>(e.g., creative and analytical processes, design process, exploration of the elements, problem solving, reflection, elaboration, oral discourse, evaluation, critical literacy, metacognition, invention, critiquing, reviewing)</i>	- uses critical/creative thinking processes with limited effectiveness	- uses critical/creative thinking processes with some effectiveness	- uses critical/creative thinking processes with considerable effectiveness	- uses critical/creative thinking processes with a high degree of effectiveness

Categories

Level 1

Level 2

Level 3

Level 4

Communication *The conveying of meaning through various forms*

The student:

Expression and organization of ideas and understandings in art forms (*dance, drama, music, and the visual arts*), including media/multimedia forms (*e.g., expression of ideas and feelings using visuals, movements, the voice, gestures, phrasing, techniques*), and **in oral and written forms** (*e.g., clear expression and logical organization in critical responses to art works and informed opinion pieces*)

- expresses and organizes ideas and understandings with limited effectiveness

- expresses and organizes ideas and understandings with some effectiveness

- expresses and organizes ideas and understandings with considerable effectiveness

- expresses and organizes ideas and understandings with a high degree of effectiveness

Communication for different audiences (*e.g., peers, adults, younger children*) and **purposes through the arts** (*e.g., drama presentations, visual arts exhibitions, dance and music performances*) and **in oral and written forms** (*e.g., debates, analyses*)

- communicates for different audiences and purposes with limited effectiveness

- communicates for different audiences and purposes with some effectiveness

- communicates for different audiences and purposes with considerable effectiveness

- communicates for different audiences and purposes with a high degree of effectiveness

Use of conventions in dance, drama, music, and the visual arts (*e.g., allegory, narrative or symbolic representation, style, articulation, drama conventions, choreographic forms, movement vocabulary*) and **arts vocabulary and terminology in oral and written forms**

- uses conventions, vocabulary, and terminology of the arts with limited effectiveness

- uses conventions, vocabulary, and terminology of the arts with some effectiveness

- uses conventions, vocabulary, and terminology of the arts with considerable effectiveness

- uses conventions, vocabulary, and terminology of the arts with a high degree of effectiveness

Application *The use of knowledge and skills to make connections within and between various contexts*

The student:

Application of knowledge and skills (*e.g., performance skills, composition, choreography, elements, principles, processes, technologies, techniques, strategies, conventions*) **in familiar contexts** (*e.g., guided improvisation, performance of a familiar work, use of familiar forms*)

- applies knowledge and skills in familiar contexts with limited effectiveness

- applies knowledge and skills in familiar contexts with some effectiveness

- applies knowledge and skills in familiar contexts with considerable effectiveness

- applies knowledge and skills in familiar contexts with a high degree of effectiveness

Transfer of knowledge and skills (*e.g., concepts, strategies, processes, techniques*) **to new contexts** (*e.g., a work requiring stylistic variation, an original composition, student-led choreography, an interdisciplinary or multidisciplinary project*)

- transfers knowledge and skills to new contexts with limited effectiveness

- transfers knowledge and skills to new contexts with some effectiveness

- transfers knowledge and skills to new contexts with considerable effectiveness

- transfers knowledge and skills to new contexts with a high degree of effectiveness

Making connections within and between various contexts (*e.g., between the arts; between the arts and personal experiences and the world outside the school; between cultural and historical, global, social, and/or environmental contexts; between the arts and other subjects*)

- makes connections within and between various contexts with limited effectiveness

- makes connections within and between various contexts with some effectiveness

- makes connections within and between various contexts with considerable effectiveness

- makes connections within and between various contexts with a high degree of effectiveness

Dance: Grade 6

Overall Expectations

By the end of Grade 6, students will:

- ▶ **Creating and Presenting:** apply the creative process to the composition of short dance pieces, using the elements of dance to communicate feelings and ideas;
- ▶ **Reflecting, Responding, and Analysing:** apply the critical analysis process to communicate their feelings, ideas, and understandings in response to a variety of dance pieces and experiences;
- ▶ **Exploring Forms and Cultural Contexts:** demonstrate an understanding of a variety of dance forms, traditions, and styles from the past and present, and their sociocultural and historical contexts.

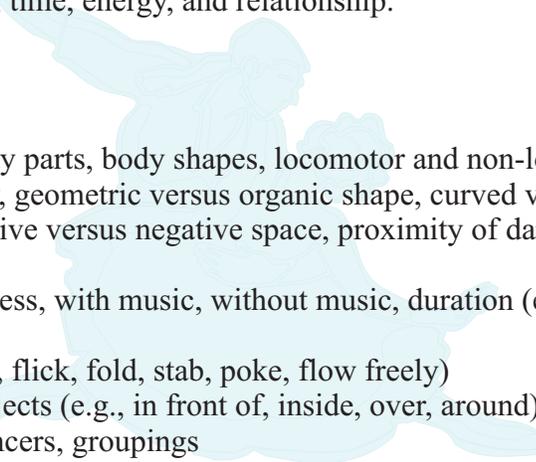


Dance: Fundamental Concepts for Grade 6

Students in Grade 6 will develop or extend understanding of the following concepts through participation in various dance experiences (e.g., communicating a variety of ideas through combined elements), with particular emphasis on body, space, time, energy, and relationship.

ELEMENTS OF DANCE

- **body:** body awareness, use of body parts, body shapes, locomotor and non-locomotor movements, body bases, symmetry versus asymmetry, geometric versus organic shape, curved versus angular shape
- **space:** pathways, directions, positive versus negative space, proximity of dancers to one another, various group formations
- **time:** tempo, rhythm, pause, stillness, with music, without music, duration (e.g., short, long), acceleration/deceleration
- **energy:** effort, force, quality (e.g., flick, fold, stab, poke, flow freely)
- **relationship:** dancers to props/objects (e.g., in front of, inside, over, around), meet/part, follow/lead, emotional connections between dancers, groupings

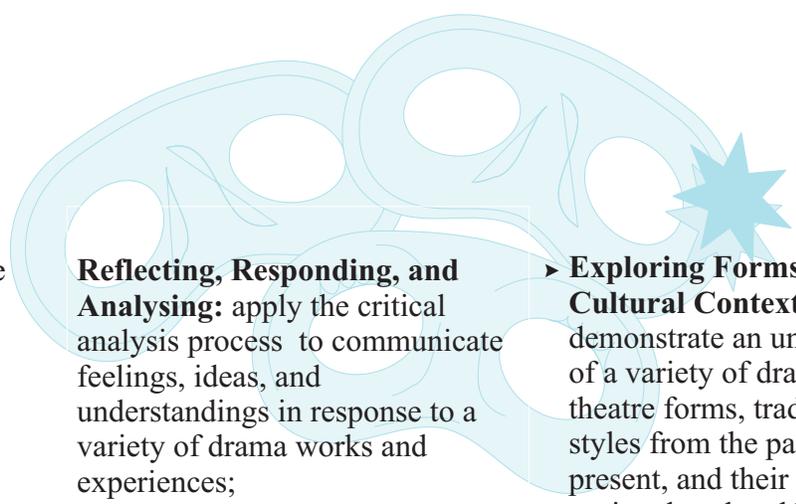


Drama: Grade 6

Overall Expectations

By the end of Grade 6, students will:

- ▶ **Creating and Presenting:** apply the creative process to process drama and the development of drama works, using the elements and conventions of drama to communicate feelings, ideas, and multiple perspectives;
- ▶ **Reflecting, Responding, and Analysing:** apply the critical analysis process to communicate feelings, ideas, and understandings in response to a variety of drama works and experiences;
- ▶ **Exploring Forms and Cultural Contexts:** demonstrate an understanding of a variety of drama and theatre forms, traditions, and styles from the past and present, and their sociocultural and historical contexts.



Drama: Fundamental Concepts for Grade 6

Students in Grade 6 will develop or extend understanding of the following concepts through participation in various drama experiences.

ELEMENTS OF DRAMA

- **role/character:** considering in depth the inner and outer life in developing a character; differentiating between authentic characters and stereotypes; using gestures and movement to convey character
- **relationship:** analysing and portraying how relationships influence character development/change
- **time and place:** establishing a clear setting; sustaining belief in the fictional setting
- **tension:** using sound, light, technology, and stage effects to heighten tension/suspense
- **focus and emphasis:** using drama conventions to reveal or communicate key emotions, motivations, perspectives, and ideas to the audience

Music: Grade 6

Overall Expectations

By the end of Grade 6, students will:

- ▶ **Creating and Performing:** apply the creative process to create and perform music for a variety of purposes, using the elements and techniques of music;
- ▶ **Reflecting, Responding, and Analysing:** apply the critical analysis process to communicate their feelings, ideas, and understandings in response to a variety of music and musical experiences;
- ▶ **Exploring Forms and Cultural Contexts:** demonstrate an understanding of a variety of musical genres and styles from the past and present, and their sociocultural and historical contexts.

Music: Fundamental Concepts for Grade 6

In Grade 6, students will build on their knowledge of the elements of music and related musical concepts that were introduced in Grades 1 to 5. Students will develop understanding of musical concepts through participation in musical experiences that involve listening, moving, creating, and performing (vocal and/or instrumental music).

ELEMENTS OF MUSIC

- **duration:** metre (oral count, with primary emphasis on “one” and secondary emphasis on “two” and “three”: “one-and-a-two-and-a-three-and-a”) and other compound metres (e.g.,); metre; pick-up note(s) (anacrusis); triplets; common Italian tempo marks (e.g., allegro, adagio) and others encountered in the repertoire performed
- **pitch:** ledger lines above or below the staff; major, minor, and perfect intervals (e.g. major third, perfect fifth)
- **dynamics and other expressive controls:** those encountered in repertoire (e.g., very soft [pianissimo – pp], very loud [fortissimo – ff], slurs)
- **timbre: electronic sounds;** Orff ensemble (xylophone, recorder, pitched and non-pitched percussion); other ensemble sonorities (drum line, choir, guitar, marching band)
- **texture/harmony:** layering of electronic sounds, chord progressions using I, IV, and V
- **form:** theme and variations; repeats (e.g., first and second endings)

Visual Arts: Grade 6

Overall Expectations

By the end of Grade 6, students will:

- ▶ **Creating and Presenting:** apply the creative process to produce art works in a variety of traditional two- and three-dimensional forms, as well as multimedia art works, that communicate feelings, ideas, and understandings, using elements, principles, and techniques of visual arts as well as current media technologies;
- ▶ **Reflecting, Responding, and Analysing:** apply the critical analysis process to communicate feelings, ideas, and understandings in response to a variety of art works and art experiences;
- ▶ **Exploring Forms and Cultural Contexts:** demonstrate an understanding of a variety of art forms, styles, and techniques from the past and present, and their sociocultural and historical contexts.

Visual Arts: Fundamental Concepts for Grade 6

In addition to the concepts introduced in Grades 1 to 5, students in Grade 6 will develop understanding of the following concepts through participation in a variety of hands-on, open-ended visual arts experiences.

ELEMENTS OF DESIGN

Students will develop understanding of all elements of design.

- **line:** lines that direct the viewer's attention; lines that create the illusion of force or movement (e.g., wavy and wiggly lines used in op art); contour drawings of objects that are not easily recognizable (e.g., crumpled paper)
- **shape and form:** exaggerated proportions, motifs, fonts; geometric (e.g., conical, pyramidal) shapes and forms
- **space:** centre of interest (focal point) and one-point perspective; basic facial proportions; horizontal and vertical symmetry
- **colour:** the colour wheel; tertiary colours; colour for expressive purposes; colour for creating naturalistic images
- **texture:** textures created with a variety of tools, materials, and techniques (e.g., gouged marks in a soft-lead print)
- **value:** shading that suggests volume; gradation

PRINCIPLES OF DESIGN

Students will develop understanding of all principles of design (that is, contrast, repetition and rhythm, variety, emphasis, proportion, balance, unity and harmony, and movement), but the focus in Grade 6 will be on balance.

- **balance:** arrangement of the elements of design to create the impression of equality in weight or importance (e.g., a formal or symmetrical arrangement produced through distribution of shapes; an informal or asymmetrical arrangement produced through use of colour); colour concepts to be used in creating balance (e.g., light or neutral colours appear lighter in "weight" than dark or brilliant colours; warm colours seem to expand, cool colours seem to contract; transparent areas seem to "weigh" less than opaque areas)