



# Ready, Set, Go: A Science Skills Primer for Grade 9 Students

## *Summary*

This project focuses on the development of scientific literacy and numeracy skills through: problem solving, communicating (both oral and written), reasoning and proving, reflecting and proper use of instruments and standard units of measurement, recording and collecting data. This resource supports literacy through communication –reading, writing and visual literacy skills. The science skills continuum found in the Science Curriculum 2008 documents was used to identify the basic scientific skills that all grade 9 students need to meet with success in science throughout high school. Strategies are included for teachers that build individual student abilities and provide a foundation for scientific inquiry. Suggestions for assessment for learning are included to help teachers discover student misconceptions and skill levels before beginning a unit of study.

This resource includes activities based on problem-based learning, differentiated instruction and critical thinking. Each activity is designed to engage students in science and can be used to introduce and/or consolidate learning of specific concepts and skills.

The project and learning goals, and activity titles correlated to curriculum connections & skills focus are given below.

**PROJECT GOAL**

1. To Develop critical thinking and critical literacy activities in science to support the literacy and problem solving continuum introduced in elementary science.
2. To Develop numeracy skills in science to support the understanding and application of mathematical reasoning in a science related focus
3. To Develop information management skills in science
4. To Develop communication skills in reading writing and visual literacy to support the literacy continuum.

**LEARNING OUTCOMES:**

Our students will demonstrate the ability to ...

1. communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.
2. respond to written, spoken, or visual messages in a manner that ensures effective communication.
3. execute mathematical operations accurately.
4. apply a systematic approach to solve problems.
5. use a variety of thinking skills to anticipate and solve problems.
6. locate, select, organize, and document information using appropriate technology and information systems.
7. analyze, evaluate, and apply relevant information from a variety of sources.
8. show respect for the diverse opinions, values, belief systems, and contributions of others.
9. interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals.

**RESOURCE PROJECT GUIDE: GRADE 9 SCIENCE – SKILL BUILDER****ACTIVITIES TO SUPPORT CURRICULUM EXPECTATIONS**

ACTIVITY TITLE/COURSE UNIT REFERENCE	GRADE 9 UNIT/STRAND SPECIFIC EXPECTATION	SKILLS FOCUS
SCIENTISTS' APPROACH (COURSE INTRODUCTION)	SNC 1D: A1.1, A1.5, A1.6, A1.8, A1.10, A1.11  SNC 1P: A1.1, A1.5, A1.6, A1.8, A1.10, A1.11	SNC 1D <ul style="list-style-type: none"> <li>• Information Management</li> <li>• Critical thinking/problem solving</li> <li>• Communication</li> <li>• Interpersonal skills</li> </ul> SNC 1P <ul style="list-style-type: none"> <li>• Information management</li> <li>• Critical thinking/problem solving</li> <li>• Communication</li> <li>• Interpersonal skills</li> </ul>
WHAT DO YOU THINK (CHEMISTRY)	SNC 1D: A1.1, A1.5, A1.6, A1.8, A1.10, A1.11, C2.1, C2.3 SNC 1P: A1.1, A1.5, A1.6, A1.8, A1.10, A1.11, C2.1, C2.2	SNC 1D <ul style="list-style-type: none"> <li>• Critical thinking/problem solving</li> <li>• Communication</li> <li>• Information management</li> <li>• Interpersonal skills</li> </ul> SNC 1P <ul style="list-style-type: none"> <li>• Critical thinking/problem solving</li> <li>• Communication</li> <li>• Information management</li> <li>• Interpersonal skills</li> </ul>

ACTIVITY TITLE/COURSE UNIT REFERENCE	GRADE 9 UNIT/STRAND SPECIFIC EXPECTATION	SKILLS FOCUS
IT'S IN THE NUMBERS (CHEMISTRY- STANDARD ATOMIC NOTATION)	SNC1D: A1.12, C2.2, C3.2, C3.5, C3.6, SNC 1P: A1.12, C3.1	SNC 1D <ul style="list-style-type: none"> <li>Numeracy</li> </ul> SNC1P <ul style="list-style-type: none"> <li>Numeracy</li> </ul>
A FORREST ECOSYSTEM (BIOLOGY)	SNC 1D: A1.5, A1.6, A.10, A1.11, B2.1, B3.1, B3.3 SNC 1P: A1.10, A1.11, B2.1, B2.2, B3.2, B3.4	SNC 1D <ul style="list-style-type: none"> <li>Communication</li> <li>Critical thinking/problem solving</li> </ul> SNC 1P <ul style="list-style-type: none"> <li>Communication</li> <li>Critical thinking/problem solving</li> </ul>
SAVING ONTARIO'S WILDLIFE (BIOLOGY)	SNC 1D: A1.1, A1.3, A1.6, A1.7, A1.9, A1.10, A1.11, B1.1, B1.2, B2.5, B3.3, B3.5 SNC 1P: A1.1, A1.3, A1.6, A1.7, A1.9, A1.10, A1.11	SNC 1D <ul style="list-style-type: none"> <li>Communication</li> <li>Numeracy</li> <li>Critical thinking/problem solving</li> <li>Information management</li> </ul> SNC 1P <ul style="list-style-type: none"> <li>Communication</li> <li>Numeracy</li> <li>Critical thinking/problem solving</li> <li>Information management</li> </ul>
EFFECTS OF PESTICIDES ON OUR ECOSYSTEM (BIOLOGY)	SNC 1D: A1.1, A1.3, A1.7, A1.11, B1.2, B2.4, B2.5, B3.5 SNC 1P: A1.1, A1.3, A1.7, A1.11, B1.1, B2.1, B2.2, B2.4, B3.5	SNC 1D <ul style="list-style-type: none"> <li>Communication</li> <li>Critical thinking</li> <li>Information management</li> </ul> SNC 1P <ul style="list-style-type: none"> <li>Communication</li> <li>Critical thinking</li> <li>Information management</li> </ul>
WATT DOES IT COST TO USE IT? (PHYSICS)	SNC 1D: A1.1, A1.4, A1.7, A1.12, A1.13, E1.3, E2.9 SNC 1P: A1.1, A1.4, A1.7, A1.12, A1.13, E1.2, E2.7	SNC 1D <ul style="list-style-type: none"> <li>Communication</li> <li>Numeracy</li> <li>Critical thinking/problem solving</li> <li>Information management</li> <li>Interpersonal</li> </ul> SNC 1P <ul style="list-style-type: none"> <li>Communication</li> <li>Numeracy</li> <li>Critical thinking/problem solving</li> <li>Information management</li> <li>Interpersonal</li> </ul>

ACTIVITY TITLE/COURSE UNIT REFERENCE	GRADE 9 UNIT/STRAND SPECIFIC EXPECTATION	SKILLS FOCUS
HOW FAR FROM HERE (EARTH AND SPACE SCIENCE: THE STUDY OF THE UNIVERSE)	SNC 1D: A1.1, A1.11, A1.12, A1.13, A2.1, D2.1, D2.2, D2.4  SNC 1P: A1.1, A1.11, A1.12, A1.13, A2.1, D2.1, D3.1, D3.2	SNC 1D <ul style="list-style-type: none"> <li>• Numeracy</li> <li>• Interpersonal skills</li> </ul> SNC 1P <ul style="list-style-type: none"> <li>• Numeracy</li> <li>• Interpersonal skills</li> </ul>