

Ontario Catholic School Graduate Expectations

The following Attributes are required in a Catholic mathematics resource:

- 1) **A discerning believer formed in the Catholic faith community**
- 2) **An effective communicator**
- 3) **A reflective, creative and holistic Thinker**
- 4) **A self-directed, responsible, lifelong learner**
- 5) **A collaborative contributor**
- 6) **A caring family member**
- 7) **A responsible citizen**

The new “*Mathematics: Making Connections*” resources developed by McGraw-Hill Ryerson (MHR) for grade 7 and grade 8 are matched 100% with the above Catholic school graduate expectations.

Please refer to the “Expectations” of the new Ontario Curriculum to confirm the respective mathematics strands.

The mathematics expectations are organized into five strands in the new Ontario Curriculum. The strands are as follows;

- Number Sense and Numeration,
- Measurement,
- Geometry and Spatial Sense,
- Patterning and Algebra, and
- Data Management and Probability.

All the knowledge and skills outlined in the expectations for the mathematics program are mandatory. The program in all grades is designed to ensure that students build a solid foundation in mathematics. The new *Ontario Curriculum* expectations and the *Ontario Catholic School Graduate Expectations* are interwoven throughout the new *Mathematics: Making Connections 7and 8* program by MHR.

The expectations of Catholic graduates are described not only in terms of knowledge and skills but also in terms of values, attitudes and actions. The values, attitudes and actions are part of the Christian vision, which is encompassed in the person of Jesus, the risen Christ. Throughout *Mathematics: Making Connections 7and 8* many real-world applications have been chosen to reinforce gospel values.

1) A discerning believer formed in the Catholic Faith Community is one who celebrates the signs and sacred mystery of God’s presence through word, sacrament, prayer, forgiveness, reflection and moral living.

- The texts reflect on God’s word by developing attitudes and values founded on Catholic social teachings. The texts act to promote social responsibility, human solidarity and the common good. All faith traditions are respected in this life journey of ours. The multicultural attitudes can be noted in the *McGraw-Hill Ryerson Mathematics 7: Making Connections*, page 342-343. Multiculturalism is cherished.
- References for the respect of life and living in community with Christ have numerous examples of equity/inclusivity. The examples fit situations inside and outside of the classroom as noted in *McGraw-Hill Ryerson Mathematics 8: Making Connections*, Chapter 1, Page 24.

2) An effective communicator is one who speaks, writes, and listens honestly and sensitively, responding critically in light of gospel values.

- An effective communicator will read, understand and use written materials critically. The communicator will present information and ideas clearly and honestly with sensitivity towards inclusion of others. Technology is now a great way of communicating mathematics concepts. Technology is woven throughout, using many examples and techniques. One such technique is the use of the Geometer’s Sketchpad and its use of geometry creation *McGraw-Hill Ryerson Mathematics 8: Making Connections*, Chapter 1, Page 27.
- Numerous examples of arts, media, technology, and information systems are used to promote the growth of the learner as well as expand the student’s perspective on issues. *McGraw-Hill Ryerson Mathematics 8: Making Connections*, Chapter 1, Page 26.
- Hands on crafts are promoted as an alternative to technology.
- The emphasis on communication is apparent in various activities including role-play “*Communicate the Ideas*” is a headline for math problems, which need to be explained in detail using sequential logic *McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 349.
- Internet research is promoted in questions with an emphasis on human history and our place in the universe, *McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 33. See also www.mcgrawhill.ca/links/math7.

3) A reflective, creative and holistic thinker is one who solves problems and makes responsible decisions with an informed moral conscience for the common good.

The holistic thinker examines, evaluates, and applies knowledge of interdependent systems for the development of a just and compassionate society. Students will study cross-curricular materials as well as proceed to tackle issues with a moral conscience.

- Students discuss, predict and test their theories in reflective questions *McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 121.
- The *Making Connections* sections in the chapters apply math to hands on everyday problems. Creative models are made or math becomes collaborative in team environments. *McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 352.
- The MHR program ties in the grade 8 program with the grade 7 program. This helps the review process and entrenches ideas and concepts for students *McGraw-Hill Ryerson Mathematics 8: Making Connections*, Page 16.
- Cross-curricular materials can be seen throughout the program. There are various uses of technology as well as other subject areas brought into mathematics. Learning now becomes part of everyday life and ties into human history. *McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 368, 372, questions #16 and 18.

4) A self-directed, responsible, lifelong learner is one who develops and demonstrates their God-given potential.

- Lifelong learners must be flexible and adaptable. The following example shows that trial and error can produce results and with it an answer stemming from adaptation and flexibility *McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 287-288.
- Initiative and Christian leadership must also come into a Catholic math program. Examples of leadership do not need to be front and center, for many of the best leaders simple lead by example *McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 252-253.
- Catholic self-directed students must demonstrate values, abilities and aspirations, which influence choices and opportunities in life. *McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 376.

- The materials in the grade 7/8 program for MHR demonstrate students in leisure and/or fitness activities which promote a healthy lifestyle *McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 342-343, 356, and 374.
- Setting goals and managing resources such as time, money are characteristics of lifelong learners. *McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 377, question #14, Page 378, question #7.

5) A collaborative contributor finds meaning, dignity and vocation in work, which respects the rights of all and contributes to the common good.

- A team member is interdependent and develops one's God-given potential to make a meaningful contribution to society
- Many examples in the materials exist where students must work in teams to achieve excellence, originality in their work as well as achieving the stated end result. The *Communicating the ideas* and *Making Connections* reinforce the above values and traits.
- The materials provide many examples of applying skills, which will lead to Christian vocations *McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 195-196.

6) A caring family member who attends to family, school, parish and the wider community.

- The text portrays the family and home in addition to community as integral to the learning of students. Photos and questions demonstrate humans interacting in a respectful, loving and compassionate manner. *McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 12, 362.
- Questions such as (*McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 195, 318) show that family, friends and community are integral to the human experience.
- Ministry to the family, school, the parish and the wider community can appear in various forms through service. Students will also learn service at a young age such as the student in the following example who is in charge of funds and needs to get to the bottom of a particular problem. *McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 373, question #21.

7) A responsible citizen who gives witness to Catholic social teaching by promoting peace, justice and the sacredness of human life.

- The texts promote equality of men and women, democracy, peace hence a just world. The sports role models include such people as Mike Weir and Lori Kane for golf. They are two great Canadian golfers. Women and men hold respected professional occupations and both sexes are encouraged to develop their God-given abilities. *McGraw-Hill Ryerson Mathematics 8: Making Connections*, Page 13, 20.
- The Catholic citizen is responsible and accountable for his/her actions. Students in the text are seen as being put into positions of responsibility and are accountable for their actions (*McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 373, question #20.). There is much role play as part of this math program which puts emphasis on student leadership and student responsibility.
- Diversity and a heterogeneous society is recognized and promoted. People's cultures and traditions are woven into the questions (*McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 372, question #13). Other faith traditions are affirmed and appreciated as being part of this wonderful interdependent pluralistic society.
- Historical examples, cultural heritage and pluralism can be identified by the names of the students and people in the texts. The materials have an appreciation for cross-curricular knowledge as can be found in the following examples *McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 379, question #6.
- Respect for the environment and its resources are used in various instances in the MHR materials. *McGraw-Hill Ryerson Mathematics 7: Making Connections*, Page 379, question #17.

The previous seven sections have specified examples of the *Ontario Catholic Graduate Expectations* and how they relate to the new grade 7 and 8 program by McGraw-Hill Ryerson. The expectations were written by the *Institute for Catholic Education* and applied to the new program.

The chapters follow the following pattern, which makes the students follow complex material much better. The material is presented in such a way that helps students learn better. The material satisfies the strands and expectations in the *New Curriculum* in a student-friendly process.

- 1) Focus on
- 2) Discover the Math
- 3) Key Ideas
- 4) Communicate the ideas
- 5) Check your understanding
- 6) Chapter problem
- 7) Extend

1) “Focus On”

- This tells both the teacher and students what expectations are being covered. If the student knows the skills and knowledge being identified here, then expectations are being met depending on the 1-4 levels of achievement.

2) “Discover the Math”

- This section of the chapter helps the student discover the concept(s) being taught. It is a hook to get the student started. This discovery is student driven, although students are led by key statements and/or questions. Students “**discover the concept**” in this section.

3) “Key Ideas”

- The key ideas section takes students through an actual problem. Students have just discovered the concept. Now students are being asked to follow a guided math problem, which they will have to solve for themselves in very short order. Students here are “**guided through the concept**” by the text.

4) “Communicate the ideas”

- This section tells students, “**Now communicate what you’ve learned.**” This is done to other fellow students, in a journal, to the class and so on. There is much evidence, which states that students are better able to solve problems if they can communicate them well. Communicating knowledge is a higher order learning/thinking skill. (See Blooms Taxonomy)

5) “Check Your Understanding”

- Problems must now be solved. This is the practice section. This section implicitly states, “**Now solve**” the questions you have been learning about.

6) “Chapter problem”

- The chapter problem is a more challenging math problem. The teacher can decide based on a rubric which level of achievement this problem will fall under. It is a thinking and reflecting problem which has an application to everyday life.

7) “Extend”

- The “Extend” section is a more challenging problem for more advanced students. It gives students an opportunity to extend their knowledge to another higher order of thinking.

In addition to these 7 sections, many sections have a “**chapter problem**” to review concepts taught throughout the chapter. “**Strategies**” are a headline which offer the students hints on various ways to solve certain tricky questions. “**Making connections**” is a hands-on method to reinforce work being taught in a difficult area of mathematics for students. “Making connections” often involves games, role-play or creative cross-curricular activities. Teams and groups are often used in this process.

The “**Did you know...**” section provides students with interesting bits of information from the social sciences and sciences. These are “factoids” which appeal to many students. All of the above strategies are linked with a process, which attracts the attention of students to mathematics. Not all of these methods may work on an entire class. Students have various learning styles and the materials presented make sure that all learning styles are being enticed to proceed with solving and enjoying mathematics.

