

Contact Information	
Board	Waterloo Catholic District School Board
Development date	August 25, 2011
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Position	Teacher
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SHSM sector	Horticulture and Landscaping
Course code and course title	Foundations for College Mathematics (MAP 4C)
Name of CLA	Green and Clean Landscaping
Brief description of CLA	This CLA is a quick activity for students to learn and demonstrate the skills required to design and build a garden.
Key Search Terms (Do not use SHSM, CLA, Course Code or Sector)	Area, Conversions, Trigonometry, Volume
Duration	7 hours
Overall expectations	1. Solve problems involving measurement and geometry and arising from real-world applications;
Specific expectations	<p>1.1 perform required conversions between the imperial system and the metric system using a variety of tools (e.g., tables, calculators, online conversion tools), as necessary within applications</p> <p>1.2 solve problems involving the areas of rectangles, triangles, and circles, and of related composite shapes, in situations arising from real-world applications</p> <p>1.3 solve problems involving the volumes and surface areas of rectangular prisms, triangular prisms, and cylinders, and of related composite figures, in situations arising from real world applications</p> <p>3.1 solve problems in two dimensions using metric or imperial measurements, including problems that arise from real-world applications (e.g., surveying, navigation, building construction), by determining the measures of the sides and angles of right triangles using the primary trigonometric ratios, and of acute triangles using the sine law and the cosine law</p>

<p>Catholic graduate expectations</p>	<p>CGE1i Integrates faith with life</p> <p>CGE3e Adopts a holistic approach to life by integrating learning from various subject areas and experience.</p> <p>CGE4b Demonstrates flexibility and adaptability</p> <p>CGE4f Applies effective communication, decision-making, problem-solving, time and resource management skills.</p> <p>CGE5d Finds meaning, dignity, fulfillment and vocation in work which contributes to the common good.</p> <p>CGE7b Accepts accountability for one's own actions.</p> <p>CGE7i Respects the environment and uses resources wisely.</p> <p>CGE7j Contributes to the common good.</p>
<p>Essential Skills and work habits</p>	<p style="text-align: center;">Essential Skills</p> <p><input type="checkbox"/> Reading Text</p> <p><input checked="" type="checkbox"/> Writing</p> <p><input type="checkbox"/> Document Use</p> <p><input type="checkbox"/> Computer Use</p> <p><input type="checkbox"/> Oral Communication</p> <p><input checked="" type="checkbox"/> Numeracy</p> <p><input type="checkbox"/> Money Math</p> <p><input type="checkbox"/> Scheduling or Budgeting and Accounting</p> <p><input checked="" type="checkbox"/> Measurement and Calculation</p> <p><input type="checkbox"/> Data Analysis</p> <p><input checked="" type="checkbox"/> Numerical Estimation</p> <p><input checked="" type="checkbox"/> Thinking Skills</p> <p><input checked="" type="checkbox"/> Job Task Planning and Organizing</p> <p><input checked="" type="checkbox"/> Decision Making</p> <p><input checked="" type="checkbox"/> Problem Solving</p> <p><input type="checkbox"/> Finding Information</p> <p style="text-align: center;">Work Habits</p> <p><input type="checkbox"/> Working Safely</p> <p><input type="checkbox"/> Teamwork</p> <p><input type="checkbox"/> Reliability</p> <p><input type="checkbox"/> Organization</p> <p><input checked="" type="checkbox"/> Working Independently</p> <p><input checked="" type="checkbox"/> Initiative</p> <p><input type="checkbox"/> Self-advocacy</p> <p><input type="checkbox"/> Customer Service</p> <p><input type="checkbox"/> Entrepreneurship</p>

Instructional/Assessment Strategies

Teacher's notes

- The Math teacher should meet with the Landscape Technology teacher on a regular basis to help ensure clear communication in the progress of skills in each other's courses.
- The teacher should become familiar with the use of mathematics and math terminology in the Landscaping and Horticulture sector.
- The teacher should review each completed section before distributing the next preparatory handout to ensure diagnostic feedback, which is important for consistent learning and student development.
- Grouping SHSM with non SHSM may be advantageous through the development of cooperative learning.
- Allow students to supplement their learning with applicable computer programs (if possible).

Context

This CLA is designed for those who are entering college (or an apprenticeship) in the Horticulture and Landscaping sector.

Strategies

- **Day 1** – Students will be introduced to the final summative activity and rubric. This will give students an idea of the end goal and what will be expected from them. The teacher will then proceed by reviewing the conversions worksheet. The teacher will review the each student's work upon completion to ensure understanding. This practice will serve as assessment FOR learning
- **Day 2** – Students will work on the "Area of Composite Figures" worksheets. The teacher will review the each student's work upon completion to ensure understanding.
- **Day 3** – Students will work on the "Volume and Surface Area" practice. The teacher will review the each student's work upon completion to ensure understanding.
- **Day 4** – The teacher will review the "Stairs and Retaining Walls" worksheet. The students will complete the required tasks presented in the worksheet. The teacher will review the each student's work upon completion to ensure understanding.
- **Day 5** – Students will be given the final summative "Creating a garden". The teacher will review and point out the key components of the task by going through the assignment and rubric.
- **Note:** The teacher may use any of the resources (video and text) listed below throughout the activity to differentiate instruction, and to give students ideas on what they can create.

Assessment and Evaluation of Student Achievement

Strategies/Tasks [Add rows as required.]	Purpose [Assessment for, as, and of learning]
1. Unit Conversions	Assessment for learning
2. Area of Composite Figures	Assessment for learning
3. Volume and Surface Area	Assessment for learning
4. Stairs and Retaining Walls	Assessment for learning
5. Creating a Garden	Assessment of learning

Assessment tools

- A detailed rubric is provided to assess the final project.
- Answer keys are provided to help assess for learning as students work through the handouts.

Differentiation

Differentiation will be based on:

Readiness Learner Profile Interest

Differentiation will take place through:

Content Process Product Learning Environment

Additional Notes/Comments/Explanations

- Having students complete a side profile of the back yard may prove to be helpful so they can understand the lay of the land.
- Help students understand the closer the contour lines in a topographic map are, the steeper the hill (the stairs should go there).

Resources

Authentic workplace materials

There are a variety of books available that provide students with a variety of garden plans and strategies. Titles and availability differ between schools.

Human resources

Print resources

Video resources

<http://www.youtube.com/watch?v=cB9wLUbEDkg> - *how to read contour lines*

http://www.youtube.com/watch?v=1VUfv3WMH_w - *building garden stairs*

<http://www.youtube.com/watch?v=s-WkBDgcap4> - *building retaining wall*

<http://www.youtube.com/watch?v=7jCF3A0ShOw> - *patio and walkways*

Software

Websites

http://www.ehow.com/how_5013954_plan-garden-layout.html - *six simple steps in creating a garden*

Other resources

Accommodations

- Individual Education Plans (IEP) should be followed at all times. Be sure to consult the SERT for additional information and suggestions;
- additional time may be needed for completion of in-class work and assignments;
- the activities in this CLA are not inflexible. Teachers should be accommodating and modify the delivery of the material to accommodate students who are not progressing well.
- the teacher may enrich the assignment to challenge advanced students (perhaps a cost or budget component);
- provide time for peer-to-peer teaching;

List of Attachments

[Attach all related materials e.g., student worksheets, tests, rubrics]