Prepared for: Cementing Integration Project – QUILL Learning Network 2015

Task-based Activity Cover Sheet

Task Title: Calculate the area of a room that includes a bay window

Learner Name:	
Date Started:	**Date Completed:**
Successful Completion: Yes___ No___	
Goal Path: Employment ✓ Apprenticeship ✓ Secondary School___ Post Secondary ___ Independence ✓	
Task Description: Learner will calculate the area of a room that includes a bay window.	
Competency: C: Understand and Use Numbers	**Task Group(s):** C3: Use Measures
Level Indicators: C3.3: Use measures to make multistep calculations; use specialized measuring tools	
Performance Descriptors: see chart or click here	
Skill Building Activities: see last page or click here	

Materials Required:

- Paper and pen
- Ruler
- Calculator
- The learner will need to know what a polygon is

ESKARGO:

- Calculates using numbers expressed as whole numbers, fractions, decimals, percentages, and integers
- Understands and uses formulas for finding the perimeter, area, and volume of nonrectangular, composite shapes
- Chooses and performs required operations; makes inferences to identify required operations
- Understands and uses properties of angles and triangles to solve problems

Attitudes:

Practitioner,

We encourage you to talk with the learner about attitudes required to complete this task set. The context of the task has to be considered when identifying attitudes. With your learner, please check one of the following:

□ Attitude is not important □ Attitude is somewhat important □ Attitude is very important

Task Title: Calculate the area of a room that includes a bay window

An important part of the job of a skilled construction tradesperson involves making calculations based on instructions such as blueprints. Before laying the floor covering, a contractor must calculate the area of the floor to know how much carpet or tile must be ordered. In complex floors, contractors will split the floor into smaller polygons to make the calculations simpler. Look at the "Diagram of the Living Room".

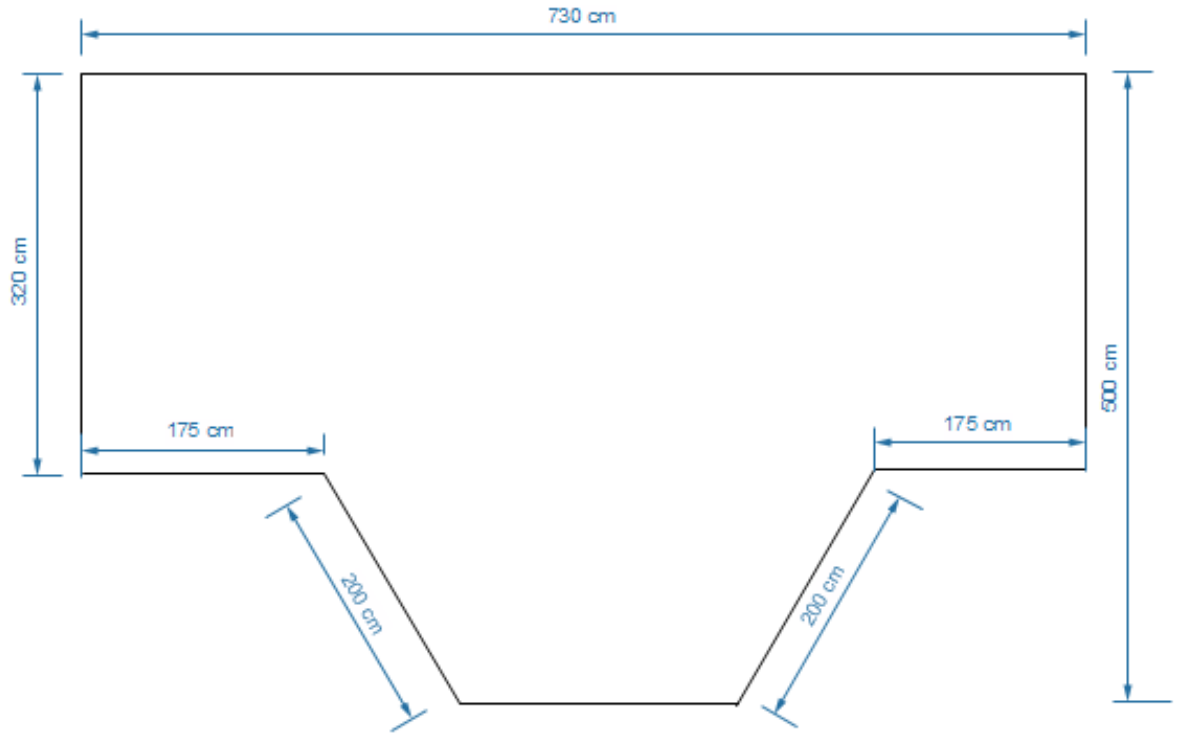
Learner Information and Tasks:

Task 1: Divide the complex polygon into known polygons

Task 2: Calculate the unknown lengths and label them on your diagram. If necessary, round calculations to 2 decimal places.

Task 3: Calculate the area of the living room floor.

Diagram of the Living Room



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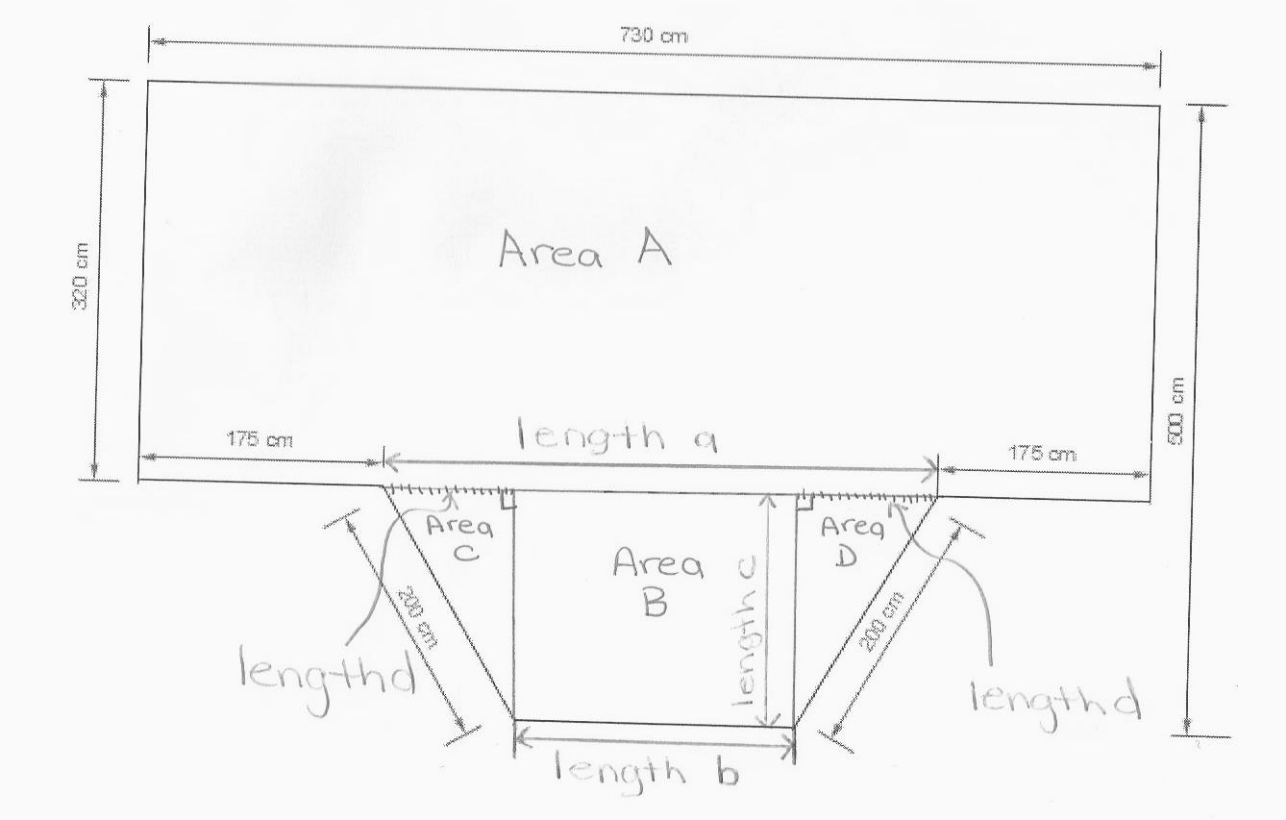
Answer Key

Task 1: See completed diagram. Note: Student may have a different way of labelling the diagram. As long as it looks completely labeled accept answers provided.



Task 2: The following calculations are for the various lengths labelled on the answer diagram

length **a**: 730 – (175+175) = 780-350 = **380 cm**

length **c**: 500- 320 = **180 cm**

length **d**: needs to be calculated with the Pythagorean Theorem. Round to 2 decimal places.

Let c=200cm $c^2 = a^2 + d^2$

Let a=180 cm $(200)^2 = (180)^2 + d^2$

Let d=unknown side d $40\,000 = 32400 + d^2$

$7600 = d^2$

d = √ 7600 **= 87.18 cm**

length **b**: (requires the calculation of length d first)

length **b**: 730 – (175 + 175 + 87.18 + 87.18 (length d)) = 730 – 524.36 = **205.64 cm**

Task 3: The following calculations are for the various areas labelled on the diagram

Area A = length x width = 730 cm x 320 cm = **233 600 cm^2**

Area B = length x width = 205.64 cm x 180 cm = **37 015.2 cm^2**

Area C = ½ (base x height) = ½ (87.18 cm x 180 cm) = **7 846.2 cm^2**

Area D = ½ (base x height) = ½ (87.18 cm x 180 cm) = **7 846.2 cm^2**

Note: Area C and D are the same. Student could do the calculation once and multiply it by 2 or calculate the area as a rectangle for C and D. All are acceptable methods of finding the area for these figures.

Area of Floor: Area A + Area B + Area C + Area D = 233 600 cm^2 + 37 015.2 cm^2 + 7 846.2 cm^2 + 7 846.2 cm^2

Area of Floor: 286 307.6 cm^2

Task Title: Calculate the area of a room that includes a bay window

	Performance Descriptors	Needs Work	Completes task with support from practitioner	Completes task independently
C3.3	• calculates using numbers expressed as whole numbers, fractions, decimals, percentages and integers			
	• understands and uses properties of angles and triangles to solve problems			
	• understands and uses formulas for finding the perimeter, area and volume of non-rectangular, composite shapes			
	• manages unfamiliar elements (e.g. context, content) to complete tasks			
	• chooses and performs required operations; makes inferences to identify required operations			
	• interprets, represents and converts measures using whole numbers, decimals, percentages, ratios and fractions			

This task: was successfully completed___ needs to be tried again___

Learner Comments

_____ _____

Instructor (print) **Learner Signature**

Skills Building Activities

Links to Online Resources:

http://www.gcflearnfree.org/featured/decimals
Basic math tutorial offers simple and easy techniques for working with and converting decimals and percents.

https://www.khanacademy.org/math/pre-algebra/measurement/area-basics/v/area-of-rectangles-and-the-distributive-property

https://www.khanacademy.org/math/pre-algebra/measurement/area-basics/v/introduction-to-area-and-unit-squares

https://www.khanacademy.org/math/pre-algebra/measurement/area-basics/v/calculating-the-square-footage-of-a-house

https://www.khanacademy.org/math/geometry/right_triangles_topic/pyth_theor/v/pythagorean-theorem

https://www.mathtv.com/

Geometry- Area, Pythagorean Theorem

LearningHUB online courses available:

- **Math, Independent Study (Assigned by practitioner after assessment)**
  - Multiplication & Division Assignment
  - Fractions Asg. #1 & 2
  - Decimals Assignment
  - Measurement Assignment
  - Geometry Plane Figures Asg. #1

- **Live Classes (SABA)** – Fractions A, B & C, Decimals A & B, Geometry B Part 1, GED Math Word Problems.

***To access LearningHUB courses**, learners must register for the LearningHUB e-Channel program by completing the registration form on their website and completing the course selection (page 2 of the registration form): https://www.learninghub.ca/get_registered.aspx

***To Access LearningHUB Course Catalogue:**
http://www.learninghub.ca/Files/PDF-files/HUBcoursecatalogue,%20December%2023,%202014%20revision.pdf