

Home Design Project

Activity Summary

- In this activity students will:
- ♦ Research different home designs, types of flooring, furniture and wall coverings
 - ♦ Design a one floor living space within certain parameters
 - ♦ Create a scale diagram of their entire floor plan and specific rooms using two different scales
 - ♦ Create a furniture layout for two rooms
 - ♦ Identify two of the **Essential Skills** (and subcategories) that are required to complete all tasks (prior to beginning)
 - ♦ Link favourite project tasks to their level of expertise with the **Essential Skills**

Prior Knowledge

- **Essential Skills** including all subcategories
- Linear measurement in imperial units with accuracy
- Methods of calculating unit rates
- Methods for calculating area and perimeter of composite shapes
- Interpreting and creating scale diagrams
- Use of Internet, spreadsheet and word-processing software

Teaching Planning Notes

- Review the assignment including prior learning required and assessment and evaluation tools.
- This project is summative in nature, however, it could be split into components and completed over a period of time as expectations are being taught.
- Reserve the computer lab for Internet searches, creation of spreadsheets and word-processing.
- Provide students with 1/4-inch graph paper for the presentation diagram and 1-inch chart paper for their room floor plans.
- Provide students with scales (rulers) for scaled plans, set squares for scaling their house, and T-squares for constructing right angles and drawing accurate scale representations, as well as masking tape to tape their plans to their desk.
- Organize a field trip to a local home improvement store after Part A is completed so that students may gather information to complete their project.
- Teachers may wish to provide flyers and/or store catalogues.
- Provide a copy of the Ontario Building Code, Section 9.6 in print or on overhead to access correct door widths for various applications in a residential space.
- Provide students with a file-folder or portfolio for all components including a checklist of required components. Completed work should be left in the room and in the portfolio.
- Provide students with an **Essential Skills** list including subcategories



FOCUS ON LEARNING

Essential Skills:

Reading Text

All Activities

Document Use

Bubble Diagram

Writing

All Activities

Numeracy

All Activities

Oral Communication

All Activities

Thinking Skills

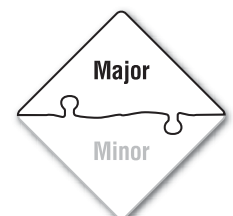
All Activities

Working with Others

All Activities

Computer Use

Internet Research
Paint and Wallpaper
Calculator
Final Report



Assessment of Student Achievement

Task	Tool / Type
Essential Skills Summary	Designing My Home Skill-Saw Summary Sheets Parts A and B Checklist (Formative)
Floor Plan, Furnishings, Floor Coverings and Wall Coverings Calculations	Designing My Home Home Design Project Rubric (Summative) Designing My Home Assessment Checklist and Evaluation Summary Sheet (Formative)
Bubble Diagram with Explanation	Designing My Home Assessment Checklist and Evaluation Summary Sheet (Formative)
Personal Reflection (Final Report)	Designing My Home Assessment Checklist and Evaluation Summary Sheet (Formative)

Activities and Assessment Materials

- Designing My Home Activity Sheet – Part A
- Designing My Home Activity Sheet – Part B
- Skill-Saw Summary Sheets – Parts A and B
- Flooring Cost Summary Sheet
- Painting Cost Summary Sheet
- Assignment Checklist and Evaluation Summary Sheet
- Home Design Project Rubric

Curriculum Linkages For Ontario Educators

Essential Skills truly are everywhere and as teachers we are always teaching students the **Essential Skills!** As subject teachers and specialists, we know that many of the curriculum expectations we are accountable to teach and assess, also address the **Essential Skills** and while the linkages are not always readily apparent, the linkages exist nonetheless.

While this activity connects to a variety of courses it is most closely aligned to the following course(s):

- College and Apprenticeship Mathematics, Grade 12, College Preparation – MAP 4CI
- Technological Design, Grade 12, Workplace Preparation - TDJ 4E (Part A only)

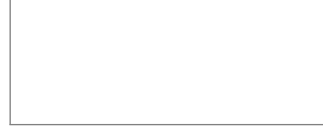
To assist you, the teacher, in making more transparent linkages, we have identified the following curriculum linkages for this activity.

College and Apprenticeship Mathematics, Grade 12, College Preparation – MAP 4CI

Coded Overall Expectations	Coded Specific Expectations
AGV.02 – solve problems involving measurement;	AG2.01 – solve problems related to the perimeter and area of plane figures, and the surface area and volume of prisms, pyramids, cylinders, spheres, and cones, including problems involving combinations of these objects; AG2.04 – demonstrate a working knowledge of the measurement of length and area in the imperial system, in relation to applications (e.g., design, construction); AG2.05 – perform required conversions between the imperial system and the metric system, as necessary within projects and applications; AG2.06 – use calculators effectively in solving problems involving measurement, and judge the reasonableness of the answers produced.
MMV.02 – interpret and analyse given formulaic models;	MM2.02 – construct (e.g., combine or modify) formulas to solve multi-step problems in particular situations (e.g., determine the amount of paint required to paint two coats on a large cylindrical water tank);
MMV.03 – interpret and analyse data given in a variety of forms.	MM3.01 – retrieve information from various sources (e.g., graphs, charts, spreadsheets, schedules); MM3.02 – identify options that meet certain criteria, using more than one chart, spreadsheet, or schedule (e.g., the schedules of connecting flights; the spreadsheets of mortgage- payment plans); MM3.03 – make informed decisions, using data provided in chart, spreadsheet, or schedule format and taking into account personal needs and preferences;

Technological Design, Grade 12, Workplace Preparation, TDJ 4E

Coded Overall Expectations	Coded Specific Expectations
SPV.01 – produce effective design briefs outlining the design challenges they face and the design criteria they will use to meet the challenges;	SP1.01 – identify design problems, list relevant criteria, and propose solutions;
SPV.02 – estimate the costs of projects;	SP2.01 – prepare effective technical drawings using standard scales, lettering techniques, and symbols;
SPV.03 – prepare effective models, prototypes, and finished products;	SP3.01 – evaluate the appropriateness of project solutions against design criteria;
SPV.04 – create appropriate drawings using either traditional or computer-based methods;	



Designing My Home

In pairs or as individuals, you will design a one-floor living space (i.e. house, townhouse, apartment, loft or condominium). In addition to designing the space, you will also determine the cost to furnish your home, cover its walls and its floors.

There are 4 parts to this assignment:

1. **Skill-Saw A** – Before starting your project, read through Part A of the assignment. Considering the list of **Essential Skills**, complete the Skill-Saw chart listing at least 2 **Essential Skills** that will be used in completing each task in Part A of this assignment including examples of how you will demonstrate the use of these skills.
2. **Researching and Designing** – After completing some research on home floor plans, you and your partner will design a one-floor living space, creating a scale diagram of the layout.
3. **Skill-Saw B** – Before starting the next phase of your project, read through Part B of the assignment. Considering the list of **Essential Skills**, complete the Skill-Saw chart listing at least 2 **Essential Skills** that will be used in completing each task in Part B of this assignment including examples of how you will demonstrate the use of these skills.
4. **Determining the Cost to Decorate** – You and your partner will determine the cost to furnish your home, cover its floors and its walls. There is no budget, dream away!

Format

A checklist of all items required for this assignment will be provided (Assignment Checklist and Evaluation Summary Sheet). All completed work will be placed in a personalized portfolio that will not leave the room.



Designing My Home

Home Design Assignment

- Part A: My Own Space!

Task 1A: Research

1. Using the Internet, find four (4) house, apartment or condo plans that are within the size range of 1300 ft² to 2000 ft². You can find these plans at various websites, including (but not limited to) the ones listed below:

www.coolhouseplans.com

www.dreamhomesource.com

www.homestyles.com

www.homeplanfinder.com

www.thehousedesigners.com



2. Analyse the plans that you have found and determine the rationale for the designer's layout and room sizes.
3. List features that you like and dislike for each house plan, such as a bad location of a washroom, small rooms, window placements, or too much distance between the kitchen and dining room.

Each partner must hand in:

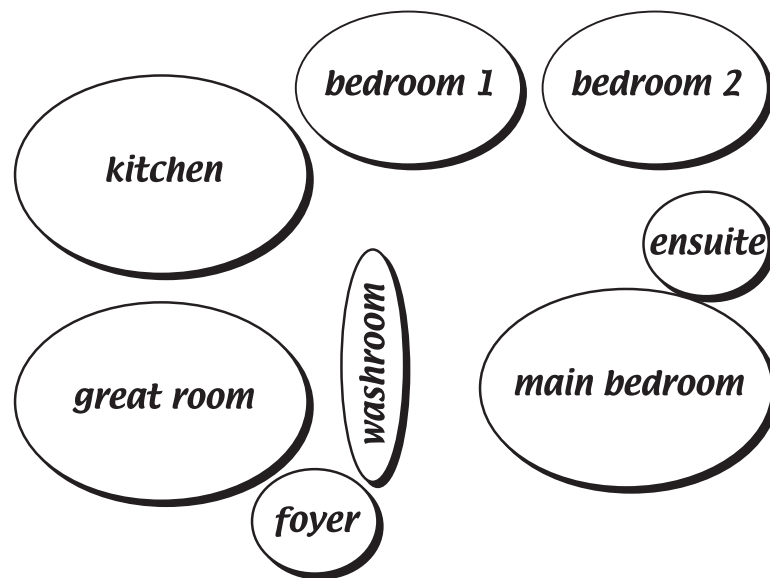
- 2 house plans
- An analysis of each plan (preferably using a word processor)
- Features you liked and disliked about each plan

Designing My Home

Task 2A: Starting to Plan

1. Bubble Diagram

Using the analysis from your research, create a bubble diagram for your home (see below). Determining the best locations of the rooms is the most critical part in this task. Locations are based on how you and your partner will best function during your daily lives. In your bubble diagram, you will not need to place hallway areas, or determine the dimensions of each room. The following is an example of what a bubble diagram should look like.



2. Write a brief summary explaining how you determined the best location for each room.

Hand in (one for the pair):

- Bubble Diagram
- Summary of room locations (preferably using a word processor)

Designing My Home

Task 3A: Scale Diagram

The home you will be designing must have an area ranging from 1300 ft² to 2000 ft² and contain the following rooms. Each room size must fall within the areas specified.

- 1 living room 145 ft² – 600 ft²;
- 1 dining room 100 ft² – 225 ft²;
- 1 kitchen 100 ft² – 400 ft²;
- 2 or 3 bedrooms 180 ft² – 510 ft² total for all bedrooms;
- 1 bathroom 50 ft² – 100 ft²;
- 1 laundry room 60 ft² – 100 ft².

1) Presentation Diagram

Use 1/4" graph paper to plan a scale version of your design. Each square has a scale of 2 feet by 2 feet (i.e. the scale is 1 to 96). You need to manipulate room size areas to meet the room specifications listed above, and you must include the area of the hallways in the total area of the house. You will produce a drawing, which differs from the bubble diagram, and includes dimensions for each room (e.g. BEDROOM 20 ft x 10 ft).

- 2) Write a brief summary explaining how the area of each room and hallway(s) were determined. Include your calculations as part of your justification, showing that the total area falls within the specifications given.

Hand in (one for the pair):

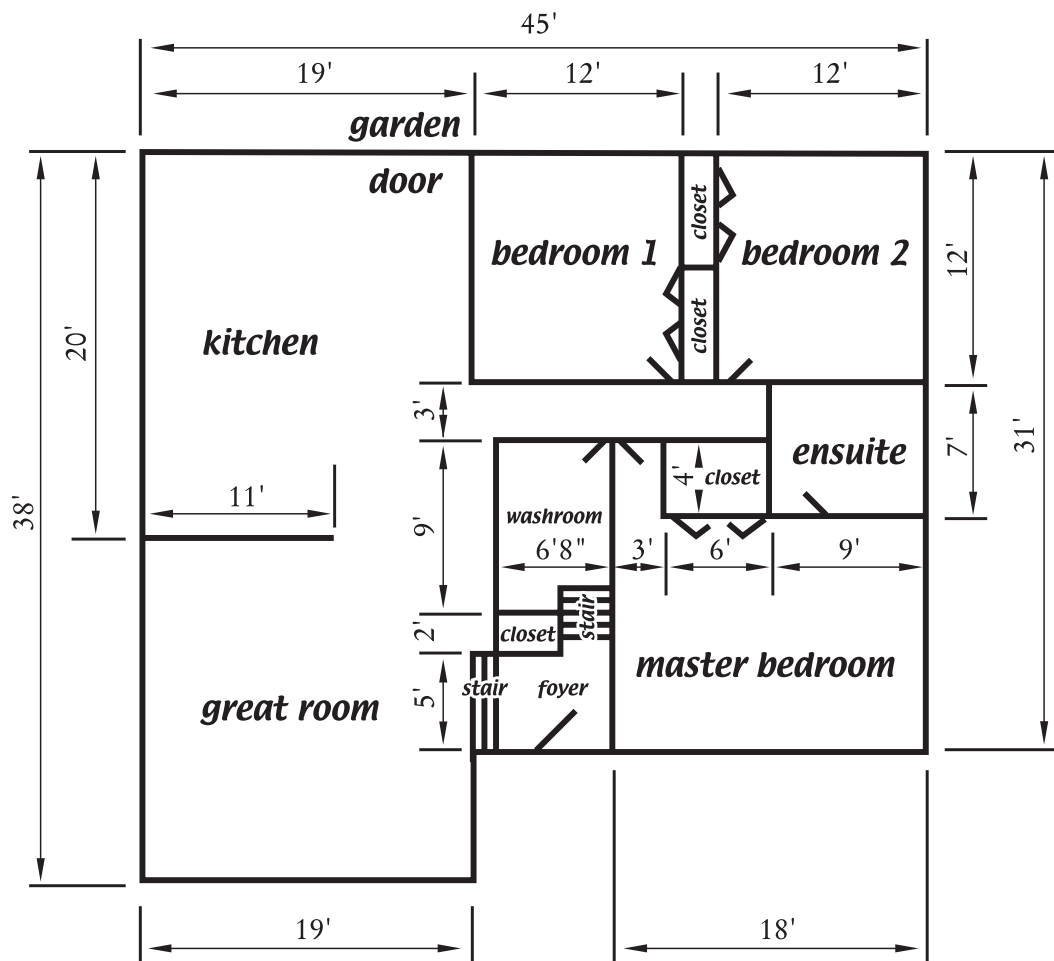
- Presentation Diagram
- Summary of areas of each room with calculations

Designing My Home

Task 4A: Floor Plan

1) Two Room Floor Plans

You are now ready to produce the floor plan for two rooms of your home. You will reproduce your master bedroom and living room/great room floor plan on chart paper using scales, T-squares, and set squares. Floor plans are to be neat, accurate, and to a scale of 1" = 1 foot (i.e. 1 to 12). The following is an example of how a professional floor plan should look. The plan below does not include windows. For another example on how to include windows and doors, see the floor plans you researched in Task #1A. For the proper width of doors (entryways and closets), refer to the Ontario Building Code, Section 9.6



Each partner must hand in:

- Hand drawn floor plan for one room in your house

Designing My Home

Home Design Assignment

- Part B: “Dec-ing” It Out!

Task 1B: Furnishing Your Home

1) Furnishings List

Brainstorm with your partner a list of items that you would like to have in each room of your home. Your list must include items you need such as major appliances and



furniture. You may wish to consider items such as lamps, audio systems or home entertainment systems. Other items you may include, which are not mandatory, are: kitchen cabinetry, items for the deck and/or garage.

2) Furnishings Summary

Using a spreadsheet or document table, create a furnishings summary, organized by room, including each item for the room, the source of this item (i.e. where you are purchasing it from), the cost of the item, and its dimensions (length, width, height). Use the internet, catalogues, store flyers or visit stores for prices and dimensions. Any additional spaces, such as garages or decks may be included, but are not mandatory.

Hand in (one for the pair):

- Furnishings summary for the entire home
- Calculation of total estimated cost of furnishings.



Designing My Home

Task 2B: Covering the Floors

1) Research

Investigate different types of flooring using the Internet, phone calls to stores, or by visiting a flooring showroom (home improvement store field trip). Write a report summarizing four types of flooring, listing the advantages and disadvantages of each type.

2) Choosing Your Floor

Using your findings, determine what type of floor you would like to use in each room of your home. Write a brief summary for each room including justification as to why you chose each type of flooring.

3) Pricing Flooring

For each room, determine the flooring cost. Show your organized calculations on a separate sheet of paper. For carpet, indicate the width of your carpet (12 ft. or 15 ft.) and use the www.homedepot.com carpet calculator. Summarize your costs using the attached chart. A sample is shown below:

ROOM	TYPE OF FLOOR	UNIT COST	FLOOR AREA	TOTAL COST OF FLOORING	COST OF INSTALLATION	COST OF FLOORING AND INSTALLATION	TAXES (GST & PST)	TOTAL COST
Dining Room	oak	\$5.99/ft. ²	12 ft. x 18 ft. = 216 ft. ²	\$1,293.84	\$2.99 x 216 = \$645.84	\$1,939.68	\$239.28	\$2,178.96
Bedroom #1	carpet (15 ft.)	\$25/yd ²	13 ft. x 13 ft. = 139 ft. ² = 22 yd. ² carpet	\$550	\$50	\$600.00	\$90.00	\$690.00
etc.								

Hand in (one for the pair):

- Flooring analysis of flooring types (each partner completes two)
- Calculations of estimated cost of flooring for each room
- Flooring Summary for the entire home

Designing My Home

Task 3B: Covering the Walls

1) Wallpapering

- (a) Choose at least one room (not a closet) in the house to be wallpapered. Determine the type of wallpaper that would be appropriate for the room using the Internet or visiting a showroom (home improvement store field trip). If possible, ask for a swatch of wallpaper (optional) and determine the price of the wallpaper chosen.
- (b) Using the dimensions of the room from your scale diagram, determine how many rolls of wallpaper to purchase. Use the www.homedepot.com wallpaper calculator. Determine the total cost of the wallpaper, including taxes.

2) Painting

- (a) Determine which rooms in the house are going to be painted. Assume in all cases, two coats of paint will be required. Investigate the type of paint needed in each room using the Internet or visiting a store (home improvement store field trip). If possible, collect colour samples of your choices (optional).
- (b) Determine the cost to paint each room. Show the calculations that are required to determine the amount of paint needed, then calculate the total cost to paint each room. Show your organized calculations on a separate sheet of paper then summarize your costs using the attached chart. Determine the total cost to paint your home.

ROOM	AREA OF WALL TO BE COVERED	TYPE OF PAINT/ COLOUR	UNIT COST	TOTAL COST OF PAINT	TAXES	TOTAL COST
Dining Room						
Bedroom #1						
etc.						

Hand in (one for the pair):

- Calculation of wallpaper amount and cost.
- Calculation of paint needed for each room.
- Summary of painting costs for the whole house.

Designing My Home

Task 4B: Planning the Furniture Layout

Using the furniture dimensions from Task #1B, add furniture to a copy of your living room and master bedroom layouts.

Hand in (one for the pair):

- Copy of both room layouts with placement of all furniture.

Task 5B: What I Learned from this Project (Individual Report)

Considering all the activities you have done to complete this project, write a detailed report (maximum one page) on what you have learned from this experience. Discuss the activities that you liked/disliked and why. What, if anything, would you do to change this project? Consider the **Essential Skills** and the tasks you performed. Is your enjoyment of a task linked to your comfort level with the **Essential Skills** required to perform that task? In which **Essential Skill(s)** do you feel you need more practice? How might you accomplish this? Explain.

Hand in (one for each person):

- Final report of what you learned from this project (preferably word-processed, one page maximum)



Designing My Home

Skill-Saw Summary Sheet (Part A)

TASK	Essential Skill WITH SUBCATEGORY (IF APPLICABLE)	EXAMPLE HOW THE Essential Skill WILL BE DEMONSTRATED
1A Research	1.	
	2.	
2A Starting to Plan	1.	
	2.	
3A Scale Diagram	1.	
	2.	
4A Floor Plan	1.	
	2.	

Skill-Saw Summary Sheet (Part B)

TASK	Essential Skill WITH SUBCATEGORY (IF APPLICABLE)	EXAMPLE HOW THE Essential Skill WILL BE DEMONSTRATED
1B Furnishing Your Home	1.	
	2.	
2B Covering the Walls	1.	
	2.	
3B Covering the Floors	1.	
	2.	
4B Furniture Layout	1.	
	2.	
5B What I Learned from this Project	1.	
	2.	

Designing My Home Painting Cost Summary

ROOM	AREA OF WALL TO BE COVERED	TYPE OF PAINT/ COLOUR	UNIT COST	TOTAL COST OF PAINT	TAXES (GST & PST)	TOTAL COST
					Grand Total	

Designing My Home Assignment Checklist and Evaluation Summary Sheet

Be sure to include the following items, organized in order, in your Assignment Portfolio:

ITEM	COMPLETED ✓	DATE COMPLETED	LEVEL ASSIGNED/COMMENTS (1=LIMITED / 5=THOROUGH)
1 Skill-Saw Summary Sheet (Part A)	<input type="checkbox"/>		
2 Home Critiques #1 & #2	<input type="checkbox"/>		
3 Home Critiques #3 & #4	<input type="checkbox"/>		
4 Bubble Diagram with explanation	<input type="checkbox"/>		
5 Calculation of Room sizes & total area of home (in ft. ²)	<input type="checkbox"/>		
6 Small Layout (1/4" square paper)	<input type="checkbox"/>		
7 Large professional floor plan of Living Room (1" paper)	<input type="checkbox"/>		
8 Large professional floor plan of Master Bedroom (1" paper)	<input type="checkbox"/>		
9 Skill-Saw Summary Sheet (Part B)	<input type="checkbox"/>		
10 Furnishings Summary	<input type="checkbox"/>		
11 Report on Flooring #1 and #2	<input type="checkbox"/>		
12 Report on Flooring #3 and #4	<input type="checkbox"/>		
13 Floor Cost Summary	<input type="checkbox"/>		
14 Wallpaper Calculations	<input type="checkbox"/>		
15 Paint Summary with Calculations	<input type="checkbox"/>		
16 Furniture Layout of Living Room	<input type="checkbox"/>		
17 Furniture Layout of Master Bedroom	<input type="checkbox"/>		
18 Assignment Final Report (partner #1)	<input type="checkbox"/>		
19 Assignment Final Report (partner #2)	<input type="checkbox"/>		
Overall Comments:			Final Mark:

Designing My Home

Home Design Project Rubric

CATEGORIES/ CRITERIA	LEVEL 1 (50-59%)	LEVEL 2 (60-69%)	LEVEL 3 (70-79%)	LEVEL 4 (80-100%)
<p>Knowledge and Understanding</p> <p>Completed measurements for scale diagrams with accuracy</p> <p>Completed Paint Cost calculations with mathematical accuracy</p> <p>Completed Flooring Cost calculations with mathematical accuracy</p>	Limited Understanding	Some Understanding	Considerable Understanding	Thorough Understanding
<p>Thinking</p> <p>Planned room dimensions and hallways to fit within design restrictions</p> <p>Effectively created a furniture layout</p>	Limited Effectiveness	Some Effectiveness	Considerable Effectiveness	High Degree of Effectiveness
<p>Communication</p> <p>Used correct mathematical symbols, labels, units and conventions</p> <p>Clarity in critiques, explanations and justifications</p>	Limited Effectiveness	Some Effectiveness	Considerable Effectiveness	High Degree of Effectiveness
<p>Application</p> <p>Effectively applies measurement techniques and formulae to solve problems</p>	Limited Effectiveness	Some Effectiveness	Considerable Effectiveness	High Degree of Effectiveness

Note: A student whose achievement is below Level 1 (50%) has not met the expectations for this assignment or activity.