



Name _____

Class Period _____

Model Cabin (500 points)

The purpose of this assignment is to give the students a chance to design, estimate and build a model of a recreational cabin or cottage. During this unit, students will be introduced to some of the basic principles of drafting and architectural design as well as construction estimating. The final completed project will include the construction of a scaled model of the cabin.

The classroom drafting equipment, woodworking tools, and computer lab will be available to students in order to complete the assignment. Students will work individually on this assignment. All work must be completed in a professional manner.

Class time given to complete: Students will be given 4 weeks to complete their required assignments. Each individual will be required to sketch out rough designs and do final architectural drawings of their cabin or cottage including a floor plan and elevations. After the design has been completed the student must estimate the approximate materials and costs for the rough framing of their building. All estimates must be submitted with a bill of materials before students may begin working on the scaled model of their cabin or cottage. All materials for the construction of the cabin/ cottage will be distributed by the teacher based on the numbers provided by the student's bill of materials.

There are a number of things to consider when you design your cabin:

- Traffic patterns
- Noise level
- House orientation
- Bedroom locations
- Kitchen/ dining room locations
- Number of windows and doors
- Utility room/ area for water heater and furnace
- Laundry facilities
- Plumbing locations
- Room sizes
- Ventilation
- Land that the house will located on
- One or two stories
- Foundation type
- Costs of the labor and materials

Students will be required to turn in a set of drawings that show the rough sketches of the building as well as the final architectural drawings of the cabin or cottage. Students will also be required to turn in all estimate sheets used to calculate the framing costs for their building. The final part to this unit is going to be to construct a scale model of the cabin or cottage.

The following pages contain all the requirements for the cabin or cottage design as well as costs associated with the framing materials.

Cabin/ Cottage Design Requirements

- The cabin or cottage should be between 1,000 and 1,500 square feet
- You must have at least 6 windows and 2 exterior doors in your cabin
- There must be at least 2 bedrooms
- There must be at least 1 bathroom
- There must be a utility room for furnace and water heater/ may also have laundry
- The building must have a kitchen with an area to eat
- There must be a family room/ living room/ or great room for entertaining
- You may make it one or two stories- if there is more than one floor you must have some type of staircase to reach the second floor/ loft
- All architectural drawings must be drawn to scale (1/4" = 1'-0" works best)
- All floor plans must be included in the architectural drawings (1 for a single story/ 2 for a two story)
- All elevations must be included in the architectural drawings
- Each room must be labeled and have dimensions on floor plan
- All drawings should be on a separate piece of paper with drawings centered on a page with a title block

Cabin/ Cottage Model Requirements

- The model must be built to a scale of 1"= 1'-0"
- All windows and doors should be built to the rough opening dimensions
- All walls must be built with studs 16" O.C. with a bottom plate and two top plates
- 6 Roof trusses must be built and installed to represent the roof structure
- All exterior and plumbing walls must be built with 2 x 6 materials
- All interior non-plumbing walls must be built with 2 x 4 materials
- All headers must be built using size appropriate lumber (headers must be designed to carry the loads above them)
- Exterior walls are to be sheathed with 7/16" OSB
- Roof is to be sheathed with 5/8" plywood
- Floors are to be decked with 3/4" plywood
- Interior walls and ceilings are to be covered with 1/2" drywall or 3/4" tongue and groove boards
- Framing must contain fire blocking, bridging, and sway bracing as required
- All materials will be handed out based on a bill of materials order from the student
- Any materials that must be added to the order after it is placed with the teacher requires a change order to be completed and submitted before the extra materials will be provided
- Only a small portion of the floor, walls, ceiling, and roof need to be covered- this allows the framing to be visible for display
- The roof should have shingles shown

Construction Materials

<u>Materials</u>	<u>Sizes</u>	<u>Costs</u>
2 x 4 pre-cut stud	1 ½ x 3 ½ x 92 5/8"	\$2.25 each
2 x 4 x 8'	1 ½ x 3 ½ x 8'	\$2.35 each
2 x 4 x 12'	1 ½ x 3 ½ x 12'	\$3.75 each
2 x 4 x 16'	1 ½ x 3 ½ x 16'	\$4.70 each
2 x 6 pre-cut stud	1 ½ x 5 ½ x 92 5/8"	\$3.65 each
2 x 6 x 8'	1 ½ x 5 ½ x 8'	\$3.85 each
2 x 6 x 12'	1 ½ x 5 ½ x 12'	\$5.75 each
2 x 6 x 16'	1 ½ x 5 ½ x 16'	\$7.70 each
2 x 8 x 8'	1 ½ x 7 ¼ x 8'	\$5.00 each
2 x 8 x 12'	1 ½ x 7 ¼ x 12'	\$7.50 each
2 x 8 x 16'	1 ½ x 7 ¼ x 16'	\$10.00 each
2 x 10 x 8'	1 ½ x 9 ¼ x 8'	\$6.40 each
2 x 10 x 12'	1 ½ x 9 ¼ x 12'	\$9.60 each
2 x 10 x 16'	1 ½ x 9 ¼ x 16'	\$12.80 each
2 x 12 x 8'	1 ½ x 11 ¼ x 8'	\$7.70 each
2 x 12 x 12'	1 ½ x 11 ¼ x 12'	\$11.55 each
2 x 12 x 16'	1 ½ x 11 ¼ x 16'	\$15.40 each
7/16" OSB	4' x 8' x 7/16"	\$2.25 each
5/8" Plywood	4' x 8' x 5/8"	\$9.25 each
¾" Plywood	4' x 8' x ¾"	\$14.85 each
Sill sealer	100' roll	\$20.25 each
1 x 6 tongue and groove	¾ x 5 ½ x Length	\$5.95 roll
½ drywall	4' x 8' x ½"	\$0.95 Ln. Ft.
½ drywall	4' x 12' x ½"	\$8.50 each
Tar paper	400 square feet (1 roll)	\$12.75 each
Architectural shingles	33 square feet (1 bundle)	\$13.75 roll
16d nails	50 lb box	\$15.00 bundle
8d nails	50 lb box	\$22.50 box
1 ¼" roofing nails	50 lb box	\$22.50 box
1 ¼" drywall screws	25 lb box	\$26.55 box
		\$56.65 box

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Model House Grading Rubric

- _____ Was there a **rough sketch of the floor plan** included in the set of architectural drawings? (25 Points)
- _____ Was there a **rough sketch of each elevation** included in the set of architectural drawings? (50 Points)
- _____ Was there a **final design of the floor plan** included in the set of architectural drawings? (25 Points)
- _____ Was there a **final design of each elevation** included in the set of architectural drawings? (50 Points)
- _____ Was the **bill of materials** for this project complete? (100 points)
- _____ Did the model **accurately match** the architectural drawings? (75 Points)
- _____ Did the model have all of the required **roof trusses**? (25 points)
- _____ Did the model have all of the required **doors and windows**? (25 points)
- _____ Did the model have all of the required **floor, wall, ceiling and roof sheathing**? (25 points)
- _____ Did the model walls have the **correct stud spacing**? (25 points)
- _____ Were the walls constructed using the **correct dimensional lumber**? (25 points)
- _____ Were the walls constructed using the **correct number of top and bottom plates**? (25 points)
- _____ Was the set project completed in a **professional manner**? (25 points)
- _____ **TOTAL (500 points possible)**