Cabin 1 has no electrical outlets, lights, or switches. You are going to determine where these items go.

1. Determine what rooms are in the cabin. You will write the names at the end of this assignment. There are definitely two bedrooms, one bathroom, a kitchen, and a living room. There could be a dining room.

2. Check your symbol page to determine how to draw lights, switches, and outlets.

3. Dotted lines show which switch operates each light.

4. Overhead Lighting Requirements:
   - Overhead lights should be in all rooms except the living room, where an overhead light is optional. The kitchen light should be fluorescent. All others should be standard ceiling lights or fan/lights.
   - Rooms such as the living room and bedrooms usually only require one overhead light.
   - The kitchen should have an additional light near the sink and one near the stove.
   - All overhead lights need to have a switch. The switch should be near the room's entrance (on the wall near the doorknob if there is a door).
   - An overhead light should be in all hallways, stairways, and porches. Long hallways need switches at each end, and they need to be three-way switches, so that the hall light can be turned on or off at either end of the hall.

5. Electrical Outlet Placement:
   - No place on a wall can be farther than six feet from an outlet. This means that one outlet covers 6 ft. on each side.
   - Walls less than 2 feet in length do not need an outlet.
   - Code requires only one outlet in the bathroom.
   - No outlet is needed behind a door or in a closet.
   - Outlets cost money, so while you want enough you don't want to go overboard.
   - The refrigerator, washer, and dryer require a special 220-volt outlet.
   - Doors, fireplaces, sliding glass doors, and other obstacles will restrict outlet placement.
   - A couple of outlets should be placed outside.

6. Write the name of the room in small, all-caps near the center of each room. The names should face toward the reader whenever possible.

7. Underneath each room name write the room's dimensions in small numbers. For example, if the width is 10 feet and the length is 12 feet you would write: 10 x 12

What is a 2 by 4? How you seen a 2 by 4 before? Is it big or small?

A 2 by 4 is a standard size board that is actually 1.5 inches thick by 3.5 inches wide. The board is 92.25 inches tall (about 8 feet). A contractor needs to know the cost of building a house beforehand in order to know how much to charge the buyer. Part of this process is making an accurate estimate of the lumber to build a house. Two by fours are the most commonly used boards. When used to build walls they are also called studs. For exterior walls two by six studs are more typically used. A contractor estimates that an average wall requires one stud per linear foot (each stud is usually spaced about 16 inches apart). Thus a 20 foot wall requires about twenty studs.

Calculate the number of studs needed to build the walls of Cabin 1. When calculating the number of studs, include all walls, including places where there are windows and doors. Determine how many studs are for exterior walls and how many are for interior walls. Based on this calculation, complete the rest of the tables below. Include your scratch work in your portfolio.

| 1.	Total number of studs needed for exterior walls	
2.	Total number of studs needed for interior walls	
3.	Total number of studs needed	

Remember that one stud is equivalent to one linear foot.

Expense Estimates

|				COST (nearest dollar)
4.	Exterior Walls*	$140.00 per linear foot	140 • Exterior Studs	
5.	Interior Walls	$35.00 per linear foot	35 • Interior Studs	
6.	Floors	$9.75 per square foot	9.75 • Cabin Area	
7.	Roof	1.5 times the floor cost	1.5 • Floor Cost	
8.	**Total Wall, Floor, and Roof Cost**			

TURN IN ALL CALCULATION WORK DIRECTLY BEHIND THIS PAGE

* includes the cost of foundation as well as window and door costs

EXAMPLE WALL FRAME LAYOUT

Studs are shown in gray

12-0

12-0   7-0   12-0

2-0

12-0

12+12+12+12+
7+2 = 57 studs
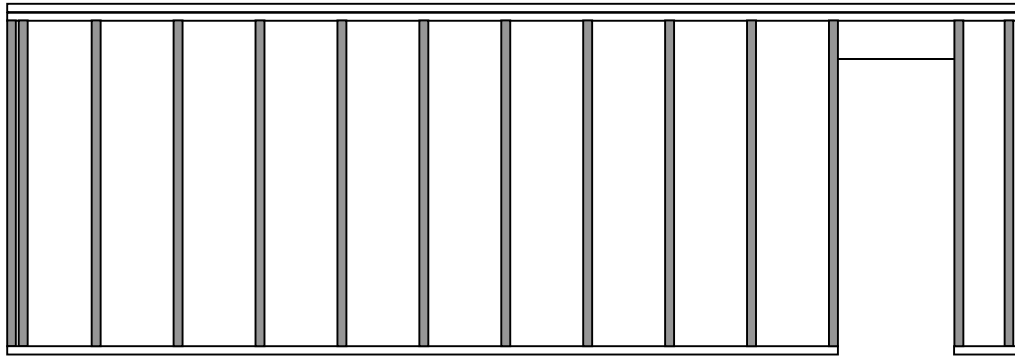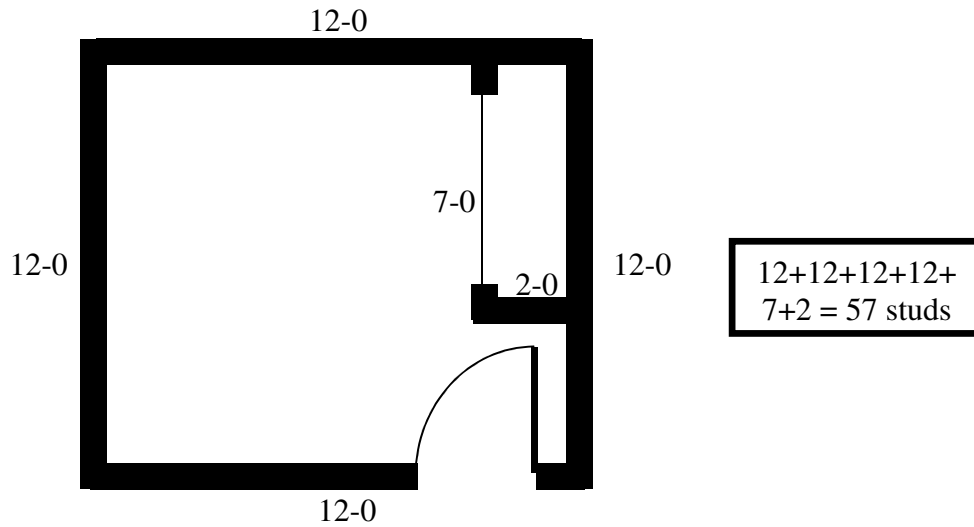
How much area do you lose on each piece of lumber going down to the actual size? Show and include all of your work.

Nominal Size of Lumber	Nominal Area	Actual Size of Lumber	Actual Area (Mixed Number)	Difference in Areas
2 x 2	4 square inches	$1\frac{1}{2}"$ x $1\frac{1}{2}"$		
2 x 4	8 square inches	$1\frac{1}{2}"$ x $3\frac{1}{2}"$		
2 x 6	12 square inches	$1\frac{1}{2}"$ x $5\frac{1}{2}"$		
2 x 8	16 square inches	$1\frac{1}{2}"$ x $7\frac{1}{4}"$		
2 x 10	20 square inches	$1\frac{1}{2}"$ x $9\frac{1}{4}"$		
2 x 12	24 square inches	$1\frac{1}{2}"$ x $11\frac{1}{4}"$		

TURN IN ALL CALCULATION WORK DIRECTLY BEHIND THIS PAGE