

Dream House Plans

Congratulations on being awarded the contract for engineering and construction of your very own Dream House! Before construction can begin, you need to complete detailed, 1/20 scale plans for both floors of your house. You have been provided the overall dimensions of the house, and small scale drawings for each floor.

Your next step is to complete a set of two plans, one for each floor of your Dream House, in **exact 1/20 scale**. These should be done on the large easel paper sheets provided, one plan per sheet. You may use pen or pencil. Pen is usually neater, but scratch-outs or white-out will reduce your professionalism score.

Your scale plans are due at 3 PM on Thursday, Oct 17. Plans may not be taken home. The lab will be open after school every day except this Friday until 3:00 PM. Use your time in class efficiently – stay focused! There will be a 20% deduction in this portion of the project score for each school day or part of school day delay in delivery, except in the case of medically excused absences, and even those will be pro-rated by the number of team members.

Your scale plans will be evaluated on:

- 40% Accuracy to scale
- 40% Completeness
 - 10% Exterior walls, porches, decks, etc.
 - 10% Exterior window and door openings
 - 10% Interior walls and interior dimensions of external walls
 - 10% Interior doors, appliances, and fixtures (tubs, sinks, shower stalls, etc.)
- 20% Professionalism (neatness, readability, similarity to real examples)
 - Extra points for two-dimensional walls

Check that...

- Your corners are true right angles – measure from both sides of the paper.
- Measurements are correct from either end of a wall
- Your first and second floors match exactly

Every day:

1. At the close of each period, roll your plans carefully so that your names are clearly visible on one end of outside of the rolled paper and store them in the cabinet.
2. Keep track of how much time you spent and specifically what you did; you will need this information to write your final project report. Fill out a new section of the Project Time Log every time you work on your plans, and have your partner or MrH initial your entry to verify our entry.

Good luck!

HINTS FOR DRAWING EXCELLENT PLANS

1. Compute the Scale Factor for the small scale drawings

Using careful measurements on the small scale drawings, and the overall dimensions of the houses provided in the descriptions, compute the scale factor for each floor of your house on the small scale drawing, for both the width and the depth. Then take the average of the width and depth for each floor to use as your final scale factor for that floor and record it in the box with the dark border. *You should already have this information from your homework assignment – check your numbers with the other members of your team!*

		feet in real life	cm in real life (converted)	cm <u>measured</u> on the drawing	Scale factor
1 st floor	Width				
	Depth				
	Average				
2 nd floor	Width				
	Depth				
	Average				

2. Draw the basic rectangle for each floor: width and depth

Start by taking the width and depth of the floors of your house in centimeters measured above, and then:

1. Multiply by your scale factor above to get “cm In Real Life”
2. Divide by 20 to get the width and depth for your 1/20 scale plans.

1 st Floor	Width on 1/20 plans	
	Depth on 1/20 plans	
2 nd Floor	Width on 1/20 plans	
	Depth on 1/20 plans	

Draw rectangles this size on your paper. Leave room for porches, bay windows, and decks. Every member of your team should sign off that this basic rectangle is the correct size, and positioned on the paper so you can fit any porches, bay windows, and decks around it. When you are sure, ask MrH to sign off on it as well.

3. Locate porches, bay windows and decks on your plans

1. Measuring from one corner of your plans, mark off exterior porches, decks, bay windows on the small scale drawings on each wall.
2. Use the scale factor to convert these to Real Life, and then divide by 20 to get the equivalent measurements for your 1/20 scale plans, just as you did above.
3. Mark these off on your plans starting from the same corners.
4. Measure how much these extend from your walls, convert this measurement the same way, and draw them in.

4. Locate exterior windows and doors on your plans

Following the same process as in #3, mark off and measure the locations of all exterior windows and door openings on your small scale drawings. Always measure from the same corner, and work left to right and forward



Convert these to measurements to real life using your scale factor, and then divide by 20 for your plans, and mark them off on your plans.

5. Locate interior walls and door openings on your plans

Follow the same steps as in #4 to find where they connect to the exterior walls first. Look for walls that are all in a line (or “collinear”, as your geometry teacher would say!) and draw these all the way across your plans, and then measure and erase the parts where there is no wall. Always measure from a well-defined point on an exterior wall.

6. Sketch in features

Now add “extras” like:

- Doors and door swings (use a compass)
- Counters
- Appliances
- Plumbing fixtures
- Other stuff shown on the small scale drawings