

1. Name two wood species appropriate for each of the following uses:

a. Hardwood flooring

b. House framing

c. Window and door frames

d. An outdoor deck

e. Softwood flooring

f. Fine furniture and paneling

2. Circle the end uses below for which quartersawn lumber is preferred:

framing members

interior trim

sheathing boards

finish flooring

outdoor decks

tabletops

3. Give actual dimensions (in English and metric units) for each of the following pieces of lumber:

a. 2x4

b. 2x6

c. 2x8

d. 2x12

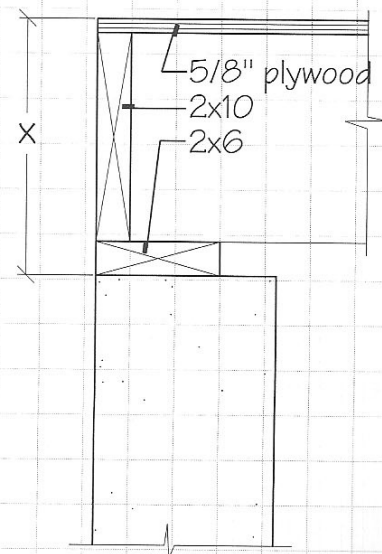
e. 1x4

f. 1x12

g. 4x6

h. 6x6

4. What is dimension "x" (in both English and metric units) in the detail below? Show calculations.



Name: _____

5. A board exactly 12" (305 mm) wide was quartersawn from a green softwood log, then seasoned to a moisture content of 12%. How wide is it now? Show calculations.

6. The platform frame shown in Figure 5.2 of the text contains a total of 33" (838 mm) of ~~cross-grain~~ ^{plainsawed} wood between foundation and roof.

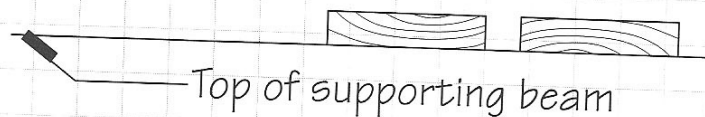
a. Assuming that plainsawed framing lumber shrinks across its grain at a rate that is an average of the shrinkage rates of tangential and radial shrinkage, how much will the roof drop if the lumber is installed at 19% moisture content and eventually dries to 15%?

b. Assuming that the 2x12 wood floor joists at both floor levels are replaced with laminated veneer lumber joists with negligible shrinkage, how much will the roof drop under the same change in moisture conditions?

Show calculations.

7. Considering the tendency of plainsawed lumber to cup during seasoning, which way should the boards on an outdoor deck be laid, so that they will not trap rainwater?

a. Circle the properly laid board.



b. Can you think of any other factors that might influence the choice of orientation?

1. How many board feet are contained in a 2x4 stud 8' long? If the stud costs \$1.33, what is the cost per board foot? Show calculations.

2. What will be the cost of 34 2x10 floor joists, each 12' long, if the price of lumber is \$330.00 per thousand board feet? Show calculations.

3. List a softwood plywood veneer grade suitable and economical for each of the following uses:

a. Reverse side of a low-cost plywood panel that will not be seen _____

b. Painted face of a storage cupboard _____

c. Smooth but low-cost floor surface over which carpet will be laid _____

4. List a softwood plywood exposure durability classification suitable for each of the following proposed uses:

a. Structural sheathing, subflooring _____

b. Exterior siding _____

c. Item c. in question 3 above, not to be installed until the building is enclosed _____

Name: _____

5. Explain a "32/16" span rating stamped on a sheet of plywood.

6. What size common nail (designated in pennies) will just reach completely through two thicknesses of nominal 2-inch lumber?

7. If $5/8$ " oriented strand board sheathing is nailed to the wood frame of a building with 8d common nails, how far does the point of the nail penetrate into the frame?

8. How far does a 16d nail end penetrate into a longitudinal piece of wood after it has been driven through a nominal 2-inch piece?

9. Match the following nails with their uses:

- | | |
|------------------------|------------------------------|
| a. Finish nail | attaching wood shingles |
| b. Deformed shank nail | attaching interior wood trim |
| c. Cut nail | attaching gypsum wallboard |
| d. Box nail | attaching asphalt shingles |
| e. Roofing nail | attaching hardwood flooring |

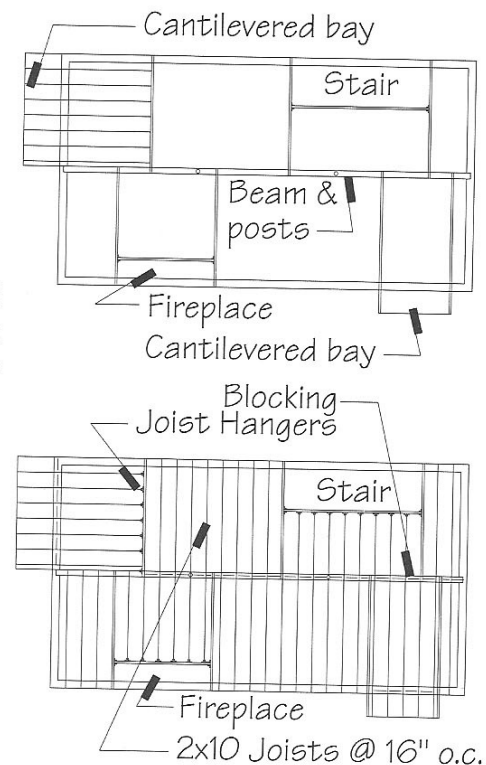
10. Match each of the following composite wood products with its description:

- | | |
|----------------------------|--|
| a. laminated veneer lumber | large flakes of wood compressed and bonded into sheets |
| b. parallel strand lumber | veneer sheets laminated into rectangular sections |
| c. plywood | small wood particles, compressed and bonded without orientation into panels |
| d. composite panel | thin wood veneers, glued into panels |
| e. oriented strand board | two parallel face veneers bonded to a reconstituted wood fiber core |
| f. waferboard | narrow veneer strands, oriented longitudinally and pressed into rectangular cross sections |
| g. particleboard | long, strand-like wood particles, compressed and glued into sheets |

Laying Out Floor Framing

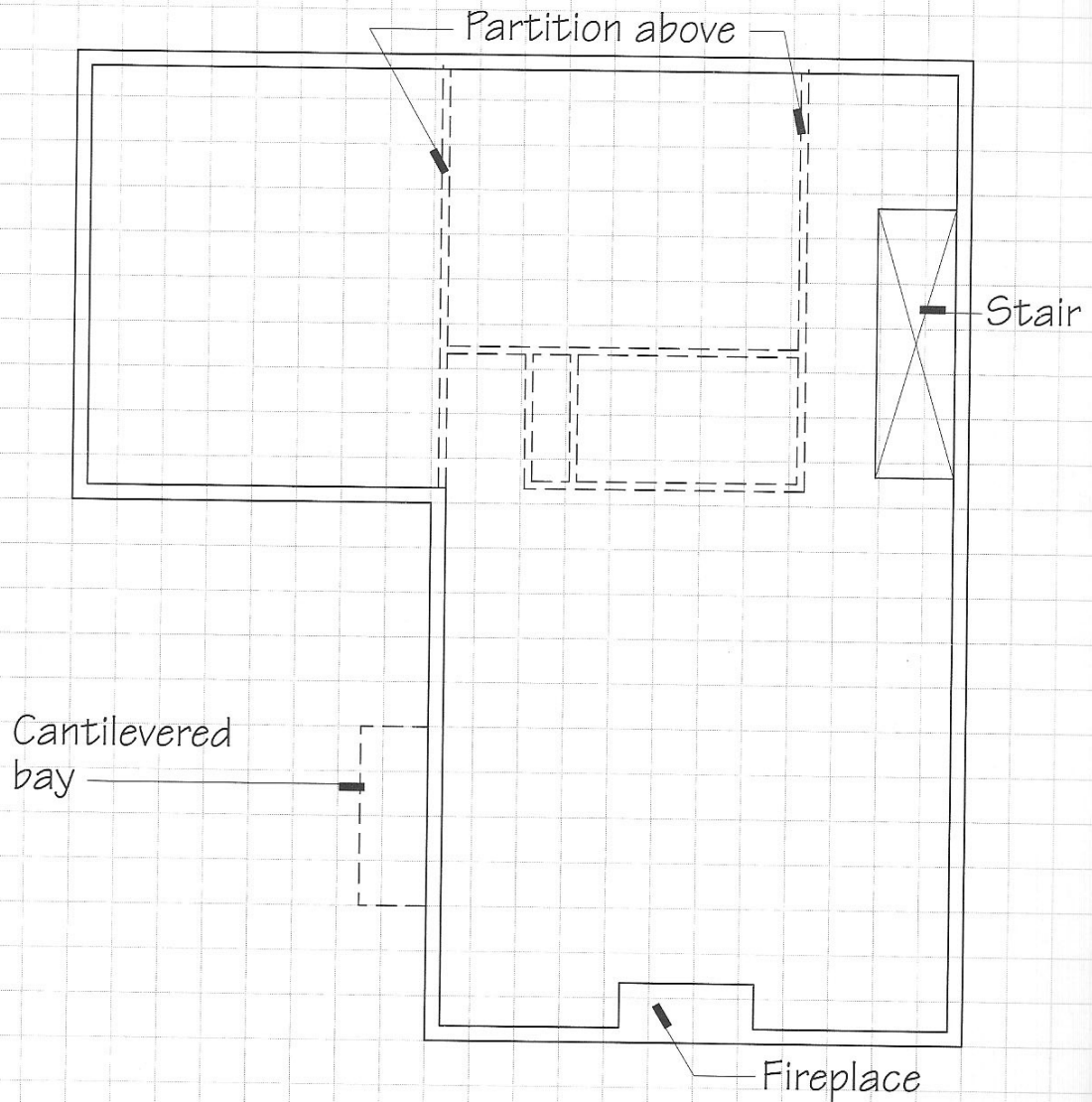
1. Review Figures 5.17 through 5.20 and pages 163 through 165 in your text. Referring to the preliminary design guidelines on page 189, jot down the maximum spans for 2x8, 2x10 and 2x12 wood joists. (See the note below if you wish to complete this exercise with I-joists.)
2. Examine the floor plan, searching for a simple arrangement of joists and beams, working within the span limits noted above. To avoid complications for the carpenters, use one size of joist throughout.
4. Draw in the beams and locate posts assuming beams can span 15' to 20' (4.6 m to 6.1 m) between supports. Add doubled headers and trimmers around stairs, chimneys, and other floor openings. Add doubled joists wherever partitions run parallel to the framing below.
5. Next lay out the framing for any cantilevered bays. The length of a cantilever should be no more than one-third the length of the interior span, and not more than one-fifth of the allowable span for the joist.
6. Complete the framing plan by adding the remainder of the joists at a spacing of 16" (400 mm) o.c. Start at one edge and work across the platform, faithfully maintaining this spacing regardless of the placement of other framing members.
7. Add joist hangers wherever joists are supported by headers. Add solid blocking wherever joists span across a beam or cantilever over a wall. Consider adding bridging at the midpoint of longer spans or deeper joists.

You may also complete this assignment using I-joists as follows: Limit the maximum I-joist depth to 12" (300 mm); space I-joists at 24" (600 mm) o.c.; substitute structural composite beams, such as LVLs, for doubled joists and headers; and limit cantilevers to one-fourth of the interior span.



Laying Out Floor Framing 5.1

1. Design and draw ground floor framing layouts for the buildings whose foundation plans are shown on this page and the following. Designate the size and spacing of joist used in each, and show beams, posts, doubled joists, joist hangers, blocking, and other features.

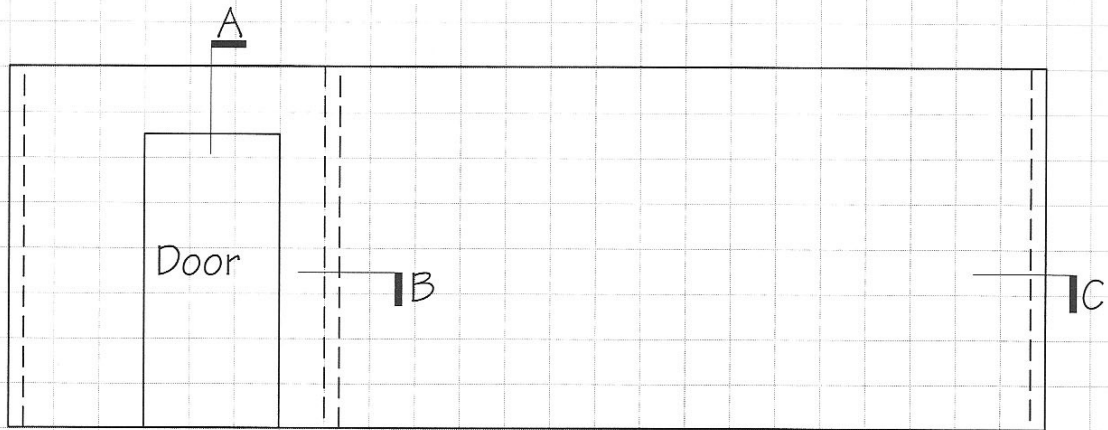


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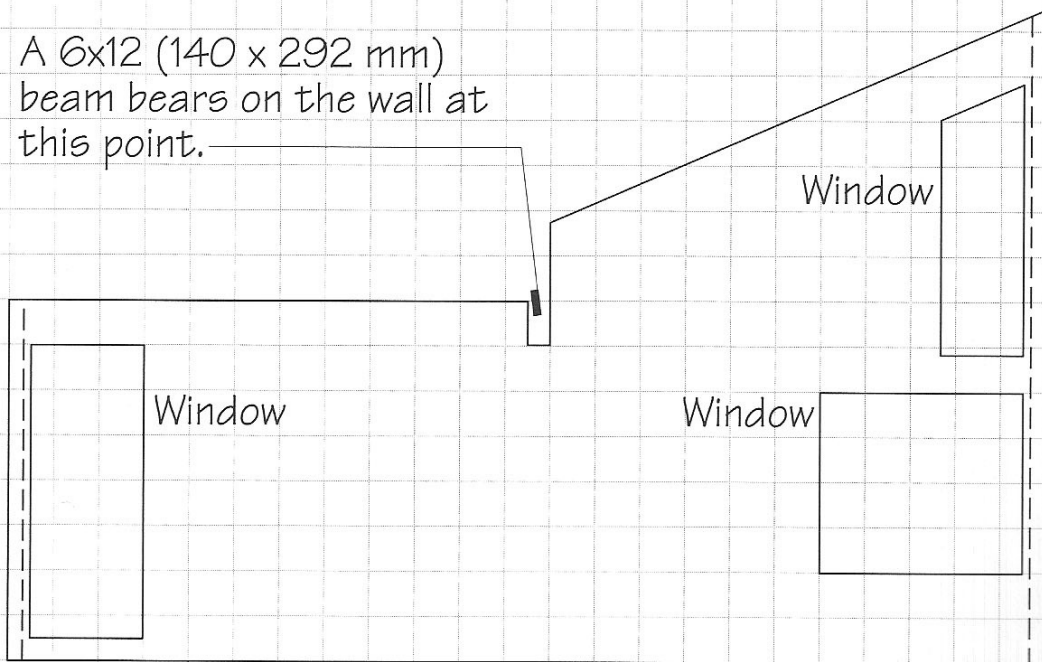
Scale: $\frac{1}{8}'' = 1'$ (1:96)
1 square = 2' (600 mm)

Laying Out Wall Framing 5.2

1. Design and draw complete framing for these two exterior walls, using 2x6 studs 24" o.c. (38 x 140 mm studs 600 mm o.c.) and 1x4 (19 x 89 mm) let-in diagonal bracing. Follow the procedure outlined in Figure 5.32 of the text. For door and window headers, use 2x8 (38 x 184 mm) framing or larger. Lettered arrows refer to details on the following page.



A 6x12 (140 x 292 mm) beam bears on the wall at this point.



Name: _____

Scale: $\frac{1}{4}'' = 1'$ (1:48)
 $1 \text{ square} = 1'$ (300 mm)