

FURNISHING

Workbook 1



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D. Schlyder

FURNISHING - Workbook 1

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INTRODUCTION TO THE FURNISHING INDUSTRY

Historical Background and Current Trends

1. Early development of the Australian furnishing industry was influenced by English furniture design and construction.
 - a. True
 - b. False

2. Which stage of craft development first required furniture makers to be skilled in new construction methods and new forms of decoration such as veneering and inlaying?
 - a. Age of the carpenter (up to 1550)
 - b. Age of the joiner (1550 to 1660)
 - c. Age of the cabinetmaker (1660 to 1750)
 - d. Age of the designer (1750 to 1830)

3. Name four prominent furniture designers who influenced English furniture design between 1750 and 1830.
 - a. _____
 - b. _____
 - c. _____
 - d. _____

4. Name the period of history which changed the way furniture was produced and paved the way for mass production methods to be developed.

5. English oak forests were largely depleted by the seventeenth century.
 - a. True
 - b. False

6. Which of the following was the fashionable timber in England from 1660 to 1720?
 - a. Satinwood
 - b. Oak
 - c. Mahogany
 - d. Walnut

7. Briefly describe the main use of satinwood in eighteenth century English furniture design.

8. Name the most important cabinet timber in the early development of the Australian furniture industry.

9. Early Australian furniture styles did not follow styles that were fashionable in England at the time.
 - a. True
 - b. False

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19-9-01 (8082) I.A

10. Which was the first manufactured board to change the way that furniture could be constructed?
- a. Medium density fibreboard b. Plywood
c. Hardboard d. Particleboard

11. Briefly state four changes in the furnishing industry which have been brought about by the introduction of manufactured boards.

- a. _____

 b. _____

 c. _____

 d. _____

12. What is the name given to modern demountable furniture which features simple, functional design of individual pieces or modular units?

Styles and Periods

1. Complete the following sentence:

The illustration on the right shows a late _____ period chair, which features spiral or _____ twist legs and rails and elaborate _____ type carving.



2. Complete the following sentence:

The photograph on the right shows a _____ style chair. If the chair was a genuine _____ it would have been made in the _____ century.



3. Briefly describe the outstanding characteristic of the furniture style illustrated by the photograph in question 2.

9. Briefly describe some of the significant features of furniture designed during the period represented by the dressing table in question 8 on the previous page.

10. Which style or movement would the moulded plywood chair shown on the right be identified with?

- a. Scandinavian
c. Art Nouveau
- b. Art Deco
d. William Morris



11. Which of the following technological advances has influenced the design of modern furniture?

- a. Manufactured boards
c. CNC machines
- b. Connectors and fasteners
d. All of the above

12. List three advantages of current trends in furniture construction which relate to the use of manufactured boards and modern methods of machining and assembly.

a. _____

b. _____

c. _____

Environmental Issues

1. Which of the following impacts on furniture manufacturing is not likely to result from environmental issues associated with native forest and plantation management?
- a. Cost of materials will rise if supply cannot satisfy demand for wood products.
b. Continuity of supply of materials could be affected.
c. The introduction of CNC machines will increase furniture production significantly.
d. The introduction of alternative native timbers could cause changes to the way some furniture is designed and constructed.
2. Better milling techniques and selection procedures could improve the quality of Australian solid timber but would create more waste. Briefly explain why this would not necessarily be economically, environmentally or ecologically harmful.

Skill Areas

1. List eight skill areas in the furnishings industry and briefly describe some of the main types of work carried out in each area.

a. Skill area: _____ Work: _____

b. Skill area: _____ Work: _____

c. Skill area: _____ Work: _____

d. Skill area: _____ Work: _____

e. Skill area: _____ Work: _____

f. Skill area: _____ Work: _____

g. Skill area: _____ Work: _____

h. Skill area: _____ Work: _____

2. Which of the following tasks would not usually be performed by a wood machinist?

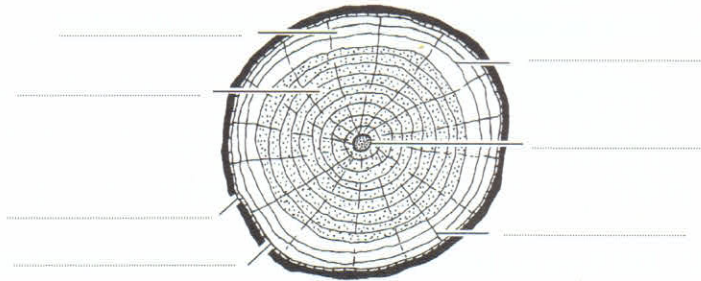
- a. Reading and interpreting working drawings.
- b. Cutting panels to size.
- c. Final surface preparation before items of furniture are polished.
- d. Accurately setting up machines to perform required tasks.

INTRODUCTION TO MATERIALS

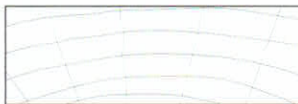
Timber

1. Complete the sentences below by inserting the missing words.
 - a. Mineral salts and water absorbed by tree roots flow upward through the _____ in the tree trunk.
 - b. Food produced by the leaves of a tree flows downward through the _____ bark.

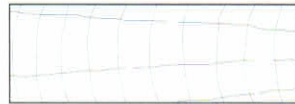
2. Name the sapwood, heartwood, live bark, cambium layer, growth rings, pith and medullary rays in the adjacent diagram.



3. Which of the following does not apply to sapwood?
 - a. New wood growth in the tree.
 - b. Lighter in colour than heartwood.
 - c. Soft, pulpy core at the centre of the tree.
 - d. Under the cambium layer.
4. Which of the following does not apply to heartwood?
 - a. More durable than sapwood.
 - b. Comprised of dead cells.
 - c. Formed by blockage of channels which conduct food materials.
 - d. Less durable than sapwood.
5. Which of the following does not apply to growth rings?
 - a. Indicate the annual growth in the trunk of a tree.
 - b. Only evident in softwood, not hardwood.
 - c. Cells are smaller and more closely packed than in early wood.
 - d. Smaller, closely packed cells form a dark ring in the tree trunk.
6. Which of the following does not apply to medullary rays?
 - a. Formed by groups of cells radiating from the pith.
 - b. Conduct food materials horizontally in the tree trunk.
 - c. Evident only in the heartwood zones of the tree.
 - d. Store food materials in the living tree.
7. Name the quarter sawn board and the back sawn board shown below.



a. _____ Sawn



b. _____ Sawn

8. Which of the following does not apply to back sawing?
- Simplest and most economical method of cutting logs into boards.
 - Average inclination of growth rings on the face of the board is less than 45°.
 - Distinctive growth rings produce decorative figure on the face of the board.
 - Method allows for sawing around defects in the log.
9. Quarter sawing produces boards with faces roughly parallel to the medullary rays.
- True
 - False
10. Timber with pronounced medullary rays reveals a distinctively patterned figure when back sawn.
- True
 - False

11. What is a knot in a piece of timber?

12. Sketch a small spike knot in the adjacent illustration.

13. Could the piece of timber illustrated in the adjacent diagram be selected for use in furniture construction?

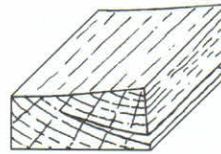


- Yes
- No

14. Briefly explain your answer to question 13.

15. What is the name of the defect in the adjacent illustration?

- Pipe
- Split vein
- Shake
- Gum vein



16. Moisture content affects the stability of timber. If moisture content increases timber tends to:

- Shrink
- Split
- Rot
- Swell

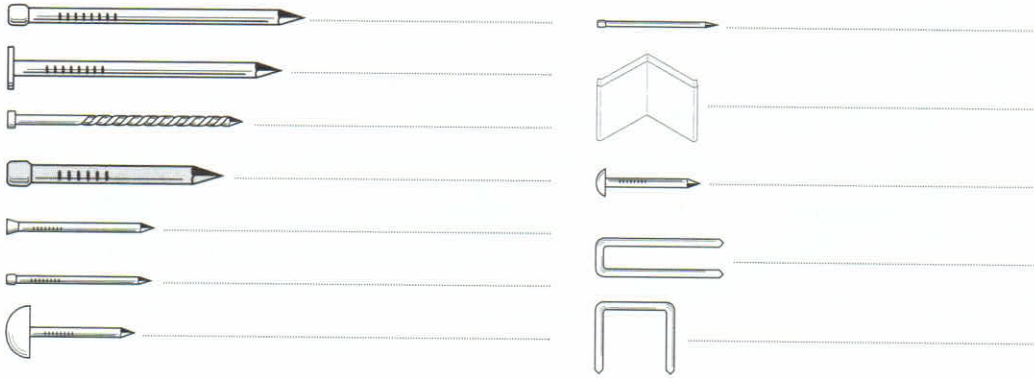
17. Briefly define the seasoning process.

18. Timber selected for furniture construction should be properly _____ and allowed to stabilise in the local _____ for at least a few weeks, to reach its equilibrium _____ content.

- 19.** Which of the following does not relate to shrinkage which occurs during the seasoning process?
- a. Most shrinkage occurs in the length of the board.
 - b. Wood fibres become smaller as combined moisture dries out of cell walls.
 - c. Shrinkage occurs in the direction of the growth rings which tend to straighten and cause 'cupping' of the board.
 - d. Shrinkage occurs in the width of the board.
- 20.** Which of the following is an imported cabinet timber?
- a. Rose Mahogany
 - b. Silky Oak
 - c. Blackwood
 - d. Teak
- 21.** Which of the following is an Australian cabinet timber?
- a. Philippine Mahogany
 - b. Meranti
 - c. Silver Ash
 - d. Calantas
- 22.** Which of the following is not a characteristic of Red Cedar?
- a. Reasonably hard
 - b. Nails reasonably well
 - c. Reddish brown colour
 - d. Medium texture
- 23.** Which of the following is not a characteristic of Meranti?
- a. Stringy grain
 - b. Fine texture
 - c. Grain filler usually required
 - d. Works moderately well
- 24.** Which of the following best describes the colour of Hoop Pine?
- a. Golden brown
 - b. Light yellow to pale brown
 - c. Silver white
 - d. Reddish brown
- 25.** Which of the following Australian timbers is pale straw in colour, quite hard, splintery, with a coarse to medium texture?
- a. Silky Oak
 - b. Queensland Maple
 - c. Tasmanian Oak
 - d. White Beech
- 26.** Which of the following imported timbers is light, easy to work, light red to brownish pink in colour with fine to medium texture?
- a. Teak
 - b. New Guinea Rosewood
 - c. Calantas
 - d. Philippine Mahogany
- 27.** Which of the following cabinet timbers may have problems with resin bleeding through finishing material such as French Polish?
- a. Queensland Maple
 - b. Silky Oak
 - c. Silver Quandong
 - d. Silver Ash

Fasteners

1. Name the fasteners illustrated below:



2. Match each fastener with an appropriate use by writing corresponding letters in the boxes.

- | | |
|-----------------------|--|
| a. Bullet head nail | <input type="checkbox"/> Fastening corners of picture frames |
| b. Hardboard nail | <input type="checkbox"/> Fastening upholstery material |
| c. V-Nail | <input type="checkbox"/> General finishing and cabinet work |
| d. Broad crown staple | <input type="checkbox"/> Fine nailing of thin material |
| e. Brad | <input type="checkbox"/> Nailing masonite to a frame |

3. What is the main advantage of particleboard nails compared with bullet head nails?

.....

.....

4. What is the special feature of process nails?

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.....

5. Match each fastener with an appropriate use by writing corresponding letters in the boxes.

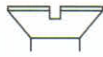
- | | |
|-------------------------|--|
| a. Narrow crown staples | <input type="checkbox"/> Fastening keyhole covers |
| b. Escutcheon pin | <input type="checkbox"/> Assembly of light framing |
| c. Upholstery nail | <input type="checkbox"/> Holding inlays |
| d. Flathead nail | <input type="checkbox"/> Fastening upholstery fabric |
| e. Veneer pin | <input type="checkbox"/> Fastening thin case timber |

6. What is the main function of nails in cabinet work?

.....

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7. a. Name the types of screw heads shown below.



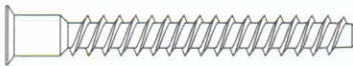
b. Name the types of screw slots shown below.



8. Name the types of screw threads shown below.









9. Match each screw feature with an appropriate use by writing corresponding letters in the boxes.

- | | |
|---------------------|--|
| a. Countersunk head | <input type="checkbox"/> Knock-down furniture |
| b. Raised head | <input type="checkbox"/> Flush finish required |
| c. Coarse thread | <input type="checkbox"/> Decorative finish required |
| d. Long thread | <input type="checkbox"/> Fastening threaded handles |
| e. Metalthread | <input type="checkbox"/> Additional holding power required |

10. Which screw length would be most suitable for securing a piece of 19mm timber?

- a. 30mm b. 45mm c. 60mm d. 75mm

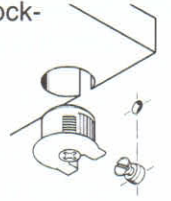
11. Why is it necessary to drill a clearance hole through the piece of timber being fastened when using conventional wood screws? _____

12. Snap-on cover caps are used with round head screws.

- a. True b. False

13. The illustration on the right shows an eccentric connecting fitting for knock-down furniture. Briefly explain how tension is applied to tighten the joint.

.....



14. Name the parts of the knock-down fitting shown on the right:

15. The knock-down fitting on the right provides a very strong joint that can be assembled and disassembled any number of times.

- a. True b. False



16. In which of the situations described below would one piece or multipurpose connectors be used?

- a. Joining individual cabinets such as in modular kitchens.
 b. Securing permanent glued joints.
 c. Where a demountable, unglued joint is required.
 d. Where a shank hole and core hole cannot be drilled.

17. Give a brief general description of where a panel connector would be used.

.....



18. What would cause the plastic wall plug illustrated on the right to grip tightly in the hole drilled in a brick wall?

.....



19. Briefly describe the tightening mechanism of the bolt type masonry anchor shown on the right.

.....



20. Name the bolt type masonry anchor in question 19.

21. A Loxin® could not be used to bolt a heavy steel bracket to a concrete floor.

- a. True b. False

22. Name a fastening device that could be used to secure an object to a plasterboard wall between two wall studs.

.....

8. At room temperature epoxy resin adhesives (not quick setting types) require a holding or cramping time of:

- a. One hour
- b. Two hours
- c. Four hours
- d. Up to twenty-four hours

9. Briefly describe the constituents of epoxy resin adhesive and how it is prepared for use.

.....
.....
.....

10. Which of the following materials would preferably be bonded with epoxy resin adhesive?

- a. Plastic laminate to wood
- b. Aluminium to glass
- c. Wallpaper to plasterboard
- d. Vinyl sheet to flooring

11. Formaldehyde adhesives are thermo-setting resins.

- a. True
- b. False

12. Which of the following does not apply to formaldehyde adhesives?

- a. Can be softened by heat once it is set.
- b. Hardened by the addition of a catalyst.
- c. Setting action is caused by chemical change.
- d. Setting can be accelerated by increasing temperature.

13. Name three wood products that are bonded with formaldehyde adhesives during manufacture.

- a.
- b.
- c.

14. What is the cramping time required for urea formaldehyde adhesive at 90° to 120°C?

- a. 24 hours
- b. 4 hours
- c. 2 hours
- d. Several minutes

15. List two safety requirements for using formaldehyde adhesives.

- a.
- b.

16. Briefly describe latex glue in its usual form.

.....

17. Latex glue could be used for bonding paper products and fabrics to other surfaces.

- a. True
- b. False

18. Which of the following does not apply to latex glue?

- a. Drying time is usually two or three hours.
- b. Easy to apply with brush or roller.
- c. Cramping is not usually required.
- d. Has a strong pungent smell.

19. What are the raw materials from which animal glue is manufactured?

.....

20. Briefly describe available forms of animal glue and their preparation.

.....
.....

21. Which of the following is the most likely working time for animal glue?

- a. Less than 15 minutes
- b. 30 minutes
- c. 45 minutes
- d. Unlimited

22. Name a traditional application where animal glue may still be used.

.....

23. Briefly describe the preparation of casein glue.

.....
.....
.....

24. Which of the following would be the most likely working time for casein glue at room temperature?

- a. More than one hour
- b. Less than fifteen minutes
- c. Up to forty minutes
- d. Up to four hours

25. What is the usual cramping time for casein glue at room temperature?

- a. 2 to 4 hours
- b. 4 to 6 hours
- c. 6 to 8 hours
- d. 12 to 24 hours

26. Briefly describe a traditional use for casein glue.

.....
.....
.....

Finishing Materials

1. Which of the following does not apply to shellac?

- a. Basis of traditional French polish
- b. Waterproof and very durable
- c. Natural resin secreted by insects
- d. Dissolves in methylated spirits

2. Briefly describe the application of French polish.

3. Briefly describe the preparation of nitro-cellulose lacquer.

4. Which of the following best describes the ability of nitro-cellulose lacquer to resist abrasion, spirits and water?

- a. Very low
- b. Low
- c. Very high
- d. Moderately high

5. In industrial applications, nitro-cellulose lacquer is:

- a. Brushed
- b. Sprayed
- c. Rolled
- d. Flood coated

6. Which of the following does not apply to pre-catalysed lacquers?

- a. Based on thermo-setting resins which harden with a catalyst.
- b. The catalyst reacts with the resins when the solvents evaporate.
- c. Pre-catalysed lacquers cannot be sprayed.
- d. The catalyst is pre-mixed with resins, solvents and other compounds.

7. Pre-catalysed polyurethane requires twenty-four hours to dry.

- a. True
- b. False

8. Which of the following best describes the ability of pre-catalysed lacquers to resist abrasion and damage by water and chemicals?

- a. Highly resistant
- b. Moderately resistant
- c. Partially resistant
- d. Not resistant

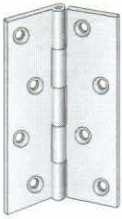
9. Two-pack polyurethane consists of two sets of compounds, one containing the

_____ and the other containing the _____

Hardware

1. Name the hinges illustrated below and briefly describe a typical use for each.

a.



b.

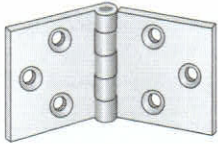


a. _____

b. _____

Use (both a and b): _____

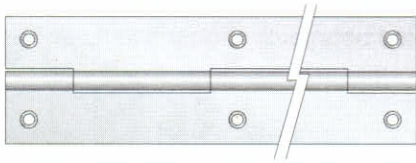
c.



c. _____

Use: _____

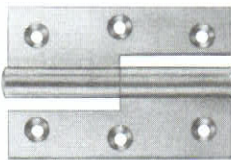
d.



d. _____

Use: _____

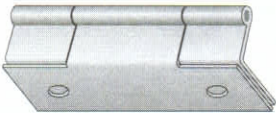
e.



e. _____

Use: _____

f.



f. _____

Use: _____

g.



g. _____

Use: _____

2. Name the hardware items illustrated below and briefly describe a typical use for each.

a.



a. _____

Use: _____

b.



b. _____

Use: _____

c.



c. _____

Use: _____

3. Briefly describe the difference between straight cupboard locks and cut cupboard locks.

4. Name the hardware items illustrated below and briefly describe a typical use for each.

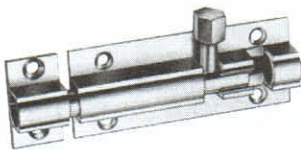
a.



a. _____

Use: _____

b.



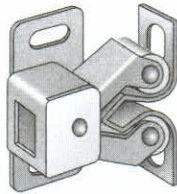
b. _____

Use: _____

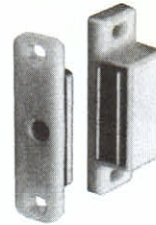
5. Name the cupboard door catches illustrated below.



a. _____



b. _____



c. _____

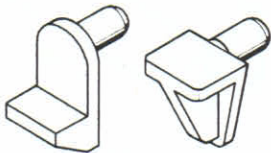
6. Name the type of furniture stay shown on the right and briefly describe the purpose of its friction brake.

Name: _____

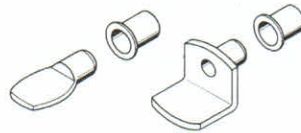
The purpose of the friction brake is to _____



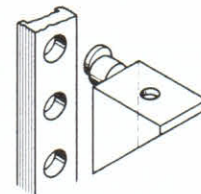
7. Name the shelf supports illustrated below.



a. _____

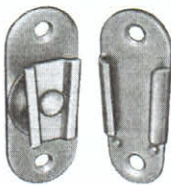


b. _____

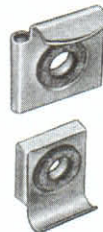


c. _____

8. Name the mirror fittings illustrated below.

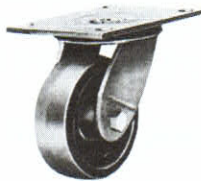


a. _____

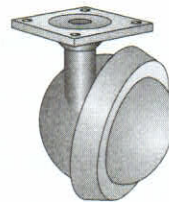


b. _____

9. Name the hardware items illustrated below.

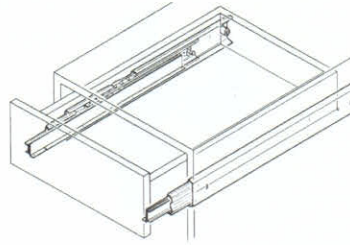
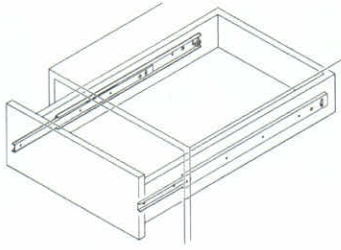


a. _____



b. _____

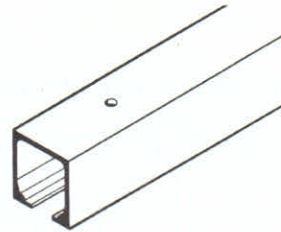
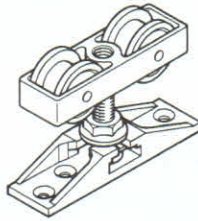
10. Name the drawer runner types illustrated below.



a. _____ b. _____

11. Briefly explain an advantage of the draw runner on the right above.

12. Name the hardware items illustrated below.



a. _____ b. _____

13. Give an example of where the hardware items in question 12 could be used.

14. Name the rod supports illustrated below.



a. _____ b. _____ c. _____

15. Name the hardware item shown on the right.



16. Briefly explain the use of the hardware item in question 15.

6. Give a common use for 2mm non-reflective glass.

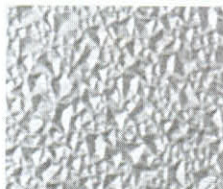
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7. Briefly describe how patterned glass is made.

.....

.....

8. Name the common patterned glass types shown below.



a. b.

9. Which of the following does not apply to wired glass?

- a. Usually 6mm in thickness.
- b. Can be used in shower screens.
- c. Welded wire is embedded in the molten glass at manufacture.
- d. Used where A grade safety glass is specified.

10. Why is edgework performed on exposed edges of glass used in furniture?

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11. When smooth arrised, the cut edge of the glass is not ground?

- a. True
- b. False

12. Which of the following glass edge treatments is the standard fine polished flat edge?

- a. Smooth arris
- b. Flat grind
- c. Flat polish
- d. Bevel

13. Mitred edges are not used for glass silicone butt joints.

- a. True
- b. False

14. Briefly define the term 'nominal thickness' of glass.

.....

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5. Which of the following is a typical use for plain white melamine surfaced MDF?

- a. Cupboard shelving
- b. Cupboard tops
- c. Polished furniture
- d. Painted furniture

6. How are the sheets of veneer arranged in the manufacture of plywood?

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7. Briefly explain the advantages of cross grain bonding veneer sheets in the manufacture of plywood.

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8. Which of the following adhesives would be used in the manufacture of marine grade plywood?

- a. Urea formaldehyde
- b. Polyvinyl acetate
- c. Latex glue
- d. Phenol formaldehyde

9. Give two uses for thin sheets of standard plywood in cabinet construction.

- a.
- b.

10. Hardboard sheets 3mm thick could not be used for cupboard backs or drawer bottoms.

- a. True
- b. False

11. What is the raw material used in the manufacture of Australian hardboard?

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12. Briefly describe the three layers which form plastic laminates.

- 1.
- 2.
- 3.

13. Why would a sheet of particleboard be surfaced with plastic laminate for a kitchen cupboard top?

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