

NAME \_\_\_\_\_ SCHOOL \_\_\_\_\_

CLASS \_\_\_\_\_ PERIOD \_\_\_\_\_ DATE \_\_\_\_\_ SCORE \_\_\_\_\_

### GENERAL MACHINE SAFETY REVIEW

FILL IN THE BLANKS: FILL IN THE BLANKS WITH THE CORRECT ANSWERS.

1. Always wear \_\_\_\_\_ in the lab. If there is any damage to these, report it to the instructor.
2. Never \_\_\_\_\_ to anyone operating any machine.
3. \_\_\_\_\_ must be worn around any machine making excessively loud noises.
4. Always get \_\_\_\_\_ to use any machine in the lab!
5. Any adjustments on any machine must be made with the \_\_\_\_\_ off.

### BAND SAW and SCROLL SAW SAFETY

TRUE/FALSE: WRITE THE FULL WORD TRUE OR FALSE IN RESPONSE TO THE FOLLOWING STATEMENTS.

6. \_\_\_\_\_ Keep hands and fingers at least  $\frac{1}{2}$ " away from the blade.
7. \_\_\_\_\_ Keep the upper guide within 2" from the material being cut.
8. \_\_\_\_\_ If the blade breaks, turn the power off and step back.
9. \_\_\_\_\_ Remove scrap pieces only after the blade has stopped.
10. \_\_\_\_\_ Sudden twists break the blade. Saw curves gradually or make relief cuts in the case of sharp curves.

### CIRCULAR SAW OR TABLE SAW

FILL IN THE BLANKS: FILL IN THE BLANKS WITH THE CORRECT ANSWERS.

11. Set the saw blade to extend \_\_\_\_\_ inch above the stock being cut.
12. Keep hands at least \_\_\_\_\_ inches away from the blade.
13. The miter gage and \_\_\_\_\_ are not used at the same time. However, one is used. Never is freehand cutting permitted.
14. Stand to either side of the \_\_\_\_\_ when sawing.
15. Use a \_\_\_\_\_ when ripping stock less than 6 inches in width.

## MITER / CUT OFF SAW

TRUE/FALSE: WRITE THE FULL WORD TRUE OR FALSE IN RESPONSE TO THE FOLLOWING STATEMENTS.

16. \_\_\_\_\_ Keep your hands away from the saw blade's path and at least 6" from the blade.
17. \_\_\_\_\_ You may stand behind the saw blade.
18. \_\_\_\_\_ Never leave the miter/cut off saw unless the power is off and the blade has stopped turning.
19. \_\_\_\_\_ Hold the stock firmly against the fence. Make sure the safety guard and anti-kickback device are in place.
20. \_\_\_\_\_ Obtain permission the first time you use the miter/cut off saw. Once you have obtained it, you need not ask again.

## DRILL PRESS

FILL IN THE BLANKS: FILL IN THE BLANKS WITH THE CORRECT ANSWERS.

21. Fasten the \_\_\_\_\_ in the chuck securely before drilling.
22. Remove the \_\_\_\_\_ from the chuck before drilling.
23. Clamp all thin wood or sheet metal with a \_\_\_\_\_ before drilling it.
24. Secure any loose clothing or long \_\_\_\_\_ before drilling.
25. Do not leave the drill press until the drill bit has \_\_\_\_\_.

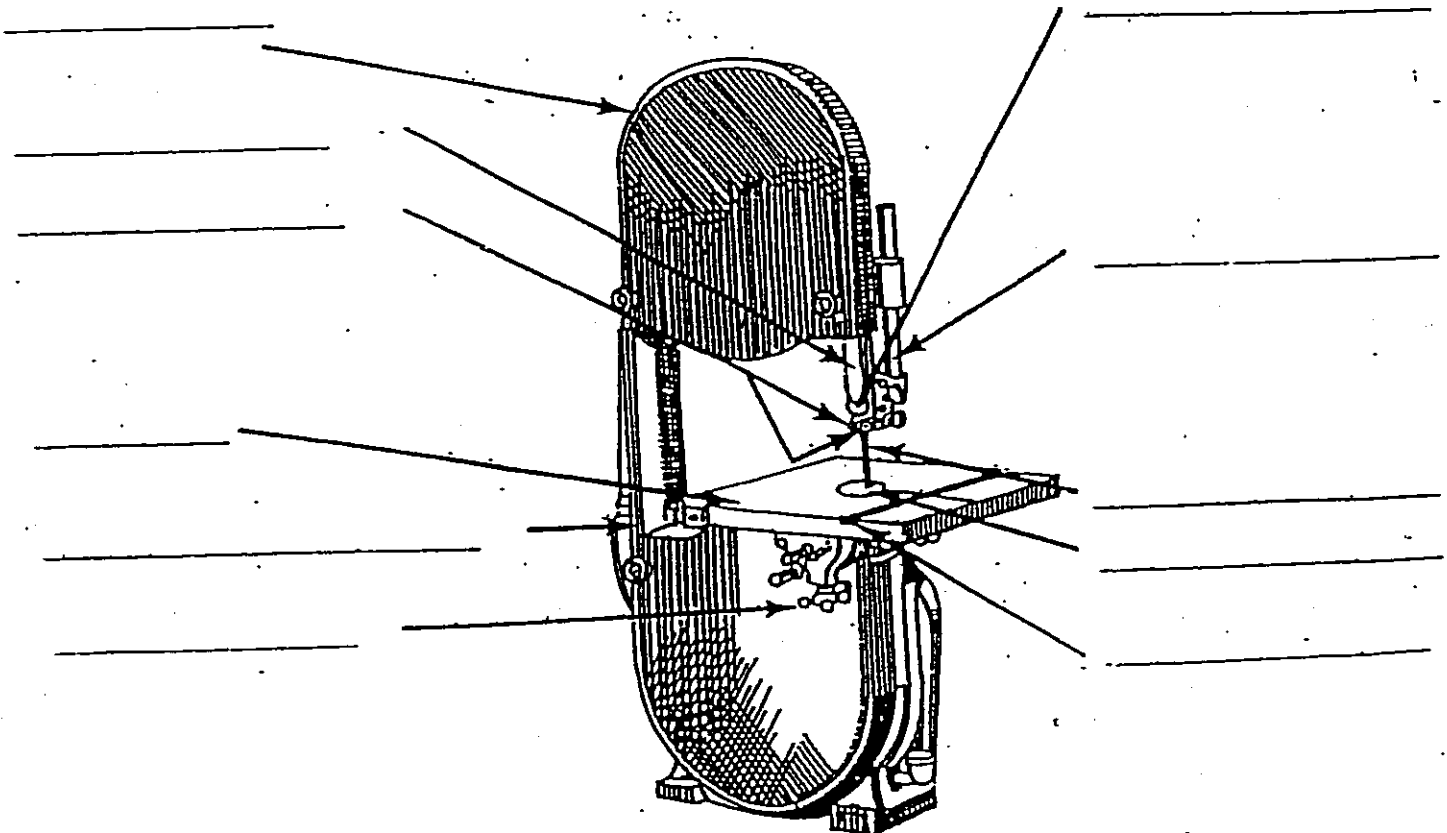
## DISC-BELT SANDER

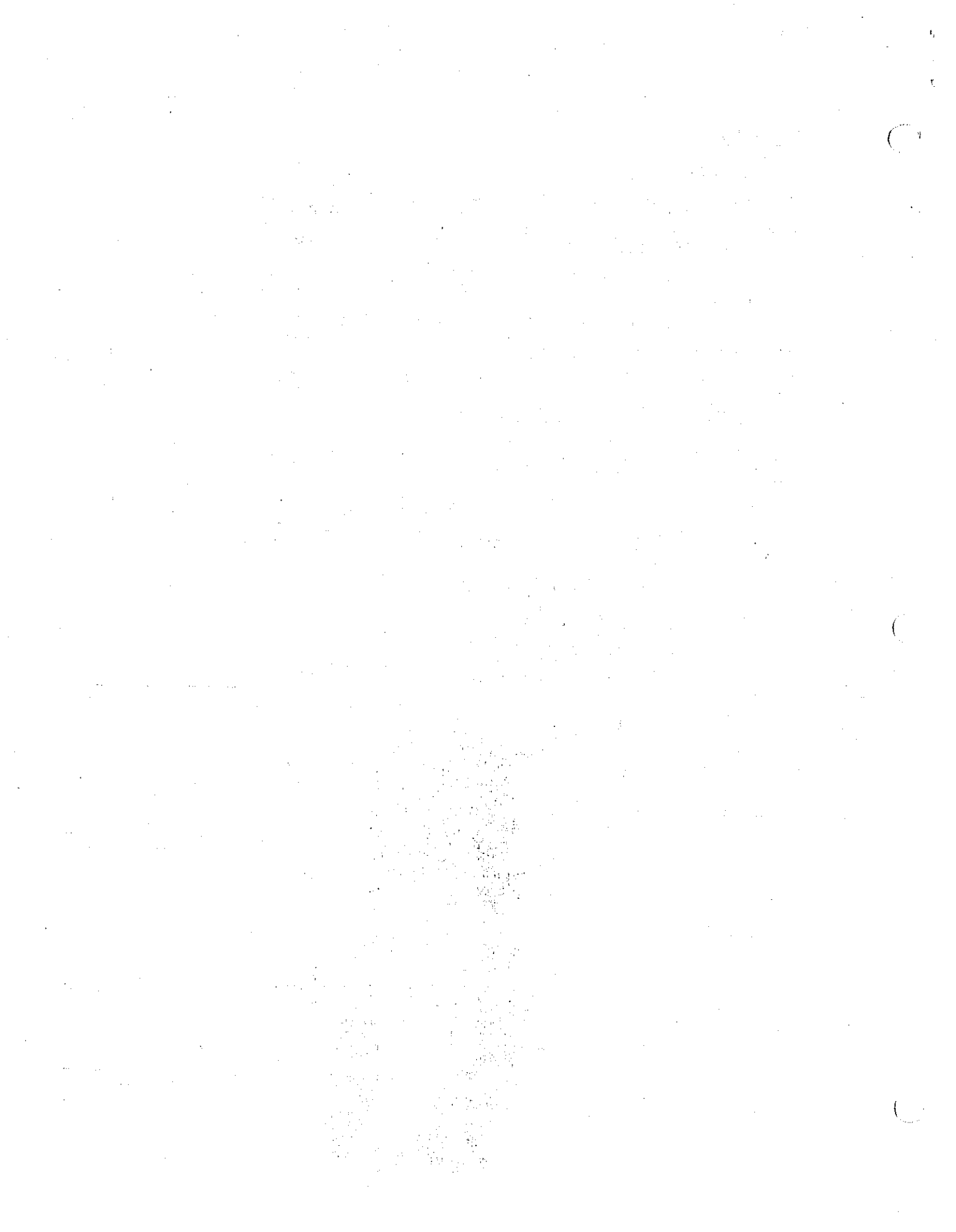
WRITE THE FULL WORD TRUE OR FALSE IN RESPONSE TO THESE STATEMENTS:

26. \_\_\_\_\_ Keep your fingers and hands away from the abrasive surface.
27. \_\_\_\_\_ You may use the edge of the disc or belt of the disc-belt sander.
28. \_\_\_\_\_ Feed stock against the fence or on the down side of the sander.
29. \_\_\_\_\_ Hold the stock in one place while you are sanding a board.
30. \_\_\_\_\_ Be sure the disc or belt is securely in place and is not worn out.
31. \_\_\_\_\_ Wear safety goggles at all times when sanding. Always get teacher permission each time you use the machine.
32. \_\_\_\_\_ All adjustments on the belt-disc sander are made with the power on.
33. \_\_\_\_\_ When sanding small pieces, one can allow fingers to get close to the abrasive surfaces.

SAFETY QUIZ

- |   |   |   |
|---|---|---|
| 1. It is safe to tilt the table for cutting bevels.                                   | T | F |
| 2. The lower band wheel does not require a guard.                                     | T | F |
| 3. The saw should be stopped by forcing a piece of wood against the blade.            | T | F |
| 4. The blade guard should be adjusted to about 1/4" from the work.                    | T | F |
| 5. It is safe to use the fence for cutting several pieces of wood to the same length. | T | F |
| 6. The hands should come no closer than 2" from the blade.                            | T | F |
| 7. The blade guides should be adjusted tight against the blade.                       | T | F |
| 8. Instructor's permission is required to operate a band saw.                         | T | F |
| 9. Adjustments should be made with the power off.                                     | T | F |
| 10. Eye protection is not required when operating a band saw.                         | T | F |
| 11. If the work does not cut easily you should:                                       |   |   |
| (a) speed up the blade  |   |   |
| (b) push harder   |   |   |
| (c) replace the blade   |   |   |
| (d) check with your instructor  |   |   |





# GENERAL AND LABORATORY SAFETY UNIT II-A

## ASSIGNMENT SHEET #1 — COMPLETE A SAFETY PLEDGE

NAME \_\_\_\_\_

SCORE \_\_\_\_\_

### Safety Pledge

It is understood that each student will be given proper instruction in the use of the equipment and in the correct safety procedures concerning the equipment before she or he will be allowed to operate it. The student must assume responsibility for following safe practices. We, therefore, ask that the student subscribe to the following safety pledge.

**I will follow all safety rules.**

**I will never use a machine without first having permission from my instructor or supervisor.**

**I will not ask permission to use a particular machine unless I have been instructed in its use and have scored 100 percent on the safety test for that machine.**

**I will report immediately any accident or injury, no matter how minor, to instructor or supervisor.**

Student's signature \_\_\_\_\_ Date \_\_\_\_\_

Instructor's signature \_\_\_\_\_ Date \_\_\_\_\_

Parent's or guardian's signature \_\_\_\_\_ Date \_\_\_\_\_

# GENERAL AND LABORATORY SAFETY

## UNIT II-A

### ASSIGNMENT SHEET #2 — SURVEY THE LABORATORY AND IDENTIFY CORRECT SAFETY PRACTICES

NAME \_\_\_\_\_ SCORE \_\_\_\_\_

- A. What safety practices are being used in your laboratory to promote general safety?
1. \_\_\_\_\_
  2. \_\_\_\_\_
  3. \_\_\_\_\_
- B. What practices are used to maintain an orderly laboratory?
1. \_\_\_\_\_
  2. \_\_\_\_\_
  3. \_\_\_\_\_
- C. Where is your laboratory fire extinguisher located? What type is it, and on what kinds of fires may it be used?
- \_\_\_\_\_
- \_\_\_\_\_
- D. Where is your laboratory first aid kit located? Who is permitted to use it?
- \_\_\_\_\_
- \_\_\_\_\_
- E. What equipment and machines in your lab must you have separate safety tests on before you are allowed to operate them?
- \_\_\_\_\_
- \_\_\_\_\_

## GENERAL AND LABORATORY SAFETY UNIT II-A

### ASSIGNMENT SHEET #3 — IDENTIFY SAFETY VIOLATIONS

NAME \_\_\_\_\_

SCORE \_\_\_\_\_

Directions: The following paragraphs show unsafe acts performed by a careless student. List the violations below.

While the instructor was out of the laboratory, a student had to make up work he had missed in school. He has passed all the safety tests on all the machines in the laboratory so there was no reason why he couldn't catch up. The student was wearing a long-sleeve shirt, rolled up his sleeves and put his watch in his pocket.

The only drill that was available had a frayed cord, but was all right to use because there was only a little bare wire exposed. Before plugging it in, he made sure the locking switch was locked on and that the tool was properly grounded. When he started drilling, he made sure that the cord was looped over his wrist to prevent it from getting in the way of the operations. He did notice that there was a puddle under his feet, but he was able to keep the cord from getting wet.

After drilling the first hole, he made sure that the locking switch was off but did not unplug it because he didn't want to further damage the frayed cord. He then changed the drill bit for a larger hole. His safety glasses kept sliding down his nose, so he took them off because there was not real danger when he was just drilling. When he was finished with the drill, he put it on the floor to keep the bench area from getting cluttered.

He then got out the circular saw to make a few crosscuts. Seeing the possible dangers with the saw compared to the drill, he put his safety glasses back on. He made sure the locking switch was off and then plugged it in. He placed the cord over his shoulder to keep it out of the path of the saw and proceeded to make the cut. The board seemed a little difficult to cut, but he was puzzled because the blade was out as far as it could go and he was only cutting one-inch stock. He then started smelling a strange burning odor, so he immediately turned off the machine and jammed the saw into the wood to stop it as quickly as possible.

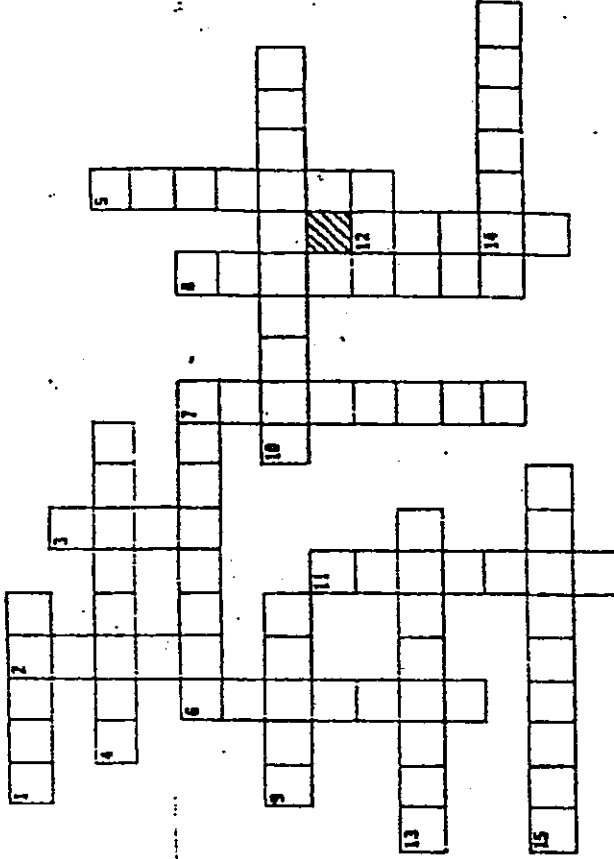
He put away the bad saw and then got out another saw to finish the cut. After he finished the cut and released the locking switch, he noticed that the guard had retracted properly so there was no need to wait until the blade had stopped rotating. He then put away the tools and cleaned up his mess like a good student should do.

GENERAL SAFETY RULES

(For use in all school shops)

1. Running is not permitted in the shop.
2. Keep aisles clear of scrap materials.
3. Arrange tools safely at your work station
4. Tools which are not in good working order should not be used.
5. It is forbidden to throw tools or materials.
6. Coats and sweaters should be removed.
6. Outdoor clothing should not be brought into the shop.
7. Long sleeves should be rolled above the elbows or buttoned tightly around the wrist.
8. Report all accidents, no matter how small, to the teacher immediately.
9. Do not place nails or other materials in your mouth.
10. Vise handles should be left in a vertical position when not in use.
11. Never tighten an empty vise.
12. Place all rags containing oil, paint, or solvents in a safety metal container.
13. Protect the edges of tools when carrying them in the shop.
14. Hands must be dry when plugging in electrical appliances.
15. Switches should be turned off before plugging in an electrical appliance.
16. Do not use any electrical appliance if the cord is not in good condition.
17. Do not stand in a damp place or touch a metal pipe when plugging in an appliance.
18. Be careful when removing stock from storage.
19. Long pieces of material should be carried by two persons.
20. Do not attempt to remove dirt from your eye by rubbing. Report to instructor immediately.

Name \_\_\_\_\_



ACROSS

1. Nails should not be carried here
4. Use caution when \_\_\_\_\_ tools.
6. \_\_\_\_\_ should always be \_\_\_\_\_ before using machines
9. \_\_\_\_\_ should always be safely arranged
10. Don't use \_\_\_\_\_ appliances with damaged cords.
13. Be sure the switch is turned off before \_\_\_\_\_ in an electrical appliance \_\_\_\_\_ clear.
14. Always keep \_\_\_\_\_ in a wet place
15. Never stand \_\_\_\_\_ when plugging in an \_\_\_\_\_.

DOWN

2. Never \_\_\_\_\_ tools or materials into it
3. Never rub your eye if this gets into it
4. Never use tools which are not in good \_\_\_\_\_
6. Use caution when removing long pieces of stock from this place
7. Rags containing these materials must be disposed of properly
8. Should be done with long sleeves to keep them tight
11. \_\_\_\_\_ is not permitted in the shop
12. \_\_\_\_\_ should not be allowed to contact on the floor

## SAFETY WORKSHEET

NAME: \_\_\_\_\_

Safety Worksheet- complete during demonstrations to help you do well on the Safety Test.

1. What is the name of the machine that planes the edges of boards? \_\_\_\_\_
2. What part of the machine covers the blades? \_\_\_\_\_
3. What machine is generally regarded as the most dangerous? \_\_\_\_\_
4. The most versatile woodworking machine is the \_\_\_\_\_
5. Cutting with the grain is called? \_\_\_\_\_
6. Cutting against the grain is called? \_\_\_\_\_
7. The blade should protrude or extend \_\_\_\_\_ above the stock when using the table saw.
8. Always use a \_\_\_\_\_ when ripping wood pieces less than six inches in width on the table saw.
9. The cut off saw can also be called the \_\_\_\_\_ saw.
10. Keep your hands \_\_\_\_\_ inches away from the blade when cutting with the miter saw.
11. What are the three signals that you need to know when using the miter saw?  
\_\_\_\_\_
12. The machine that drills holes when needed is called the \_\_\_\_\_?
13. Fasten the \_\_\_\_\_ securely in the machine by tightening it with the \_\_\_\_\_
14. Always remove the \_\_\_\_\_ before turning on the machine.
15. Be careful to \_\_\_\_\_ material when drilling it, especially small or metal pieces.
16. Secure any loose \_\_\_\_\_ before using the drill press.
17. The \_\_\_\_\_ actually sands materials with a rotating sanding disc.
18. Always sand on the \_\_\_\_\_ rotation of the disc.
19. Never let your fingers get too \_\_\_\_\_ to the rotating disc.
20. Always wear \_\_\_\_\_ when working in the lab.
21. What is the machine that is used to make gradual curved cuts in wood materials? \_\_\_\_\_
22. The upper guide should be adjusted to within \_\_\_\_\_ of an inch to the stock you are using.
23. You should never \_\_\_\_\_ a machine after using it. Always stay until the blade \_\_\_\_\_
24. If the bandsaw blade should break, turn the power \_\_\_\_\_, and step \_\_\_\_\_ from the machine.
25. Never lift heavy objects with your \_\_\_\_\_. Always with your \_\_\_\_\_.
26. Stay out of the marked painted zones around machinery, unless you are the \_\_\_\_\_ of the equipment being used.
27. Report any unsafe condition to the \_\_\_\_\_ of the class.
28. You should always obtain \_\_\_\_\_ before operating equipment in the lab.
29. Always dispose of small \_\_\_\_\_ and other garbage in the proper garbage cans.
30. Remove \_\_\_\_\_ when working in the lab.

# GENERAL AND LABORATORY SAFETY

## UNIT II-A

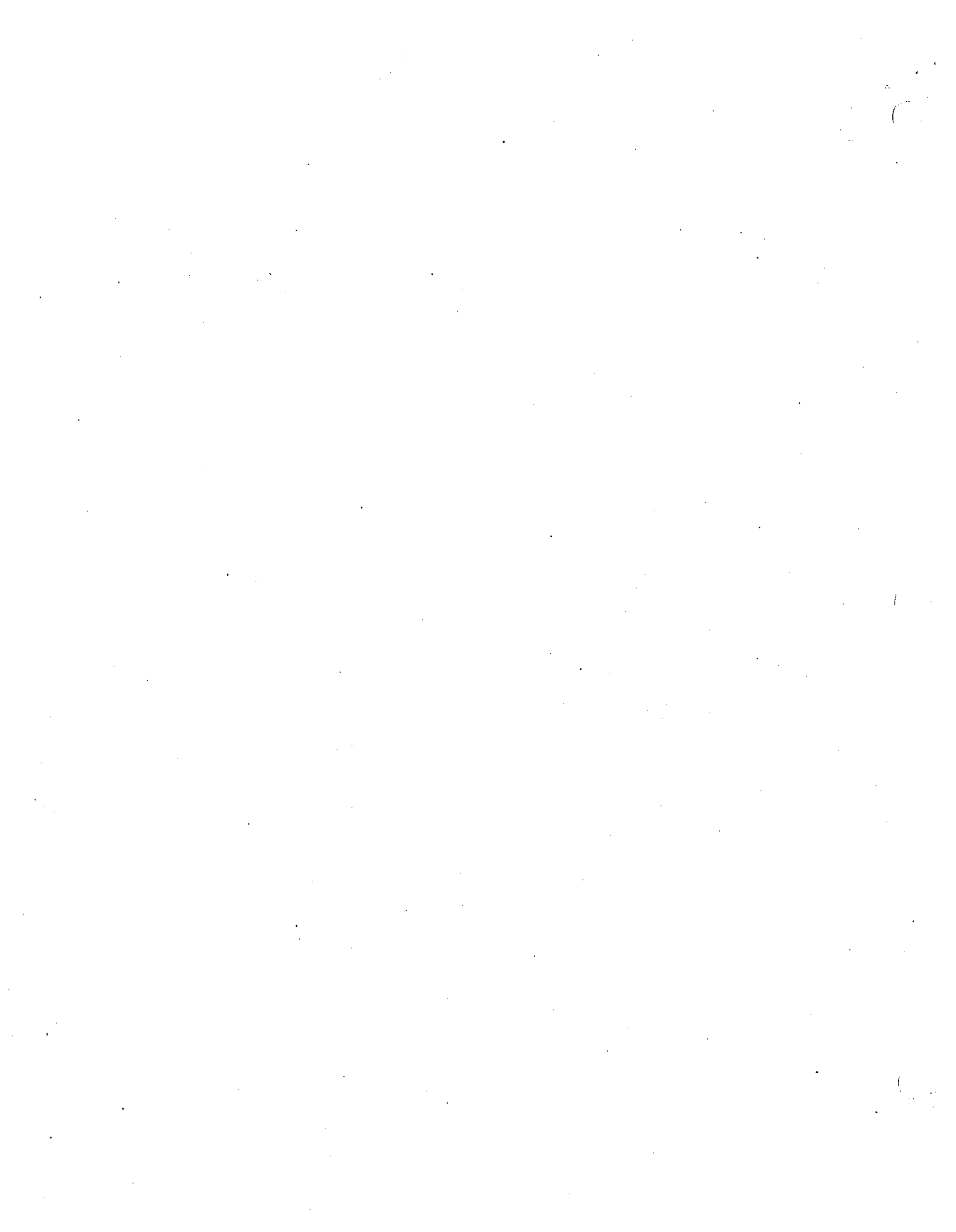
### UNIT OBJECTIVE

After completion of this unit, the student should be able to recognize unsafe situations and state rules for safe laboratory practices. Competencies will be demonstrated by completing the assignment sheets and unit test with a minimum score of 100 percent.

### SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Complete statements concerning the terms safety, accident, and first aid.
2. Match the colors of the safety color code with their uses.
3. Select true statements concerning general laboratory rules.
4. Complete statements concerning personal safety rules.
5. Complete statements concerning methods used to maintain a clean and orderly laboratory.
6. Match the classes of fire with their descriptions.
7. Label the components of the fire triangle.
8. Match the types of fire extinguishers with their characteristics.
9. Complete the safety pledge. (Assignment Sheet #1)
10. Survey the laboratory and identify correct safety practices. (Assignment Sheet #2)



## GENERAL AND LABORATORY SAFETY UNIT II-A

### INFORMATION SHEET

#### I. Terms and definitions

- A. Safety — State or condition of being safe and free from danger, risk, or injury.
- B. Accident — Any sudden, unintentional event which causes personal injury or damage.
- C. First aid — Immediate, temporary care given an accident victim until services of a physician can be obtained.

#### II. Safety color code colors and their uses

##### A. Green

- 1. Applied to non-critical parts of equipment and machined surfaces, name plates, and bearing surfaces
- 2. Designates the location of safety and first aid equipment

##### B. Yellow

- 1. Applied to operating levers, wheels, handles, and hazardous areas which may cause stumbling, falling, or tripping
- 2. Designates caution

##### C. Orange

- 1. Applied to electrical switches, interior surfaces of doors, electrical panels, and movable guards
- 2. Designates dangerous parts of equipment which may cut, crush, shock, or otherwise injure

##### D. Red

- 1. Physical color associated with fire
- 2. Used to identify the location of fire fighting equipment

(NOTE: Emergency fire exits shall be designated in red. Buttons or levers for electrical switches used for the stopping of machinery should be designated in red. Gasoline cans should be painted red with additional identification in the form of a yellow band around the can.)

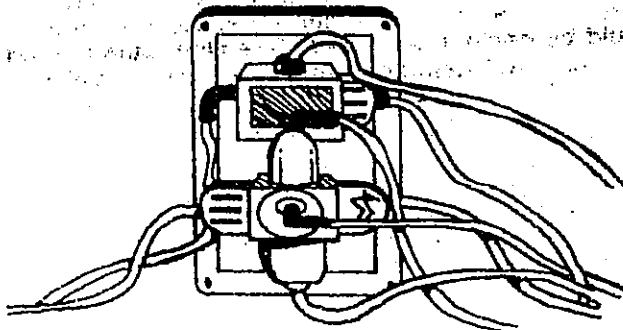
## INFORMATION SHEET

- E. Blue — Designates caution against starting equipment while it is being worked on, or against the use of defective equipment. (A blue tag should be lettered "Out of Order.")
- F. Ivory — Applied to label edges, vise jaws, and edges of tool rests to reflect light and "show the way"

iii.

### General laboratory safety rules

- A. Use tools and equipment only for their intended purposes.
- B. Return all tools to their proper places after use.
- C. Keep all hand tools sharp, clean, and in safe working order.
- D. Report any defective tools, machines, or other equipment to the instructor.
- E. Retain all guards and safety devices except with the specific authorization of the instructor.
- F. Make sure all guards and barriers are in place and adjusted properly before starting a machine tool.
- G. Operate machines and tools only after receiving instruction on how to use them safely.
- H. Use machinery only under supervision.
- I. Follow the specific safety rules for specific machines.
- J. Turn off the power and remain at the machine until all moving parts have come to a stop.
- K. Disconnect the power from machines before performing the maintenance task of oiling or cleaning.
- L. Use correct, properly fitting wrenches for nuts, bolts, and objects to be turned or held.
- M. Clean the chips from a machine with a brush — not with a rag or bare hands.
- N. Report any unsafe condition or practice in the laboratory immediately.



Overloaded Outlet

## INFORMATION SHEET

- O. Do not get involved in any horseplay in laboratory or classroom area.
- P. Use a solvent only after determining its properties, what it is used for, and how to use it.

(NOTE: Always read labels before using a product.)

- Q. Report all accidents to the instructor regardless of nature or severity.

### IV. Personal safety rules

- A. Wear protective equipment as required. (Transparency 1)

1. Approved safety glasses can save your eyesight! There are many hazards that your eyes might come in contact with, so be prepared. (Transparency 2)
2. Ear protection can prevent damage to your hearing.
3. Approved head gear (hard hats) and steel-toed shoes are especially valuable on construction sites.
4. Different kinds of gloves are used to protect your hands from rough surfaces or chemicals.
5. Aprons are required when mixing strong chemicals.
6. Face shields are required when welding.

(NOTE: Contact lens wearers must use extra caution around heat such as welders.)

- B. Secure loose clothing and long hair when working around machines or rotating equipment.

Example: Ties, scarves, excessively wide sleeves or pant legs

- C. Remove rings and other jewelry when working in the laboratory.

- D. Conduct yourself in a manner conducive to safe laboratory practices.

- E. Use soap and water frequently as a method of preventing skin diseases and irritations.

- F. Work only in well-ventilated areas.

- G. Lift heavy objects with your leg muscles, not your back. (Transparency 3)

- H. Learn to use a ladder properly. See specific rules on Transparency 4.

## INFORMATION SHEET

### V. Methods used to maintain a clean and orderly laboratory (Transparency 5)

- A. Arrange machinery and equipment to permit safe, efficient work practices and ease in cleaning.
- B. Stack materials and supplies safely or store in proper place.
- C. Store tools and accessories safely in cabinets, on racks, or in other suitable devices.
- D. Clear working areas and work benches of debris and other hazards.
- E. Keep aisles, doorways, and areas around machines and equipment clean and clear of debris, paper, and boxes.
- F. Keep floors clean and clear of obstructions and slippery substances.



- G. Dispose of combustible materials properly or store in approved containers.
- H. Store oily rags and other flammable materials such as solvents in self-closing or spring-lid metal containers.
- I. Know the proper procedures to follow in keeping the work area clean and orderly.
- J. Keep sufficient brooms, brushes, and other housekeeping equipment readily available.

### VI. Classes of fires

- A. Class A — Fires that occur in ordinary combustible materials, such as wood, rags, and rubbish
- B. Class B — Fires that occur with flammable liquids, such as gasoline, oil, grease, paints, and thinners

## INFORMATION SHEET

- C. Class C — Fires that occur in or near electrical equipment such as motors, switchboards, and electrical wiring
- D. Class D — Fires that occur with combustible metals such as iron and magnesium

### VII. Three components of the fire triangle (Transparency 6)

- A. Fuel — Any combustible (burnable) material
- B. Heat — Enough to raise the fuel to its ignition temperature
- C. Oxygen — Necessary to sustain combustion

(NOTE: To produce fire these three elements are necessary and must be present at the same time. If any one of the three is missing, a fire cannot be started or, with the removal of any of them, the fire will be extinguished.)

### VIII. Types of fire extinguishers (Transparencies 7 and 8)

(NOTE: Other types of fire extinguishers are available for specific applications. The ones listed here are the most common types.)

- A. Pressurized water — Used on Class A fires
- B. Carbon dioxide — Used on Class B and C fires
- C. Multi-purpose dry chemical — Used on Class A, B, and C fires
- D. Halon gas — Can be used on B and C fires but is primarily used on fires involving computer equipment and circuitry

(NOTE: The ingredients of many fire extinguishers will ruin computer components. Halon gas is the preferred type around this equipment.)

