

# ***TECHNOLOGY EDUCATION***

***Safety Resources: Notes, Tests, and Illustrations***

Compiled by Rachel Baxter  
& Mary Lorenz

# Table of Contents

## SECTION I – SAFETY REQUIREMENTS

1.0 Texas State Law .....	1
---------------------------	---

## SECTION II: MACHINE SPECIFIC SAFETY RULES AND TESTS

Arc Welder .....	2
Band Saw .....	6
Belt Finishing Sander .....	11
Buffer .....	15
Portable Circular Saw .....	20
Craft/X-acto Knife Safety .....	24
Crucible Furnace .....	25
Disc Sander .....	29
Drill Press .....	34
Equipment Safety .....	39
Gas Forge .....	40
General Safety – Part I .....	44
General Safety – Part II .....	49
Grinder .....	54
Hand Tool Safety .....	58
Horizontal Milling Machine .....	62
Hot Glue Gun Safety .....	66
Impact Wrench .....	67
Jig/Bayonet .....	71
Jointer .....	74
Metal Lathe .....	79
Motorized Miter Box .....	83
Oxyacetylene Welder .....	87
Planer/Surfacer .....	91
Portable Belt Sander .....	96
Portable Drill .....	100
Portable Finishing Sander .....	104
Portable Grinder .....	108
Portable Power Tool Safety .....	112
Portable Router .....	117
Power Equipment Safety .....	121
Radial Arm Saw .....	126
Robotics .....	131
Sand Blaster .....	135
Scroll Saw .....	137
Sheet Metal .....	143
Soldering Station .....	147
Spinning Lathe .....	151
Table Saw .....	155
Tig and Mig Welder .....	159
Wood Lathe .....	163

## *Table of Contents*

### **SECTION III: APPENDIX**

#### **Safety Report Forms**

Student Medical Information Sheet .....	167
Authorization to Consent to Treatment of a Minor .....	169
Insurance Waiver .....	170
Student Safety Performance Record .....	171
Teachers Observation Report of Students .....	172
Accident Report Form .....	173
Accident Report Summary .....	174
Color Coded Signs .....	175



## 1.0 Texas State Law

The Texas School Law Bulletin contains one citation dealing with safety. Paragraph 38.005 is reproduced below. This eye-protection law must be implemented in the classroom.

38.005 Protective Eye Devices in Public Schools.

(a) Every teacher and student must wear industrial-quality eye-protective devices in appropriate situations as determined by school district policy.

The Technology Education professional can have a positive, preventive impact on classroom safety. If fact, there are three major reasons why the instructor is so involved:

1. Safety is a part of the state-prescribed Technology Education curriculum, as shown by the basic understanding:

#7 The student works safely with tools, equipment, machines, and materials used in manufacturing, construction, communication, energy, power, transportation, and bio-related technology.

The student is expected to:

- A. Master relevant safety tests;
- B. Follow safety manuals, instructions, and requirements;
- C. Describe hazardous materials and wastes; and
- D. Dispose of hazardous materials and wastes appropriately.

2. The instructor is the manager and supervisor of the laboratory and classroom, and students cannot be safe without his or her supervision.

3. An instructor can, under certain circumstances, be held liable for accidents that happen in his or her area of responsibility.

# ***Arc Welder Notes***

## **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. A welding helmet with a clean observation window must be worn.
2. Keep sleeves and pants cuff rolled down.
3. Goggles must be worn for all chipping operations.
4. Keep all flammable material away from working areas.
5. Always wear leather gloves, apron, and shoes when welding.
6. The floor area should be kept clear of all obstructions and dry.
7. Closed containers should not be welded without the instructor's permission.
8. Report any overheating of the welding unit to the instructor at once.
9. Screens to protect others must be in place before welding is started.
10. The exhaust system must be turned on prior to welding.

## Arc Welder Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. Flammable materials should be kept (☐ Near ☐ Away from) the working area.
2. Chipping can be done (☐ With ☐ Without) goggles.
3. Make sure all around you are (☐ Unaware ☐ Aware) that you are striking the arc.
4. (☐ Always ☐ Never) wear a welding helmet.
5. Gloves and protective clothing are (☐ Not necessary ☐ Necessary).
6. Ventilation is (☐ Required ☐ Not necessary) during welding.
7. A (☐ Open ☐ Closed) container can be dangerous to weld.
8. The welding area floor should be (☐ Dry ☐ Damp) for a good ground.

List five (5) SAFETY procedures you should do before you operate this machine:

9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_

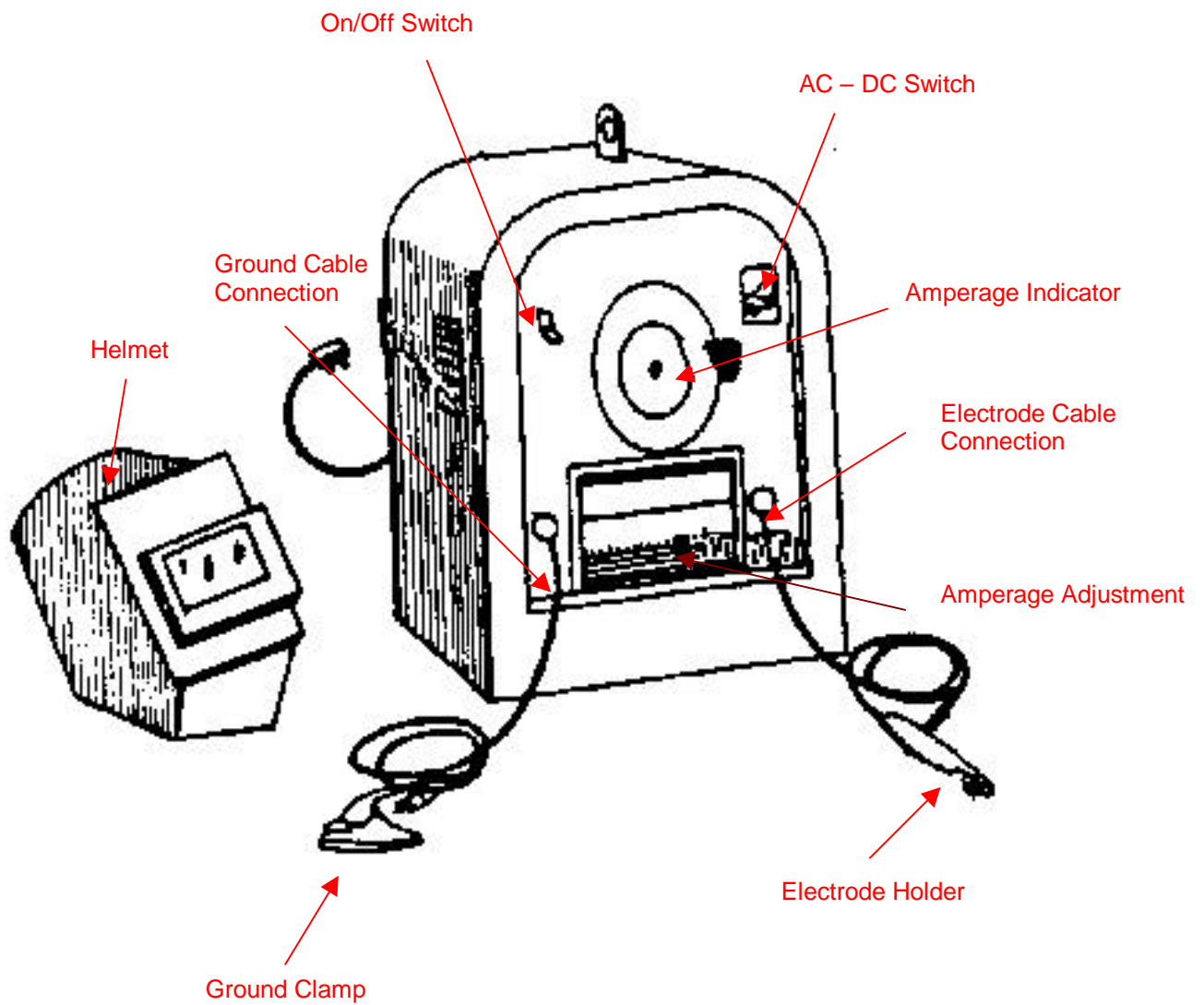
## *Arc Welder Written Test Key*

1. Away from
2. Should
3. Do
4. Should
5. Before
6. Reduce
7. Is not
8. In an area designated
9. Gas

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## Arc Welder Parts





## Band Saw Notes

### Requirements:

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Adjust the blade guard to where it is 1/4" above the highest part of the wood. Use the "*Pinky Test*" to make sure that it is SAFE to turn the machine on and start cutting.
2. Use a push stick whenever possible and always when cutting objects like a C02 car.
3. ONLY one person can use the machine at a time. Everyone should form a line and wait patiently and quietly behind the yellow line
4. Never force your wood into the blade. Let the machine do the work.
5. If it is not working properly turn it off and tell your teacher immediately.
6. Cut sharp curves on the scroll saw.
7. Avoid backing out of a cut. If there is no way to avoid it then you need to turn the machine off, wait until the blade has completely stopped, and then carefully back out.
8. Your fingers should be on either side of the blade, but never in front of the blade.
9. Blades do occasionally break. If the blade breaks while you are operating it simply turn it off, and send your partner to get the teacher. Never leave the machine, or try to open the casing and fix it yourself.
10. Make sure that the dust collector is on and that the vent is open.
11. Round stock must be cut using the V-Block to secure it. Also, never reach around the blade to remove your work.
12. Always use scrap wood to push or move scrap wood away from the blade.
13. Never leave the machine until it has come to a complete stop, then clean the table off by using a table broom, never your hands.

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. Adjust the blade guard to where it is 1/4" above the (☐ Lowest ☐ Highest) part of the wood that you are cutting.
2. You (☐ Should ☐ Should not) use a push stick when cutting out your C0<sup>2</sup> car design.
3. You should wait behind the (☐ Air ☐ Yellow) line for your turn to use the machine.
4. ONLY (☐ One ☐ Three) people can use this machine at a time.
5. You can SAFELY cut (☐ Slight ☐ Fight) curves on the band saw.
6. Your fingers should stay (☐ In front ☐ To either side) of the blade as you cut.
7. When cutting round or irregular shaped stock you should use the (☐ C-block ☐ V-block) to secure it.
8. You should use (☐ Hand ☐ Table broom) to clean the top of the table off when you are finished.
9. You should use your (☐ Hand ☐ Scrap wood) to push wood away from the blade.
10. It (☐ Is ☐ Is not) SAFE to force wood into the blade.
11. Blades do occasionally break on this machine, if it does break you should:

---

List five (5) SAFETY procedures you should do before you operate this machine:

11. 

---
12. 

---
13. 

---
14. 

---
15. 

---

## ***Band Saw Written Test Key***

1. Highest
2. Should
3. Yellow
4. One
5. Slight
6. To either side
7. V-block
8. Table broom
9. Scrap wood
10. Is not
11. Turn it off and have someone get the teacher immediately.

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## Band Saw Hands-On Test

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Subject: \_\_\_\_\_

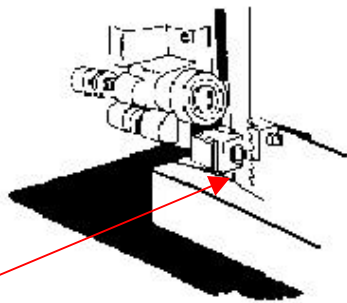
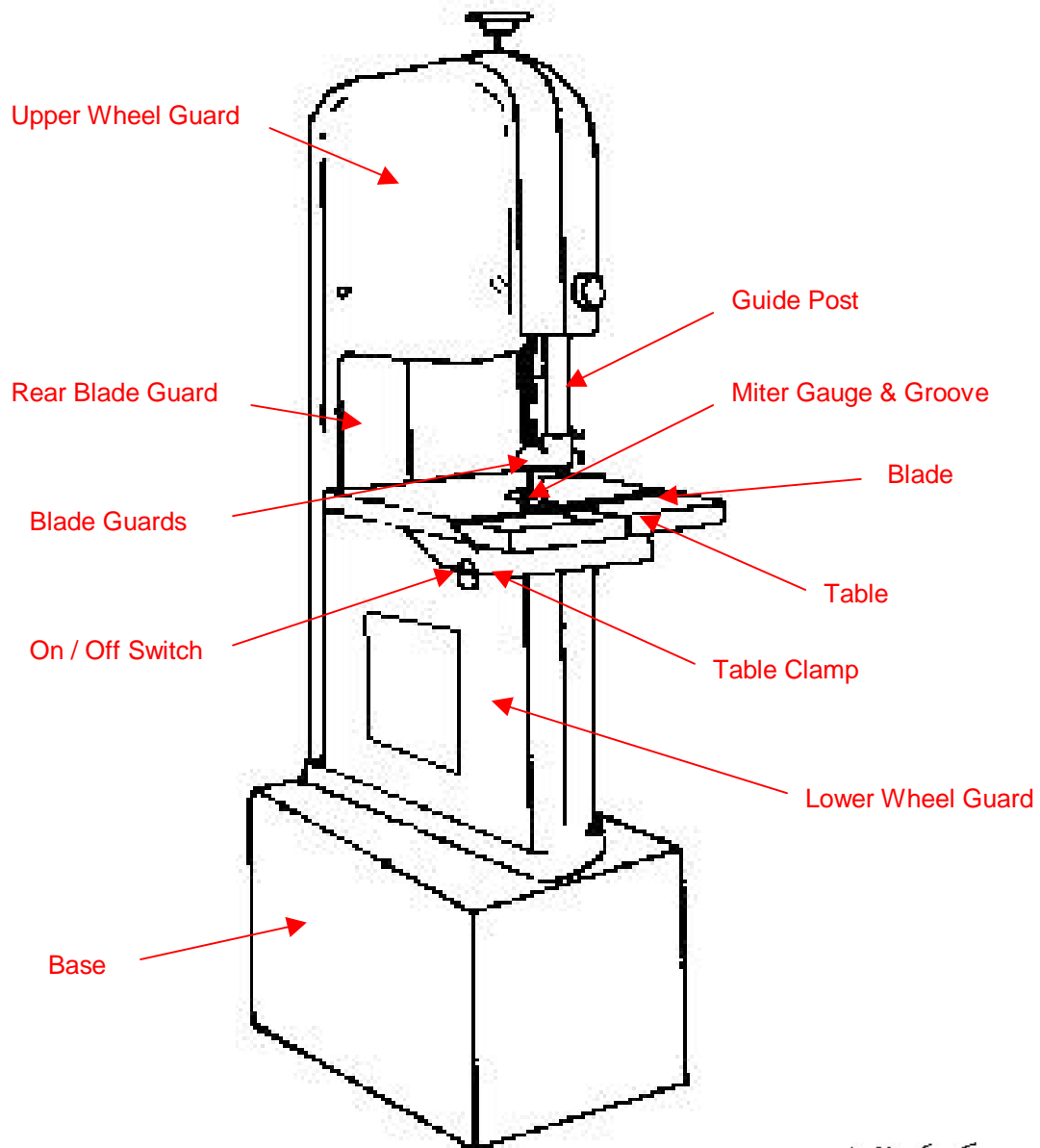
Per: \_\_\_\_\_

1. What does it do? \_\_\_\_\_
2. Why is it useful? \_\_\_\_\_
3. Can the student identify this machine (point to it)? ☐ Yes ☐ No
4. Identify the following parts:

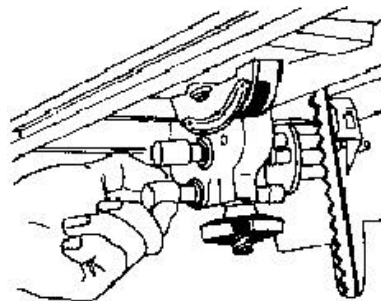
<input type="checkbox"/> On/Off Switch	<input type="checkbox"/> Lower Wheel Guard	<input type="checkbox"/> Miter Gage Groove
<input type="checkbox"/> Table	<input type="checkbox"/> Upper Wheel Guard	<input type="checkbox"/> Blade
<input type="checkbox"/> Blade Guard	<input type="checkbox"/> Rear Blade Guard	<input type="checkbox"/> Guide Post
<input type="checkbox"/> Dust Collector	<input type="checkbox"/> Kick Back Zone	
5. Safety procedures followed before using the machine:

<input type="checkbox"/> Shirt tucked in	<input type="checkbox"/> Z87 safety glasses
<input type="checkbox"/> Hair secured	<input type="checkbox"/> Checks kick back zone
<input type="checkbox"/> Remove jewelry	<input type="checkbox"/> Gets help from/helps partner as needed
6. Procedures to set up for a cut:
  - ☐ "Pinky Test" – sets guard ¼" above thickest part of the wood (i.e. pinky does not fit under the guard).
  - ☐ Hands – fingers stay to the side of the blade, not front of it.
  - ☐ Push Stick – uses one when needed, ALWAYS with the CO2 Car, or to remove scrap.
  - ☐ Lowers Guard – lowers the blade guard by hand, does not let it just drop.
  - ☐ Feet – facing machine.
  - ☐ Vents – double check to see that they are on and open.
  - ☐ Eyes – watches to see where the blade is going and to make sure that the hand is no where near the blade.
7. Makes two (2) safe and successful operations:
  - 1) ☐ Yes ☐ No
  - 2) ☐ Yes ☐ No
8. Makes sure that the machine has been shut down properly, that the area is clean, and puts tools away. ☐ Yes ☐ No

## Band Saw Parts



**NOTE:** Blade height and cut slight curves!



**NOTE:** Adjusting the table angle & clamping down in place.

## ***Belt Finishing Sander Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Make sure there is adequate, strong tension on the belt and that it is not torn.
2. Make all adjustments except final belt tracking with the power off.
3. When changing belts, make sure the new belt runs as arrows indicate.
4. Adjust table to within 1/16" of the abrasive belt.
5. Sand on the down stroke of the belt sander.
6. Machine sand only objects large enough to hold safely against the belt.
7. Move stock evenly and steadily over the abrasive surface of the sander.
8. Keep hands clear of the abrasive belt while operating and keep material flat on the table.

## ***Belt Finishing Sander Written Test***

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. Safety glasses (☐ Are ☐ Are not) the only protective clothing that you need to wear.
1. Use a (☐ Push block ☐ Your fingers) to hold thin material against the belt.
2. The wood should be (☐ Wet ☐ Dry), with no resin, paint, or finish on it and with no nails or other hardware in it.
3. The abrasive belt on the sander must be in good condition. Belts containing small rips or burns are (☐ Permissible ☐ Not O.K.) to use.
4. The belt track must be adjusted with the power (☐ Off ☐ On).
5. The table must be (☐ 1" ☐ 1/16") from the belt.
6. The work must be kept (☐ Stationary ☐ Moving) while sanding.
7. If the machine is not working properly you should:  
\_\_\_\_\_

List five (5) SAFETY procedures you should do before you operate this machine:

8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_

## ***Belt Finishing Sander Written Test Key***

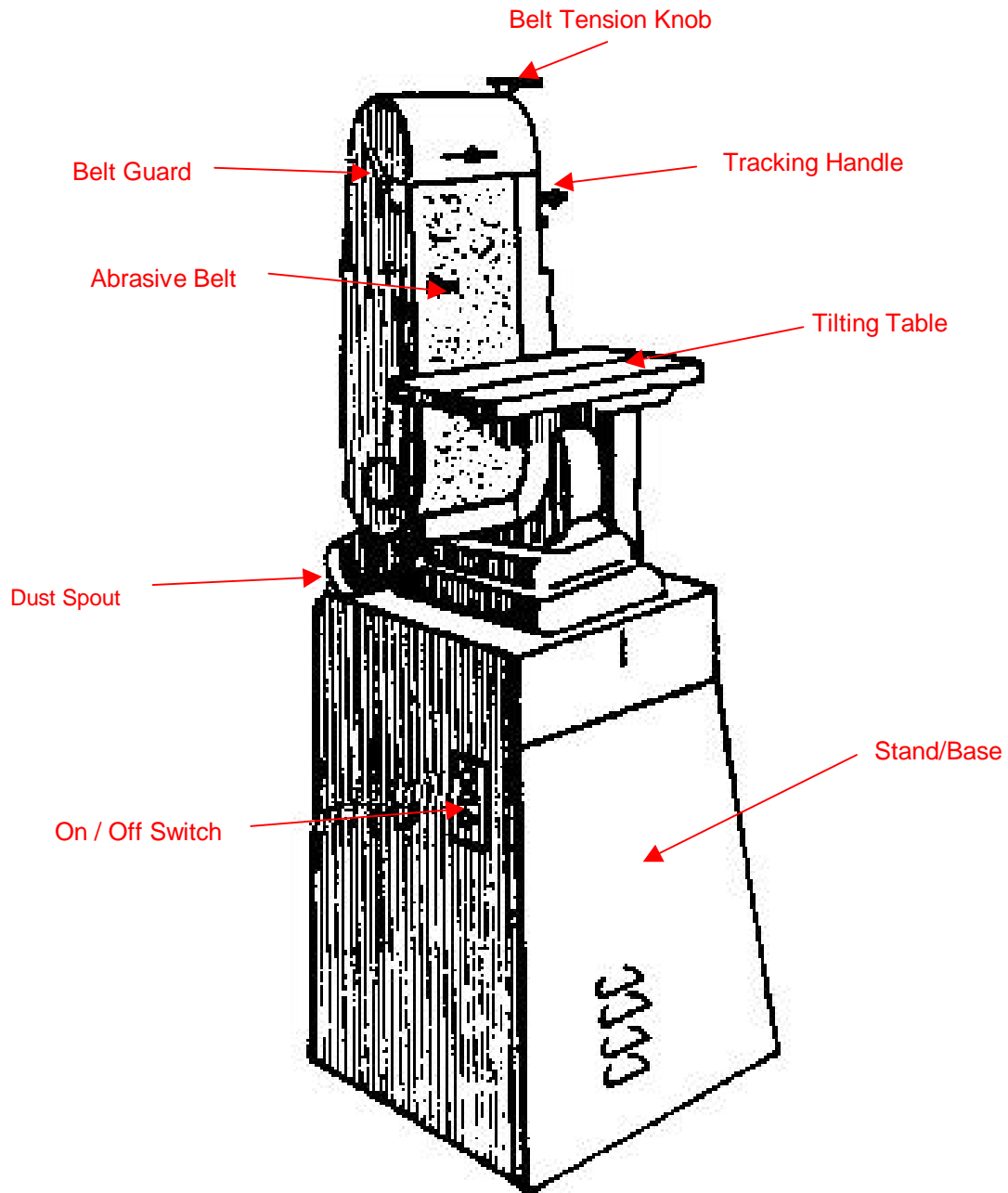
1. Push block
2. Dry
3. Not O.K.
4. On
5. 1/16"
6. Stationary
- 7.

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.



## ***Belt Finishing Sander Parts***



## Buffer Notes

### Requirements:

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. The *LEFT* side is for *BUFFING*; the RIGHT side is for CLEANING!
2. The buffer is to be used on plastics. Wood, or metal will contaminate the wheel and cause it to scratch and ruin your project.
3. If you need more buffing compound tell your teacher.
4. Buffing compound is basically a very fine sanding compound. It causes the plastic to heat up, and melt giving you a smooth finish. This means it can and will burn you if you touch it while it is on.
5. Make sure that all clothing, hair, and jewelry is secured or removed. They will get caught in this machine.
6. Work with a partner in case something does go wrong.
7. Hold your plastic with both hands, and buff towards the lower middle. Make sure you are holding the plastic vertically, or "UP/DOWN". Never hold it horizontally "SIDEWAYS", because this will ruin the buffing wheels material.
8. Never buff at the top, or very bottom of the wheel. Those are the spots where material easily gets caught and thrown, causing injuries.
9. Respect all machines, even the buffer, as "nice" as it looks, can cause a serious injury!
10. Remember, have patience and wait quietly behind the yellow line for your turn.
11. As with any machine if something goes wrong, turn it off, unplug it, and tell your teacher.

## Buffer Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. Wood, and metal (☐ Will ☐ Will not) contaminate the buffing wheel.
2. The buffing wheel will (☐ Burn ☐ Do nothing to) you.
3. The buffing compound is basically a real (☐ Fine ☐ Rough) sanding compound.
- 4/5. You should buff the plastic by holding it (☐ Horizontally ☐ Vertically) and buffing in the (☐ Lower Middle ☐ Upper) part of the wheel.
6. You should hold the material you are buffing with (☐ One ☐ Both) hand(s).
7. The buffer (☐ Can ☐ Can not) cause a serious injury.
- 8/9. Remember to wait (☐ Patiently ☐ Impatiently) behind the (☐ Red ☐ Yellow) line.
10. If you are not careful the buffer (☐ Will ☐ Will not) catch your material and throw it causing potential injuries.
11. If the machine is not working properly you should:  
\_\_\_\_\_

List five (5) SAFETY procedures you should do before you operate this machine:

12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_

## ***Buffer Written Test Key***

1. Will
2. Burn
3. Fine
4. Vertically
5. Lower middle
6. Both
7. Can
8. Patiently
9. Yellow
10. Will
11. Turn it off, unplug it, and tell the teacher immediately.

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## Buffer Hands-On Test

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Subject: \_\_\_\_\_

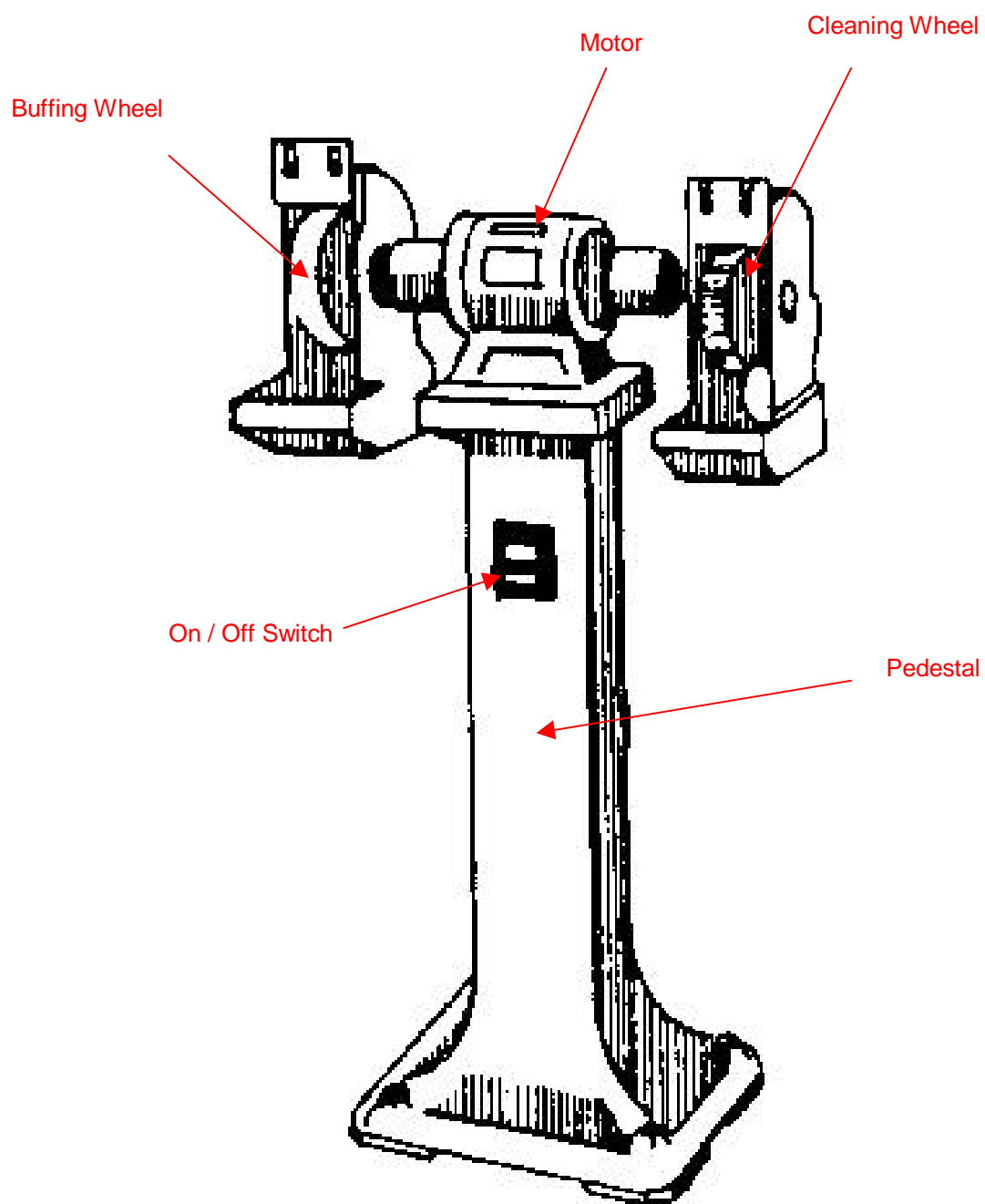
Per: \_\_\_\_\_

1. What does it do? \_\_\_\_\_
2. Why is it useful? \_\_\_\_\_
3. Can the student identify this machine (point to it)? (☐ Yes ☐ No)
4. Identify the following parts:  

<input type="checkbox"/> On/Off	<input type="checkbox"/> Cleaning Wheel
<input type="checkbox"/> Buffing Wheel	<input type="checkbox"/> Stand/Base
5. Safety procedures followed before using the machine:  

<input type="checkbox"/> Shirt tucked in	<input type="checkbox"/> Z87 safety glasses
<input type="checkbox"/> Hair secured	<input type="checkbox"/> Checks kick back zone
<input type="checkbox"/> Remove jewelry	<input type="checkbox"/> Gets help from/helps partner as needed
6. Procedures for operating machine (teacher designate):  
☐ Plastic – uses both hands to hold the plastic vertically and lower middle part of the wheel.  
☐ Hands – fingers stay at least 1 inch away from the buffing and cleaning wheels.  
☐ Feet – facing machine.  
☐ Eyes – watches to see where the fingers and plastic are going, and make sure that the fingers are now where near the wheel.
7. Makes two (2) safe and successful operations:  
1) ☐ Yes ☐ No  
2) ☐ Yes ☐ No
8. Makes sure that the machine has been shut down properly, that the area is clean, and puts tools away. ☐ Yes ☐ No

## ***Buffer Parts***



## ***Portable Circular Saw Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. As with any machine you must wear proper eye protection, pass ALL tests with 100%, and have your teacher's permission to operate it.
2. All stock must be well supported and securely clamped down.
3. Adjust the depth of cut to the thickness of the stock (material) plus 1/8".
4. Make sure the power cord is clear of the blade and that your work area is clean before you start cutting.
5. Check the base and angle adjustments to be sure they are tight.
6. Always place the base of the saw on the stock you will be cutting. Make sure that the blade is not actually touching the stock before you turn it on.
7. Advance the saw blade slowly and evenly making sure that it cuts straight through the work.
8. Never put the saw down until the blade has come to a complete stop!
9. Always unplug the machine to change the blades or to make any kind of adjustments.

## Portable Circular Saw Written Test

Use the correct heading & Write the ANSWER on your own Paper. Use the BEST answer to complete the following:

1. As with any machine you must wear proper eye protection, pass ALL tests a (☐ 85% ☐ 95% ☐ 100%), and have your teacher's permission to operate it.
2. It (☐ Is ☐ Is not) important to make sure that all stock is supported and securely clamped down.
3. Adjust the depth of cut to the thickness of the stock (material) plus (☐ 1/8" ☐ 1/2" ☐ 3/4")
4. The power cord (☐ Should ☐ Should not) be clear of the blade.
5. Your work area should be (☐ Clean ☐ Dirty) before you start cutting.
6. Check the base and angle adjustments to be sure they are (☐ Loose ☐ Tight)
7. Always place the base of the saw on the stock you will be cutting. Make sure that the blade (☐ Is ☐ Is not) actually touching the stock before you turn it on!
- 8/9. Advance the saw blade (☐ Slowly ☐ Quickly) and evenly making sure that it (☐ Angled ☐ Straight) through the work.
10. You should sit the saw down when the blade has come to a (☐ Half ☐ Full) stop!
11. You should \_\_\_\_\_ the machine to change the blades or to make any kind of adjustments.

List five (5) SAFETY procedures you should do before you operate this or any machine:

12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_



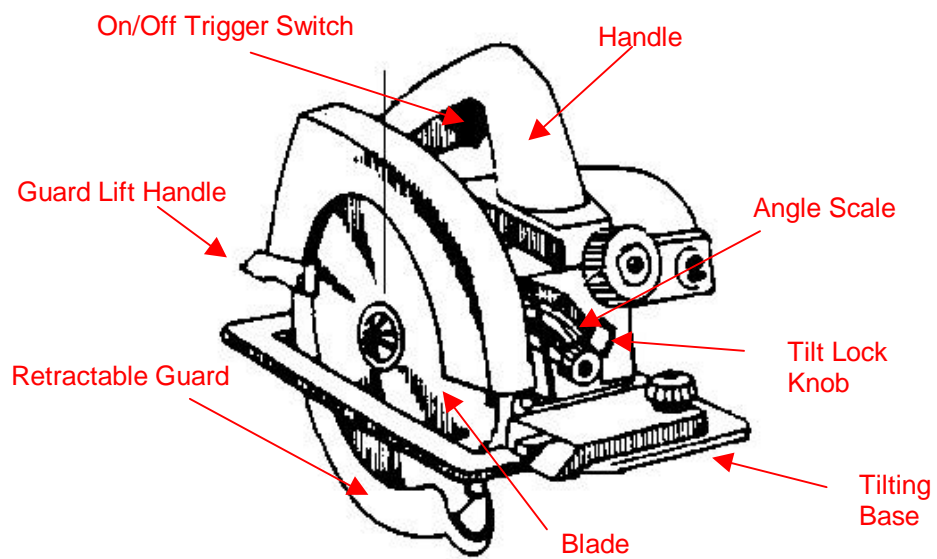
## ***Portable Circular Saw Written Test Key***

1. 100%
2. Is
3. 1/8"
4. Should
5. Clean
6. Tight
7. Is not
8. Slowly
9. Straight
10. Full
11. Unplug

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands

## ***Portable Circular Saw Parts***



## Craft Knife Safety Notes

You will use a Craft Knife in many activities or projects. There are different kinds of knives, but most have a removable blade that can be replaced when it becomes dull. Many also have a cap that fits over the blade when the knife is not in use.

These knives are very sharp and can be dangerous if used incorrectly. Accidents or injuries can be easily avoided if you follow some commonsense SAFETY rules when using these knives:

1. Do not use a knife with a dull blade.
2. Use a knife for cutting only; never use a knife to hammer, pry open, or unscrew.
3. Always use a culling board or special culling surface under the material you are cutting. Make sure the material being cut is lying flat on the cutting surface.
4. When cutting, always pull the knife away from your body. Never pull a knife toward your body.
5. Never throw a craft knife or blade.
6. Keep the blade covered with the protective cap, and return to its proper storage place when the knife is not in use.



## ***Crucible Furnace Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. As with any machine you must wear proper eye protection, pass ALL tests with 100%, and have your teacher's permission to operate it.
2. You must wear all necessary protective clothing; safety glasses, coats; leather gloves, face shield, shoes, and leg protectors.
3. Keep all flammable material away from the work area.
4. Preheat cold metal before placing it in the crucible. Do not just throw or toss the metal into crucible since that can cause a dangerous splash, use tongs to carefully place it inside.
5. Place the mold on the designated area BEFORE you begin to pour the metal.
6. Move cautiously and carry molten metal close to the mold to help reduce possible dangers.
7. Be very careful and make sure that you do not step on any molten metal.
8. Any unused and unattended metal should be placed in an area designated for this purpose.
9. To shut down make sure that you turn the "GAS" off first.

## Crucible Furnace Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. Safety glasses (☐ Are ☐ Are not) the only protective clothing that you need to wear.
2. You (☐ Should ☐ Should not) keep all flammable material away from the working area.
3. You (☐ Do ☐ Do not) need to preheat cold metal before placing it in the crucible.
4. To be SAFE you (☐ Should ☐ Should not) use the tongs to place metal inside the crucible.
5. Place mold in the designated area (☐ After ☐ Before) you begin to pour the metal.
6. Move very cautiously and carry molten / melted metal up close to the mold to help (☐ Increase ☐ Reduce) possible dangers.
7. It (☐ Is ☐ Is not) okay or SAFE to step on any molten metal.
8. Any unused and unattended metal should be placed (☐ Anywhere ☐ In an area designated).
9. To shut down make sure that you turn the (☐ Air ☐ Gas) off first.

List five (5) SAFETY procedures you should do before you operate this machine:

10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_

## ***Crucible Furnace Written Test Key***

1. Are not
2. Should
3. Do
4. Should
5. Before
6. Reduce
7. Is not
8. In an area designated
9. Gas

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## Crucible Furnace Hands-On Test

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Subject: \_\_\_\_\_

Per: \_\_\_\_\_

1. What does it do? \_\_\_\_\_

2. Why is it useful? \_\_\_\_\_

3. Can the student identify this machine (point to it)? (☐ Yes ☐ No)

4. Identify the following parts:

☐ Lid

☐ Fire Bow w/Crucible

☐ Pilot

☐ Lid Handle

☐ Air Control

☐ On/Off Switch

☐ Fire Brick

☐ Gas Control

☐ Igniter Switch

5. Safety procedures followed before using the machine:

☐ Shirt tucked in

☐ Z87 safety glasses

☐ Hair secured

☐ Checks kick back zone

☐ Remove jewelry

☐ Gets help from/helps partner as needed

6. Procedures for operating machine (teacher designate):

☐ \_\_\_\_\_

☐ \_\_\_\_\_

☐ \_\_\_\_\_

☐ \_\_\_\_\_

☐ \_\_\_\_\_

☐ \_\_\_\_\_

☐ \_\_\_\_\_

7. Makes two (2) safe and successful operations:

1) ☐ Yes ☐ No

2) ☐ Yes ☐ No

8. Makes sure that the machine has been shut down properly, that the area is clean, and puts tools away. ☐ Yes ☐ No

## ***Disc Sander Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Check the abrasive disk for tears, or loose areas. If it has any report them immediately.
2. The table should be 1/16" away from the disc.
3. Always sand on the down stroke side of the disk. Sanding on the up side will cause your wood to get caught and thrown, potentially causing serious damage to yourself, lab partners, or school property.
4. The disc sander is just as dangerous as any saw. Keep all parts of your body away from the disk as it rotates. Especially your fingers, it can cut or tear part of your finger off.
5. Sand objects that you can SAFELY hold against the table.
6. Remember always to hold your wood flat against the table. If you need wood sanded at an angle adjust the table accordingly.
7. Move your wood at an even, and steady pace/pressure across the surface of the rotating disk.
8. Use just enough pressure to do the job. Too much pressure can ruin the disk, machine, and cause injury to someone.
9. Always make sure that the dust collector is turned ON, and that the vent is OPEN.
10. Never leave the machine until it has come to a complete stop! You can help it stop by sanding down a piece of scrap wood. Never jam a piece of scrap wood into the machine.
11. As with every machine, if it is not working properly turn it off, and tell the teacher.
12. Remember to have patience, and wait quietly for your turn behind the yellow line.



## Disc Sander Written Test

Use the correct heading & Write the answer on your own paper. Use the BEST answer to complete the following:

1. It ☐ Is ☐ Is not important to check the abrasive disk for tears, or loose areas.
2. The table should be ☐ 1/2" ☐ 1/4" ☐ 1/16" away from the disc.
3. You sand on the ☐ Left ☐ Right side of the disc.
- 4/5. The disc sander ☐ Is ☐ Is not a potentially dangerous machine, because it ☐ Can ☐ Can not cut or tear part of your finger off.
6. You can SAFELY sand ☐ Small ☐ Big objects.
7. It ☐ Is ☐ Is not necessary to hold your wood flat against the table.
8. You can use a piece of scarp wood to slow the disc sander down by ☐ Jamming it into the disc ☐ Sanding it carefully down)
9. You ☐ Should ☐ Should not sand your wood with and even, steady pressure.
10. You should have patience, and quietly wait for your turn behind the ☐ Red ☐ Yellow line.
11. If the machine is not working properly you should: \_\_\_\_\_

List five (5) safety procedures you Should do before you operate this machine:

12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_

## ***Disc Sander Written Test Key***

1. Is
  2. 1/16"
  3. Left
  4. Is
  5. Can
  6. Big
  7. Is
  8. Sanding it carefully down.
  9. Should
  10. Yellow
  11. If the machine is not working properly, you should *(this question worth 25 points)*
- 

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## Disc Sander Hands-On Test

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Subject: \_\_\_\_\_

Per: \_\_\_\_\_

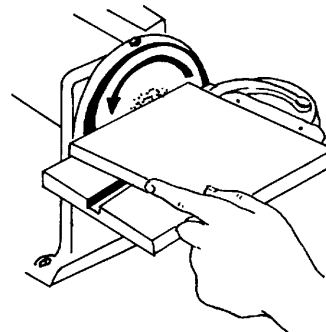
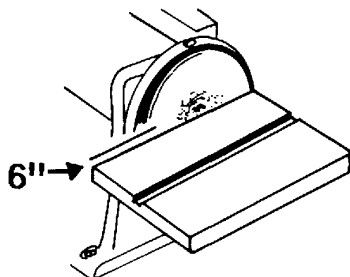
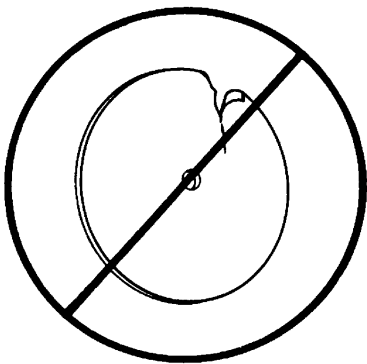
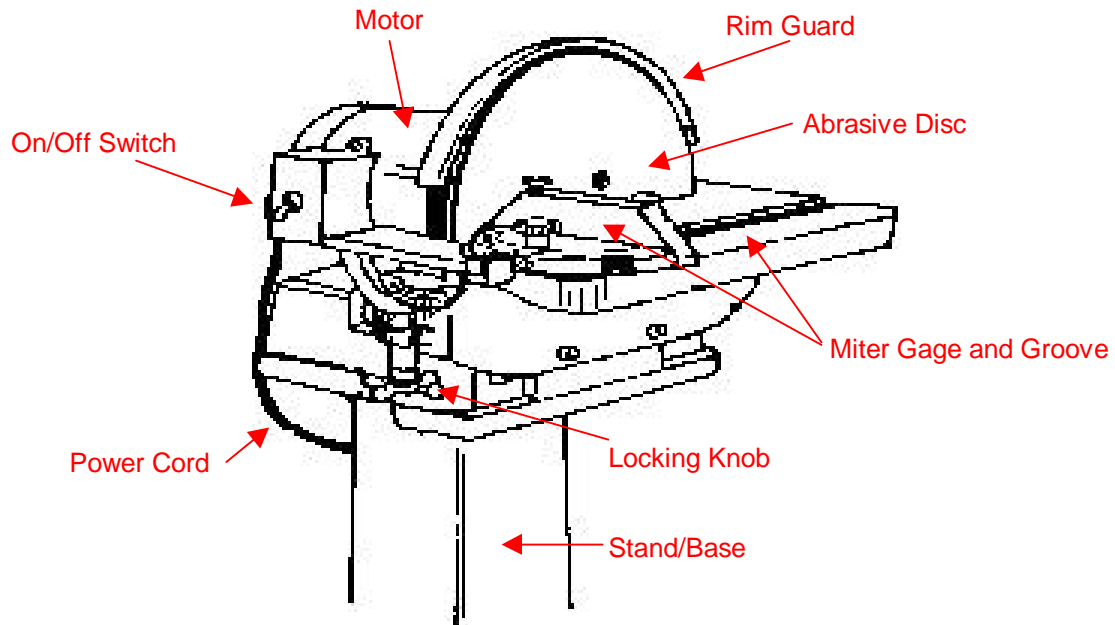
1. What does it do? \_\_\_\_\_
2. Why is it useful? \_\_\_\_\_
3. Can the student identify this machine (point to it)? (☐ Yes ☐ No)
4. Identify the following parts:

<input type="checkbox"/> On/Off switch	<input type="checkbox"/> Dust spout	<input type="checkbox"/> Power cord
<input type="checkbox"/> Tilting table	<input type="checkbox"/> Lock knob	<input type="checkbox"/> Motor
<input type="checkbox"/> Abrasive disc	<input type="checkbox"/> Rim Guard	
5. Safety procedures followed before using the machine:

<input type="checkbox"/> Shirt tucked in	<input type="checkbox"/> Z87 safety glasses
<input type="checkbox"/> Hair secured	<input type="checkbox"/> Checks kick back zone
<input type="checkbox"/> Remove jewelry	<input type="checkbox"/> Gets help from/helps partner as needed
6. Procedures for operating machine (teacher designate):

<input type="checkbox"/> Wood – uses both hands to hold the wood flat against the table.
<input type="checkbox"/> Hands – fingers stay at least 1 inch away from the abrasive disc.
<input type="checkbox"/> Scrap Wood – uses it to slowly sand the disc to a stop.
<input type="checkbox"/> Feet – facing the machine.
<input type="checkbox"/> Eyes – watches to see where the material is going and makes sure that the hands are no where near the disc.
7. Makes two (2) safe and successful operations:
  - 1) ☐ Yes ☐ No
  - 2) ☐ Yes ☐ No
8. Makes sure that the machine has been shut down properly, that the area is clean, and puts tools away. ☐ Yes ☐ No

## Disc Sander Parts



**Note: To be safe, sand on the down stroke/left side only!**

## ***Drill Press Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Always use a piece of scrap wood and set the table or stop to keep from drilling into the tabletop.
2. Use a clamp or vise grips to secure/fasten your wood to the table.
3. Make sure that your scrap wood, good wood, and any clamp you are using are the **ONLY** objects on the table. Other objects can get caught in the machine and cause injuries.
4. Use a "V-block" clamp for CO<sup>2</sup> cars, round, or irregular shaped stock.
5. Select the right size and type of bit. Wood bits for wood, metal bits for metal.
6. Use a center punch for a guide whenever possible. Always use a center punch when drilling into metal or hard woods.
7. Do not panic if the bit gets stuck in the wood. Turn the machine off. When it has completely stopped, remove the bit from your wood.
8. Select the correct drilling speed. For metal or hard woods and large drill bits you should use a slower speed.
9. Always remove the chips from the table after the machine is turned off and is no longer moving. Use a table brush, never your hands.
10. As with any machine, if it is not working properly you should always turn it off, unplug it, and tell a teacher.

## Drill Press Written Test

Use the correct heading and write the answer on your own paper. Use the BEST answer to complete the following:

1. You (☐ Should ☐ Should not) use a piece of scrap wood and a clamp or vise grip when using this machine.
- 2/3. Objects other than your wood and clamps (☐ Should ☐ Should not) be removed from the table top, because they can \_\_\_\_\_
4. Use a (☐ C-Block ☐ V-Block) to clamp down C0<sup>2</sup> cars and irregular stock.
5. The type of bit you select for drilling (☐ Is ☐ Is not) important.
6. You (☐ Should ☐ Should not) use a center punch when drilling into metal or hard woods.
7. You should use a (☐ Faster ☐ Slower) drill speed when drilling into metals, hard wood, and with larger drill bits.
- 8/9. (☐ Do ☐ Do not) panic if the bit gets stuck in the wood, you should:  
\_\_\_\_\_.
10. You should remove chips from the table with your (☐ Hand ☐ Table broom).
11. As with any machine, if it is NOT working properly you should:  
\_\_\_\_\_

List Five (5) safety procedures you should do before you operate this machine:

12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_

## ***Drill Press Written Test Key***

1. Should
2. Should
3. Get caught in the machine, thrown, and cause an injury.
4. V-Block
5. Is
6. Should
7. Slower
8. Do not
9. Turn it off and carefully remove the drill bit and get help if you need it.
10. Table broom
11. Turn it off, unplug it, and tell the teacher.

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## Drill Press Hands-On Test

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Subject: \_\_\_\_\_

Per: \_\_\_\_\_

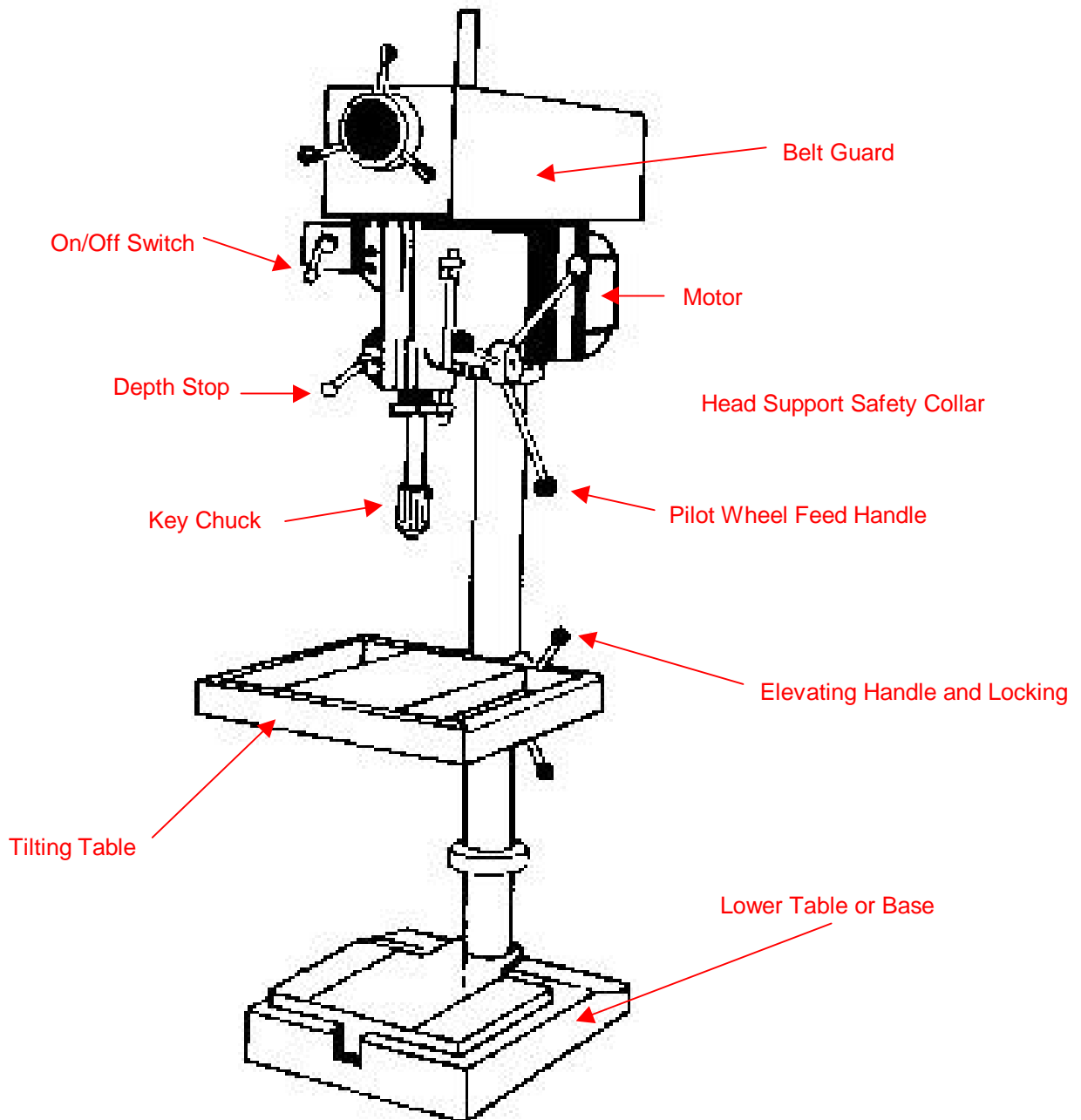
1. What does it do? \_\_\_\_\_
2. Why is it useful? \_\_\_\_\_
3. Can the student identify this machine (point to it)? ☐ Yes ☐ No
4. Identify the following parts:

<input type="checkbox"/> On/Off Switch	<input type="checkbox"/> Head Support Safety Collar	<input type="checkbox"/> Column
<input type="checkbox"/> Tilting Table	<input type="checkbox"/> Motor	<input type="checkbox"/> Tilt Angle Lock Knob
<input type="checkbox"/> Base	<input type="checkbox"/> Belt Guard	
<input type="checkbox"/> Key Chuck	<input type="checkbox"/> Depth Stop	
<input type="checkbox"/> Pilot Wheel Feed	<input type="checkbox"/> Table Locking Clamp	
5. Safety procedures followed before using the machine:

<input type="checkbox"/> Shirt tucked in	<input type="checkbox"/> Z87 safety glasses
<input type="checkbox"/> Hair secured	<input type="checkbox"/> Checks kick back zone
<input type="checkbox"/> Remove jewelry	<input type="checkbox"/> Gets help from/helps partner as needed
6. Procedures for operating machine (teacher designate):
  - ☐ Depth Stop – makes sure that it is set to avoid drilling into the tabletop.
  - ☐ Scrap Wood – uses to avoid drilling into the tabletop.
  - ☐ Left Hand – holds the wood flat or it's clamped down.
  - ☐ Right Hand – guides the wheel feed (or vise versa).
  - ☐ Feet – facing the machine.
  - ☐ Key Chuck – tightens down the chuck key in at least two (2) places (*righty tighty /lefty loosy*).
  - ☐ Eyes – watching to see where the bit is going and making sure that the body goes no where near it.
7. Makes two (2) safe and successful operations:
  - 1) ☐ Yes ☐ No
  - 2) ☐ Yes ☐ No
8. Makes sure that the machine has been shut down properly, that the area is clean, and puts tools away. ☐ Yes ☐ No



## ***Drill Press Parts***



## ***Equipment Safety Notes***

### **A. Preparation**

1. Wear safety glasses for all machine operations.
2. Secure loose clothing and remove jewelry or clothing accessories that may get caught in the machine.
3. Clear area of scraps.
4. Position guards.
5. Set up machine for the specific operation. If the machine is computer controlled, step through the program.
6. Position stock for the machine operation.
7. Consider physical demands and use a helper if necessary.
8. Check with instructor before performing the operation.

### **B. Task Performance**

1. Mentally review the operational procedure and machine safety rules.
2. Focus full attention on the machine operation.
3. Never leave the machine.
4. If a problem is encountered, stop the machine at a safe point.
5. Make machine or stock adjustments only when machine motion has stopped.

### **C. Termination**

1. Make sure machine is turned off and all motion has stopped.
2. Remove scrap material that accumulated during the operation.
3. Return the machine to its customary setup.

# Gas Forge Notes

## Requirements:

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. As with any machine you must wear proper eye protection, pass ALL tests with 100%, and have your teacher's permission to operate it.
2. Make sure that the area is clear of any type of flammable material and make sure the area is well ventilated.
3. Keep top OPEN while lighting.
4. Follow all sequential instructions for igniting gas and air; review them if you have questions about operating procedures.
5. Use tongs or pliers to handle HOT metal.
6. To be SAFE, treat all metal that may be around the furnace as being HOT.
7. Wear leather gloves, like for welding, and long sleeve shirts when handling HOT material.
8. ALL unattended/unused HOT metal should be placed in a specific designated area.
9. Make sure that you stand so that your face is protected when quenching metal.
10. Shut off the "GAS" first and "AIR" last when you are finished using the forge.
11. MAKE SURE that all of the valves are tightly turned OFF.
12. It doesn't matter if they are WARM or HOT, quench the tongs before putting them away.

## Gas Forge Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. You (☐ Should ☐ Should not) make sure that the area is clear of any type of flammable material and that the area is well ventilated.
2. Keep the top (☐ Open ☐ Closed) while lighting.
3. You should use tongs or pliers to handle (☐ Should ☐ Should not) metal.
4. To be SAFE you (☐ Should ☐ Should not) treat all metal that may be around the furnace as if it is HOT.
- 5/6. Wear (☐ Cloth ☐ Leather) gloves and (☐ Long ☐ Short) sleeve shirts when handling HOT material.
7. ALL unattended/unused HOT metal (☐ Should be placed in a specific area designated and marked ☐ Just placed near the forge).
8. Make sure that you (☐ Sit ☐ Stand) so that your face is protected when quenching metal.
- 9/10. You should FIRST shut off the (☐ Air ☐ Gas) and (☐ Air ☐ Gas) LAST when you are finished using the forge.
11. MAKE SURE that all of the valves are tightly turned (☐ On ☐ Off).
12. You should (☐ Quench ☐ Do nothing to) the tongs before putting them away.

List five (5) SAFETY procedures you should do before you operate this machine:

13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_
17. \_\_\_\_\_

## ***Gas Forge Written Test Key***

1. Should
2. Open
3. Hot
4. Should
5. Leather
6. Long
7. Should be placed in a specific area designated and marked.
8. Stand
9. Gas
10. Air
11. Off
12. Quench

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## Gas Forge Hands-On Test

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Subject: \_\_\_\_\_

Per: \_\_\_\_\_

1. What does it do? \_\_\_\_\_
2. Why is it useful? \_\_\_\_\_

3. Can the student identify this machine (point to it)? (☐ Yes ☐ No)

4. Identify the following parts:

- |                                     |                                       |   |
|-------------------------------------|---------------------------------------|---|
| <input type="checkbox"/> Lid        | <input type="checkbox"/> Work Rack    | <input type="checkbox"/> Blower         |
| <input type="checkbox"/> Lid Handle | <input type="checkbox"/> Air Control  | <input type="checkbox"/> Gas Control    |
| <input type="checkbox"/> Fire Box   | <input type="checkbox"/> Blower Motor | <input type="checkbox"/> Igniter Switch |
| <input type="checkbox"/> Fire Brick |                                       |   |

5. Safety procedures followed before using the machine:

- |  |   |
|--|---|
| <input type="checkbox"/> Shirt tucked in | <input type="checkbox"/> Z87 safety glasses                     |
| <input type="checkbox"/> Hair secured    | <input type="checkbox"/> Checks kick back zone                  |
| <input type="checkbox"/> Remove jewelry  | <input type="checkbox"/> Gets help from/helps partner as needed |

6. Procedures for operating machine (teacher designate):

- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_

7. Makes two (2) safe and successful operations:

1) ☐ Yes ☐ No

2) ☐ Yes ☐ No

8. Makes sure that the machine has been shut down properly, that the area is clean, and puts tools away. ☐ Yes ☐ No

# General Safety – Part I

## Requirements:

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Always wear eye protection. Wear safety glasses, goggles or a face shield.
2. Get the instructor's permission before you use the equipment.
3. Use the equipment *only* when the instructor is in the laboratory.
4. Report all accidents, near accidents or injuries to the instructor immediately.
5. Don't use tools or equipment that are in any way defective. Tell the instructor if a tool is dull or broken or isn't working properly.
6. Don't use any equipment until you have been shown how to use it correctly and safely. Don't use it unless you understand the instructions.
7. Keep clothes tucked in and sleeves neatly rolled up. Loose clothing can get caught in a machine and cause an injury.
8. If your hair is long, tie it back or wear a cap over it. Long hair can be caught in a moving machine.
9. Remove rings, bracelets, watches and, necklaces before you do any work in the laboratory. Watches and jewelry should not be worn in the laboratory.
10. Don't wear gloves when you use the tools or operate any of the equipment. The only time it's OK to wear gloves is when you're handling rough lumber.
11. Wear protective shoes. Wear hard shoes or boots with rubber soles and rubber heels. *Don't* wear sandals in the laboratory.
12. Wear approved ear protection around loud, noisy equipment.
13. Wear a dust mask or an air filter when working around a lot of wood dust. Wood dust can be harmful if inhaled.
14. Use finishing materials, thinners or other oily or flammable liquids only in well-ventilated areas.

15. Clean up spills. Don't leave anything on the floor that someone could slip on.
16. Keep used rags in an approved, covered metal container. Damp, oily rags can ignite through spontaneous combustion. The heat produced by oxidation is enough to start a fire.
17. Know where the fire extinguishers are located and know how to use them *before* there is an emergency.
18. Keep cabinet doors and drawers closed.
19. Aisles have to be kept clear and free of litter, scraps, and materials. Don't leave anything on the floor that could be tripped over or slipped on.
20. Vises should be kept closed when they're not in use.



## General Safety Part I Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. Always wear eye (☐ Protection ☐ Drops).
2. Use equipment only with the instructor's (☐ Protection ☐ Permission).
3. Use the equipment only when the (☐ Principal ☐ Instructor) is in the laboratory.
4. (☐ Ignore ☐ Report) all accidents or injuries.
5. Do not use (☐ Defective ☐ Clean) equipment.
6. Never use equipment until you have been properly (☐ Instructed ☐ Protected) in its use.
7. Loose clothing can cause (☐ Protection ☐ Injuries).
8. Long hair must be (☐ Tied back ☐ Braided) or covered with a cap.
9. No (☐ Jewelry ☐ Aprons) should be worn in the laboratory.
10. Never wear gloves except when handling (☐ Smooth ☐ Rough) lumber.
11. Wear (☐ Covered ☐ Closed) shoes or boots.
12. Approved protection earmuffs should be worn around (☐ Dirty ☐ Noisy) equipment.
13. A (☐ Dust mask ☐ Face shield) must be worn when working where there is wood dust.
14. Finishing materials should only be used in well (☐ Ventilated ☐ Drafty) areas.
15. Always (☐ Ignore ☐ Clean up) spilled materials.
16. Used rags are to be kept in a covered (☐ Metal ☐ Plastic) container.
17. Locate the (☐ Fire extinguishers ☐ Air hoses) and learn how to use them.
18. Keep cabinet doors and drawers (☐ Open ☐ Closed).

19. Never leave anything on the (☐ Floor ☐ Workbench) that could be slipped on or tripped over.
20. (☐ Open ☐ Close) vises when they are not in use.

## ***General Safety Part I Written Test Key***

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.
- 15.
- 16.
- 17.
- 18.
- 19.
- 20.

## ***General Safety – Part II***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

21. Keep workbenches clear and organized. Don't pile up tools and don't lay tools down so they hang over the edge of the bench.
22. Always use a brush or a rag to clear away sawdust and scraps. Never use your hands to wipe off a surface.
23. Use the right tool for the job. Use the tool only for what they're designed to do. Use the right size tool.
24. Carry pointed or sharp tools with the point or edge held down toward the floor. This will help avoid injuries if you bump into something or if someone bumps into you.
25. When you hold a tool, hold it by the handle. When you hand someone a tool, hold it so they can take it by the handle.
26. When you're finished with a tool return it to its proper storage area. Return it to the tool room, tool rack or cabinet where it belongs.
27. If you're handling large or heavy materials, get someone to help you. Also, ask someone to help or 'tail-off' for you when you cut a large piece of material on a machine.
28. Lift with your legs, not with your back. Lifting improperly or carelessly can cause severe back injuries.
29. Be sure your hands are dry and that you're standing on a dry floor when you use electrical devices.
30. Check the condition of the power cord. Don't use the equipment if the insulation on the cord is damaged, cut or frayed. Tell the instructor.
31. When you disconnect a power cord, pull the plug; don't yank on the cord. Hold the plug and pull it out of the outlet.
32. Use all the recommended guards and safety devices on the power equipment. Never remove a guard without the instructor's permission.

33. Disconnect the power equipment any time you need to make major changes or adjustments. Unplug the tool or machine or disconnect it at the circuit breaker panel. If you disconnect the circuit breaker, put up a sign: "Don't Connect."
34. Turn off the machine any time you make minor changes or adjustments. Never adjust equipment while it's running. Wait for it to come to a complete stop before you make the adjustment.
35. Do not, any time you leave a machine, it off and stay with it until it comes to a complete stop.
36. When you approach a machine to use it, make sure the person who used it before you turned it off. Make sure it's completely stopped.
37. Respect the safety zones. Stay away from anyone operating the power equipment. Don't talk to them or distract them in any way. Don't let anyone distract you when you're using the equipment.
38. Concentrate on what you're doing; give it your full attention. If you don't feel well or if there's some reason you can't concentrate, tell your instructor.
39. Work at a safe speed. Don't rush or hurry through a project. Working too fast is dangerous and it will result in poor craftsmanship.
40. Don't fool around in the shop! There are no exceptions to this: Don't ever play around in the shop.

## General Safety Part II Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

21. Workbenches should be kept (☐ Clear ☐ Cluttered) and organized.
22. Use (☐ Your hands ☐ A brush) or a rag to clear away scraps and sawdust.
23. Tools should be used only for what they are (☐ Designed to do ☐ Easiest to use).
24. (☐ Dull ☐ Sharp) tools should be carried with the edge or point held down toward the floor.
25. A tool should always be held by the (☐ Cord ☐ Handle).
26. When you are finished with a tool, return it to its (☐ Assigned storage area ☐ Where you found it).
27. Ask for (☐ Permission ☐ Help) when you need to handle large or heavy material.
28. Lift with your (☐ Neck ☐ Legs) not with your back.
29. Never handle (☐ Electrical ☐ Writing) equipment if your hands are wet or if you are standing on a wet floor.
30. Equipment with a (☐ Damaged ☐ Clean) power cord should be reported to the instructor. It should not be used.
31. Don't yank on the power cord to disconnect a tool. Pull the (☐ Plug ☐ Socket).
32. Use all the recommended (☐ Guards ☐ Obstructions) and other safety devices when you operate power equipment.
33. Always disconnect the power equipment before you make any major (☐ Mistakes ☐ Adjustments).
34. Never adjust equipment while it is (☐ Stopped ☐ Running).
35. When you turn off a machine, stay with it until it is (☐ Almost ☐ Completely) stopped.
36. Before you use a machine, make sure the person who used it before you has turned it off and it is completely (☐ Stopped ☐ Clean).

- 37. Don't (☐ Distract ☐ Leave alone) anyone while they are operating the equipment.
- 38. Using tools and equipment requires your complete (☐ Attention ☐ Help) at all times.
- 39. Always work at a (☐ Fast ☐ Safe) speed.
- 40. Never fool around or (☐ Play ☐ Concentrate) in the laboratory.

## ***General Safety Part II Written Test Key***

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.
- 15.
- 16.
- 17.
- 18.
- 19.
- 20.
- 21.
- 22.
- 23.
- 24.
- 25.
- 26.
- 27.
- 28.
- 29.
- 30.
- 31.
- 32.
- 33.
- 34.
- 35.
- 36.
- 37.
- 38.
- 39.
- 40.



## ***Grinder Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. With this machine you must wear proper eye protection, a face shield, pass ALL tests with 100%, and have your teacher's permission to operate it.
2. Set the tool rest and spark deflector so that they are 1/16" to 1/8" away from the wheel.
3. Hold work firmly and securely with both hands. Remember that small pieces require special set-ups.
4. Never stand directly in front of the grinding wheel. Stand to the side when you start this machine.
5. Grind using only the face of the wheel, never use the sides.
6. Press material against the wheel with just enough pressure that you cause a steady, even removal of metal. This will happen with practice, do not become discouraged on your first try.
7. Again, move stock slowly and evenly across the face of the wheel, not the sides.
8. Never leave the machine until the grinding wheels have come to a complete stop, even if someone will be using it right after you do.

## Grinder Written Test

Use the correct heading and write the answer on your own paper. Use the BEST answer to complete the following:

1. With this machine you must wear proper eye protection, a \_\_\_\_\_, pass ALL tests with 100%, and have your teacher's permission to operate it.
2. Set tool rest and spark deflector so that they are (☐ 1/8" ☐ 1/4" ☐ 1/2") away from the wheel.
3. Hold work firmly and securely with (☐ One ☐ Both) hand(s).
4. Remember that small pieces (☐ Will ☐ Will not) require special set-ups.
5. You should stand (☐ Directly in front of ☐ To the side) when you start this machine.
6. Grind using the (☐ Face ☐ Sides) of the wheel.
7. Press material against the wheel with (☐ A lot of ☐ Just enough) pressure so that you cause a steady and even removal of metal.
8. Again, move stock slowly and evenly across the (☐ Face ☐ Sides) of the wheel.
9. You can leave the machine when the grinding wheels have come to a (☐ Half ☐ Full) stop.

List five (5) SAFETY procedures you should do before you operate this or any machine:

10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_

## ***Grinder Written Test Key***

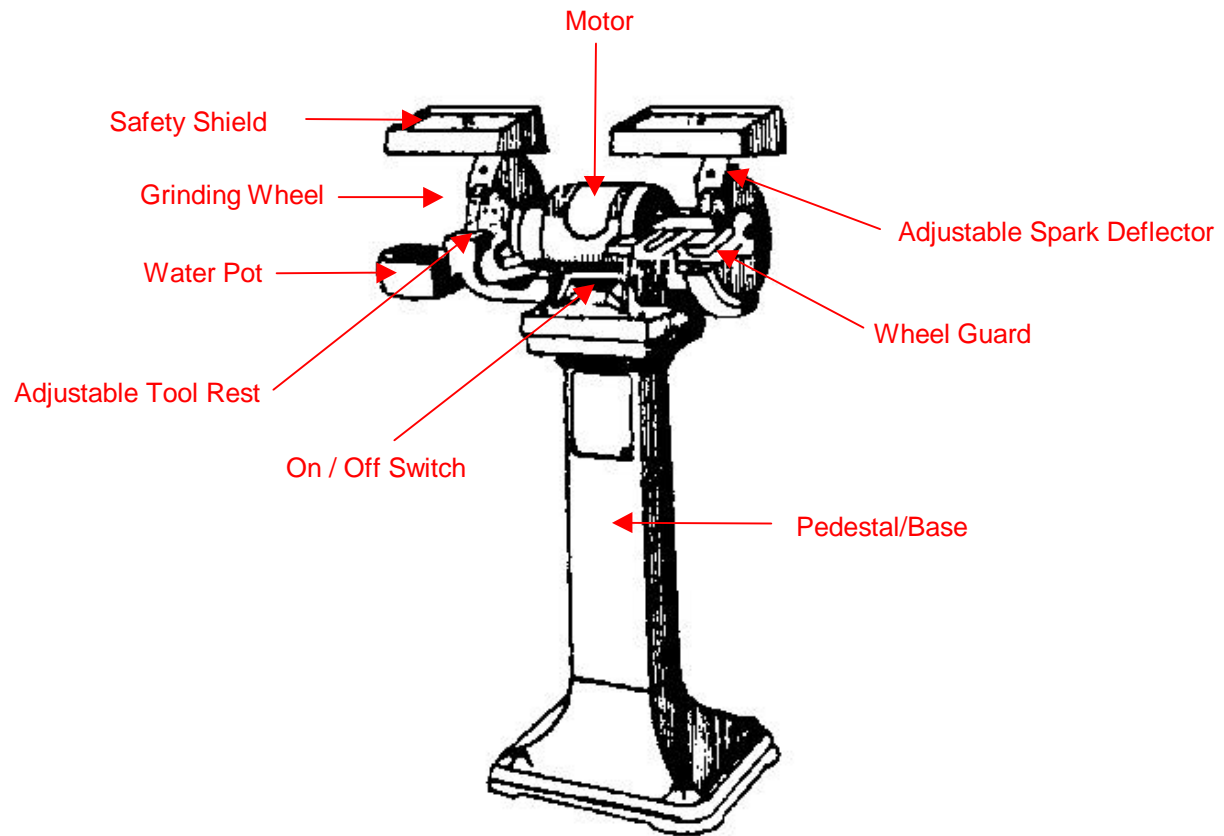
Use the correct heading and write the answer on your own paper. Use the BEST answer to complete the following:

1. Face shield
2. 1/8"
3. Both
4. Will
5. To the side
6. Just enough
7. Face
8. Full

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## Grinder Parts



# ***Hand Tool Safety***

## **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Wear eye protection. Always wear safety glasses, goggles, or a face shield when you work in the laboratory.
2. Always use the right type of tool for the job. Use the tool designed for the work you want to do.
3. Use the right size tool. Don't try to do heavy work with a small, light tool; don't try to do fine work with large, heavy-duty tools. Use the tool that suits the work.
4. Before you use a tool, check it to be sure it's clean and in good condition.
5. Never use your hands or fingers to test whether or not a tool is sharp. If the tool is as sharp as it should be, you'll cut yourself.
6. Be sure the tool handle is fitted tightly and securely.
7. Don't use a dull, broken or defective tool. Report defective or damaged equipment to the instructor.
8. Always carry tools by the handle.
9. When you carry a tool, hold it so the point or sharp edge is aimed down toward the floor.
10. Avoid holding the work with one hand while you use the tool with the other hand. Fasten the work down so you'll have both hands to use the tools.
11. Plan the work so you can keep your balance. Always keep your weight on both feet, and don't over-reach.
12. Don't lay tools down near the edge of the bench. Don't lay tools down where they could roll off, where someone could bump into them or where someone could trip over them.
13. Never aim a cutting tool toward your hands, arms or body. Aim the tool away from you and away from others, whether you are working with it or just holding it.

14. Always keep your hands and arms out of the path of a cutting tool. Keep hands and arms behind the cutting edge.
15. When you are finished with a tool, return it to its assigned storage area. Don't leave tools lying around.
16. Use the tools *only* if you understand how to use them correctly and safely. If you're not sure, check with the instructor.

## Hand Tool Safety Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. Always wear (☐ Eye protection ☐ Loose clothing) in the shop.
2. Use only the type of tools that are (☐ Defective ☐ Designed) for the work you are doing.
3. Always use the right (☐ Size ☐ Small) tool for the job.
4. Check tools to be sure they are sharp, (☐ Clean ☐ Large) and in good condition before you use them.
5. Don't use your (☐ Finger ☐ Shirt) to test whether or not a tool is sharp.
6. Be sure the tool handle is fitted (☐ Loosely ☐ Tightly) and securely.
7. Don't use a tool that is dull, broken or (☐ Defective ☐ Working).
8. Tools should always be carried by the (☐ Blade ☐ Handle).
9. Carry sharp tools so the edge or the point is aimed down towards the (☐ Floor ☐ Ceiling).
10. The material should be fastened down so that (☐ Both ☐ No) hands are left free to use the tools.
11. Plan the work so you can keep your (☐ Fingers ☐ Balance) at all times. Plan it so you don't have to over-reach.
12. Never lay tools down near the (☐ Edge ☐ Center) of the bench where they could roll off, or where someone could bump into them.
13. (☐ Never ☐ Always) aim a cutting tool toward yourself or toward anyone else.
14. Keep your hands and arms (☐ Near ☐ Away from) the cutting edge of the tool.
15. Tools that are not in use should be returned to the (☐ Assigned storage area ☐ Where you found them).
16. Tools should be used only if you understand how to use them (☐ Sort of ☐ Correctly) and safely.

## ***Hand Tool Safety Written Test Key***

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.
- 15.
- 16.



## ***Horizontal Milling Machine Written Test***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. As with any machine you must wear proper eye protection, pass ALL tests with 100%, and have your teacher's permission to operate it.
2. Turn the power OFF before you make any measurements or adjustments.
3. Be sure the holding device is mounted solidly to the table and the work is held firmly.
4. Never reach over or near the rotating center.
5. Cutters should not be handled with bare hands, make sure that you are wearing protective gloves.
6. Always use a small brush like a table broom to remove chips and never clear chips away while the machine is in operation.
7. Do not leave the machine while it is working. Remain with the machine for the duration of the cut.
8. Keep the floor around the machine clear of chips, and wipe up spilled cutting fluid immediately.
9. Make sure that you store all oily rags used to wipe down the machine in an approved metal container that can be closed tightly.

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. Turn the power (☐ On ☐ Off) before you make any measurements or adjustments.
2. Be sure the holding device (☐ Is ☐ Is not) mounted solidly to the table and the work is held firmly.
3. You (☐ Can ☐ Can not) SAFELY reach over or near the rotating center.
4. Cutters should be handled with (☐ Bare ☐ Gloved) hands.
5. You (☐ Should ☐ Should not) use a small brush like a table broom to remove chips.
6. It (☐ Is ☐ Is not) SAFE to clear chips away while the machine is in operation.
7. It is (☐ Safe ☐ Unsafe) to leave the machine while it is working.
8. Keep the floor around the machine (☐ Clean ☐ Messy).
9. You (☐ Do ☐ Do not) need to wipe up spilled cutting fluid immediately.
10. Make sure that you store all oily rags used to wipe down the machine in an approved (☐ Rubber ☐ Metal) container that can be closed tightly.

List five (5) SAFETY procedures you should do before you operate this machine:

11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_

## ***Horizontal Milling Machine Written Test Key***

1. Off
2. Is
3. Can not
4. Gloved
5. Should
6. Is not
7. Unsafe
8. Clean
9. Do
10. Metal

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## Horizontal Milling Machine Hands-On Test

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Subject: \_\_\_\_\_

Per: \_\_\_\_\_

1. What does it do? \_\_\_\_\_
2. Why is it useful? \_\_\_\_\_

3. Can the student identify this machine (point to it)? (☐ Yes ☐ No)

4. Identify the following parts:

- |                                       |   |  |
|---------------------------------------|---|--|
| <input type="checkbox"/> Over Arm     | <input type="checkbox"/> Cross Feed Handwheel | <input type="checkbox"/> Arbor Support Bracket       |
| <input type="checkbox"/> Table        | <input type="checkbox"/> Table Raising Crank  | <input type="checkbox"/> Level for Back Gear         |
| <input type="checkbox"/> Cabinet Base | <input type="checkbox"/> Power Table Feed     | <input type="checkbox"/> Longitudinal Feed Handwheel |
| <input type="checkbox"/> Arbor        | <input type="checkbox"/> Saddle               | <input type="checkbox"/> Knee                        |

5. Safety procedures followed before using the machine:

- |  |   |
|--|---|
| <input type="checkbox"/> Shirt tucked in | <input type="checkbox"/> Z87 safety glasses                     |
| <input type="checkbox"/> Hair secured    | <input type="checkbox"/> Checks kick back zone                  |
| <input type="checkbox"/> Remove jewelry  | <input type="checkbox"/> Gets help from/helps partner as needed |

6. Procedures for operating machine (teacher designate):

- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_
- ☐ \_\_\_\_\_

7. Makes two (2) safe and successful operations:

1) ☐ Yes ☐ No

2) ☐ Yes ☐ No

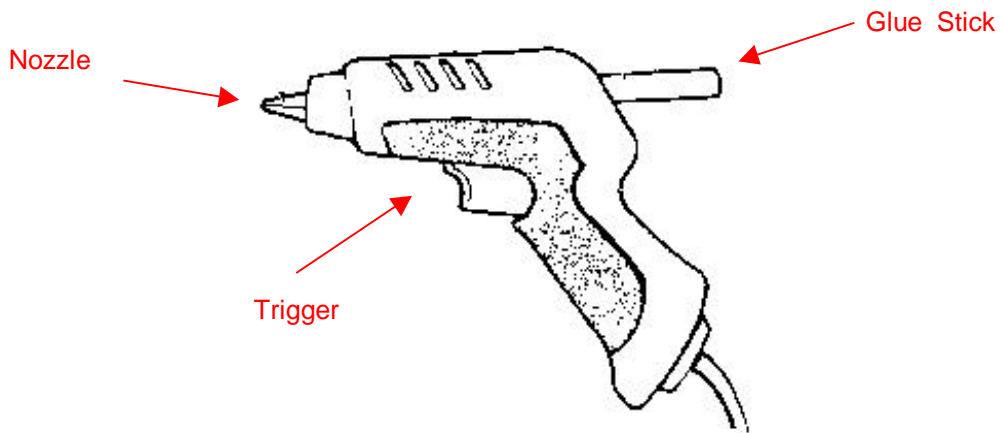
8. Makes sure that the machine has been shut down properly, that the area is clean, and puts tools away. ☐ Yes ☐ No

## Hot Glue Gun Safety Notes

You will use a hot glue gun on some activities or projects. A glue HOT gun provides melted glue that dries quickly and provides a very strong bond.

Because the HOT glue can cause burns, you must follow these SAFETY rules when using the gun:

1. Never touch the melted glue or the nozzle of the glue gun.
2. Do not put anything except glue sticks into the glue gun.
3. Use the correct size glue sticks in the glue gun. Do not try to trim a glue stick that is too big.
4. Wait until the glue has melted completely before using it on your project. Test the glue by squirting a small amount on a piece of scrap material. It should be runny and soft.
5. Be careful when holding glued pieces together. Melted glue can soak through thin or porous material and cause burns.



## ***Impact Wrench Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Be sure the trigger is in the "OFF" position before connecting the air supply.
2. Use only black impact sockets designed for use with power equipment.
3. Secure all work with clamps or tightly in a vise.
4. Set torque control for correct tightness before starting the job.
5. Be sure both hands are free to properly operate the impact tool.
6. Maintain balance and firm footing at all times.
7. Always use the tool in short bursts of power.
8. Disconnect the airline at the tool when not in actual use.

## Impact Wrench Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. Be sure all work (☐ Is ☐ Is not) secured with clamps or tightly in a vise.
2. (☐ Firm ☐ Flexible) footing is required of the operator at all times.
3. The (☐ Chrome ☐ Black) sockets are designed for impact wrenches.
4. The tool should be disconnected from the airline at the (☐ Hose whip ☐ Tool).
5. The impact wrench must be (☐ Disconnected ☐ Connected) when not in actual use.
6. (☐ Long ☐ Short) bursts of power should always be used to operate the tool.
7. If the machine is not working properly you should:  
\_\_\_\_\_

List five (5) SAFETY procedures you should do before you operate this or any machine:

8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_

## ***Impact Wrench Written Test Key***

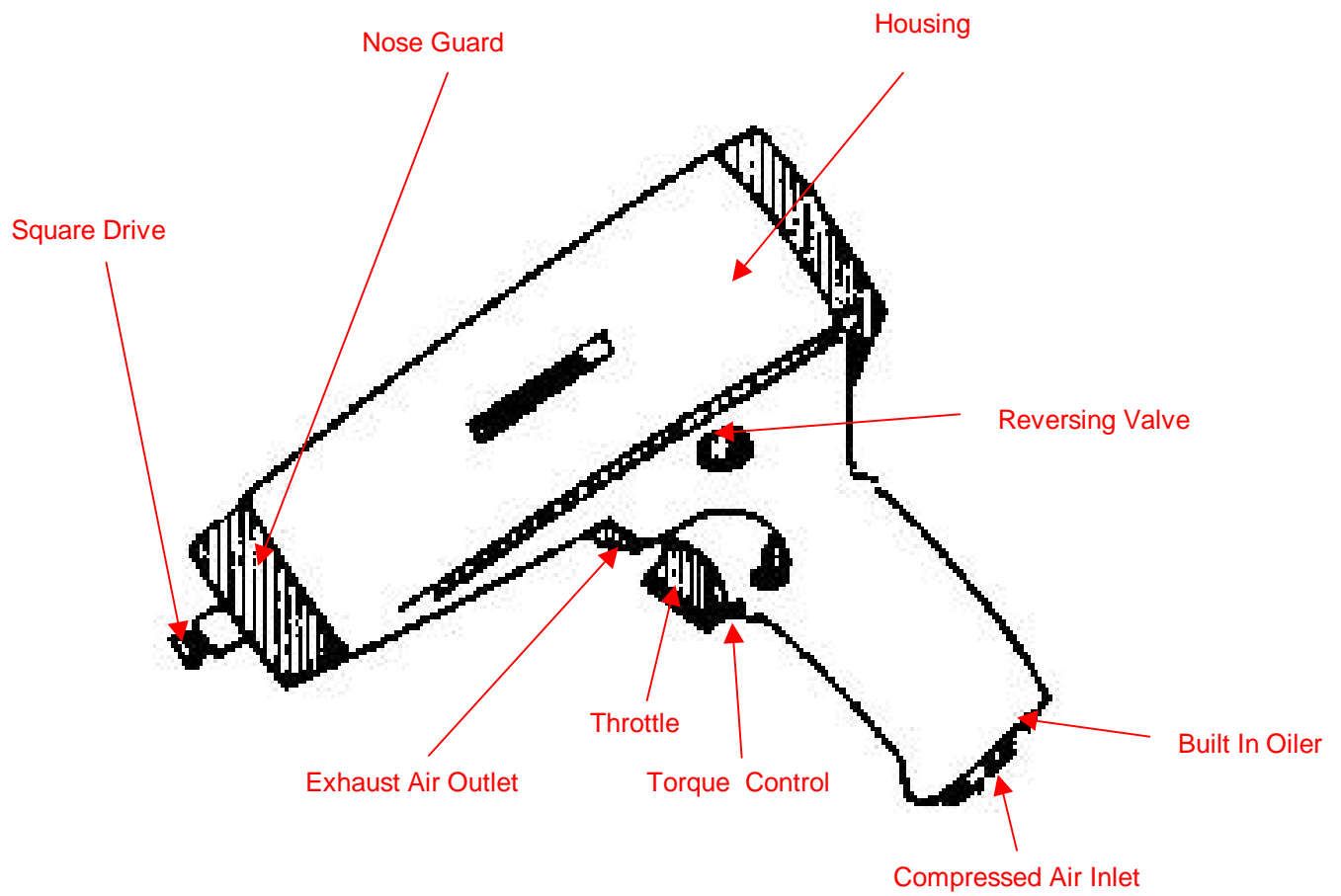
1. Is
2. Firm
3. Black
4. Tool
5. Disconnected
6. Short

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.



## ***Impact Wrench Parts***



## Jig/Bayonet Saw Notes

### Requirements:

1. As with any machine, you must wear proper eye protection, pass ALL tests with 100% and have your teacher's permission to operate it.
2. Select the correct blade for the stock (material) and clamp the blade down tightly in the chuck.
3. Always disconnect the saw to change blades or make adjustments of any kind.
4. Use vise or clamps to securely hold the stock (material) that you will be cutting. A C-Clamp, wood clamp, or *quick grip* are the easiest ones to use
5. Keep a constant and even cutting pressure. Do not force the blade into the work, just like with any saw if it's not cutting, there is a reason!
6. Do not attempt to cut curves that are so tight that the blade can be twisted and then broken.
7. Never sit this saw or any power tool down on the workbench until it has completely stopped. If you are not going to use it again immediately, you should also unplug it so that it does not get accidentally turned on until you need it again.

## Jig/Bayonet Saw Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. As with any machine, you must wear proper eye protection, pass ALL tests with 100T, and have your (☐ Do ☐ Do not) need your teacher's permission to operate it.
2. Selecting the correct blade for the stock (material) (☐ Is ☐ Is not) important.
3. You should clamp the blade down (☐ Lightly ☐ Tightly) in the chuck.
4. Always (☐ Do ☐ Do not) the saw when you change blades or make adjustments of any kind.
5. Use vise or clamps. Like a (☐ C-clamp ☐ V-clamp) to securely hold the stock (material) that you will be cutting.
6. Keep a constant and (☐ Even ☐ Uneven) cutting pressure.
7. You (☐ Should ☐ Should not) force the blade into the work.
8. You can safely cut (☐ Tight ☐ Slight) curves.
9. You can safely sit this saw down on the workbench when (☐ You are through with it ☐ It has completely stopped).
10. If you are not going to use it again immediately, you should

---

List five (5) SAFETY procedures you should do before you operate this or any machine:

11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_

## ***Jig/Bayonet Saw Written Test Key***

1. Do
2. Is
3. Tightly
4. Disconnect
5. C-clamp
6. Even
7. Should not
8. Slight
9. It has completely stopped
10. Unplug it so that it does not get accidentally turned on until you need it again.

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## ***Jointer Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Always keep the knives of the jointer sharp, dull knives tend to cause kickbacks and will result in poor planing. Report dull knives to the teacher immediately.
2. The fence should be tight. Never adjust the fence while the jointer is running.
3. Adjust the depth of cut before you turn the jointer on. 1/16" is the maximum safe plane thickness.
4. Be sure that the guard is in place and operating with ease. If the regular guard is removed, a special guard must be provided.
5. Always allow the machine to come to Full speed before using it.
6. Check all stock for knots, splits, metal particles, and other imperfections. Remove them before you plane the stock.
7. Do not use the jointer on plywood or PARTICLEBOARD.
8. Stand to the side of the jointer, never directly behind it. You want to be out of the way in case of a kick back.
9. Cut with the grain. Also, never joint the end of a board!
10. Always use a push stick or push block when the wood is below the height of the fence, or when surfacing the wood.
11. Do not try to make too heavy of a cut. 1/16" is the maximum safe plane thickness
12. Use COMMON SENSE when stock is too thin or thick to joint safely.
13. Never apply pressure to the board with your hand directly over the cutter head area.

## Jointer Written Test

Use the correct heading and write the answer on your own paper! Using the BEST answer to complete the following:

1. ALWAYS keep the knives of the jointer (☐ Dull ☐ Sharp).
2. It is (☐ Safe ☐ Dangerous) adjust the fence while the jointer is running!
3. Adjust the depth of cut (☐ After ☐ Before) you turn to jointer ON!
4. (☐ ½" ☐ 1/8" ☐ 1/16") is the maximum SAFE plane thickness!
5. You should allow the machine to come to (☐ Half ☐ Full) speed before using it!
6. You (☐ Can ☐ Cannot) SAFELY use the jointer on PLYWOOD or PARTICLEBOARD.
7. Cut (☐ Against ☐ With) THE GRAIN!
8. You (☐ Should ☐ Should not) use your hands to clean wood shavings from ANY table!
9. If you are facing the jointer and using the kick back danger area is to your (☐ Left ☐ Right).
10. You (☐ Should ☐ Should not) turn the dust collector on before you start your work.

List five (5) SAFETY procedures you should do before you operate this or any machine:

11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_

## ***Jointer Written Test Key***

1. Sharp
2. Dangerous
3. Before
4. 1/16"
5. Full speed
6. **Cannot**
7. With
8. Should not
9. Right
10. Should

List five (5) safety procedures you should do before you operate this or any machine:

11. Tuck in your shirt.
12. Secure your hair.
13. Remove jewelry.
14. Wear Z87 safety glasses.
15. Work with a partner.
16. Listen for and report any problems immediately.
17. Make sure that any guards are in place and working.
18. No horseplay.
19. Keep work area clean.
20. Protect hands.

## Jointer Hands-On Test

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Subject: \_\_\_\_\_

Per: \_\_\_\_\_

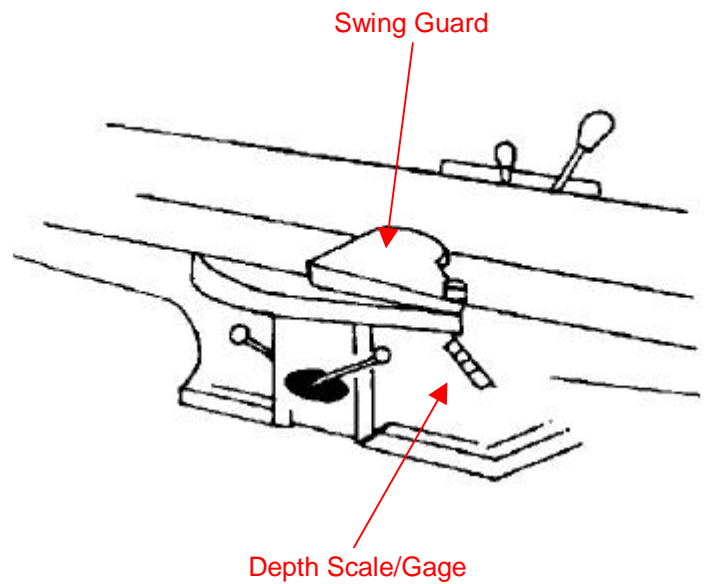
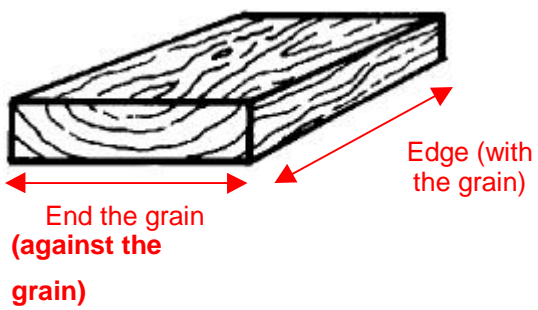
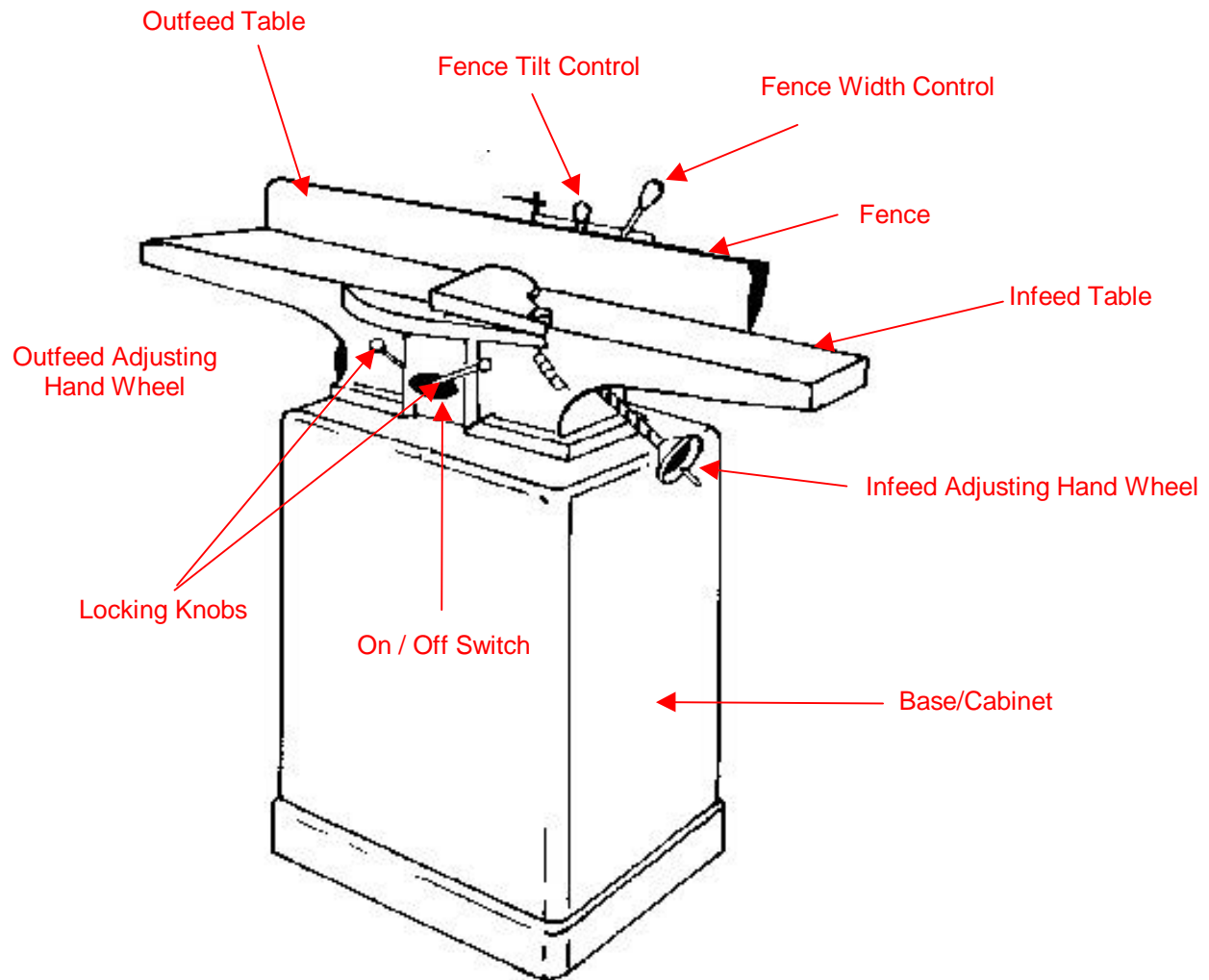
1. What does it do? \_\_\_\_\_
2. Why is it useful? \_\_\_\_\_
3. Can the student identify this machine (point to it)? (☐ Yes ☐ No)
4. Identify the following parts:

<input type="checkbox"/> On/Off Switch	<input type="checkbox"/> Kick Back Zone	<input type="checkbox"/> Guard
<input type="checkbox"/> Infeed Table	<input type="checkbox"/> Infeed Table Adjustment Lever	<input type="checkbox"/> Cutter Head
<input type="checkbox"/> Outfeed Table	<input type="checkbox"/> Infeed Depth of Cut Gage	<input type="checkbox"/> Fence
<input type="checkbox"/> Dust Collector		
5. Safety procedures followed before using the machine:

<input type="checkbox"/> Shirt tucked in	<input type="checkbox"/> Z87 safety glasses
<input type="checkbox"/> Hair secured	<input type="checkbox"/> Checks kick back zone
<input type="checkbox"/> Remove jewelry	<input type="checkbox"/> Gets help from/helps partner as needed
6. Procedures for operating machine (teacher designate):
  - ☐ Fence Adjustment – makes sure that it is big enough and uses a push stick if needed.
  - ☐ Infeed Table Adjustment – 1/16" maximum cut.
  - ☐ Left Hand – keeping board flush with the fence, but stays far away from the cutter head.
  - ☐ Right Hand – Guides the board, but stays away from the cutter head.
  - ☐ Feet – facing the machines and does the "side step."
  - ☐ Vents – double checks to make sure that they are open.
7. Makes two (2) safe and successful operations:
  - 1) ☐ Yes ☐ No
  - 2) ☐ Yes ☐ No
8. Makes sure that the machine has been shut down properly, that the area is clean, and puts tools away. ☐ Yes ☐ No



## Jointer Parts



## ***Metal Lathe Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. When operating this machine you must wear proper eye protection, a face shield, pass ALL tests with 100%, and have your teacher's permission to operate it.
2. Never leave chuck key or wrench in the lathe chuck, since they can be thrown easily causing an accident.
3. Be sure that all parts of the carriage will clear any rotating part during the full length of the cut/turning that you will be doing.
4. Place hands on the controls or at your sides, except when filing or polishing.
5. Make sure the work is secure and the lathe is set at the correct speed and feed rate before you start.
6. Handle chucks and face plates very carefully.
7. Bring lathe to a complete stop before reversing.
8. Remove tool holder and post before you begin to file or polish.
9. Remove chips with a table broom brush, never by hand.
10. Do not stop a lathe chuck with anything. Allow it to slowly coast to a stop. Remember to keep hands and any other body parts away from all moving parts.
11. No loose clothing!

## ***Metal Lathe Written Test***

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. When operating this machine you must wear proper eye protection, a \_\_\_\_\_, pass ALL tests with 100%, and have your teacher's permission to operate it.
2. You should (☐ Leave ☐ Remove) the chuck key or wrench in the lathe chuck.
3. Be sure that all parts of the carriage will (☐ Clear ☐ Touch) any rotating part during the full length of the cut.
4. Place hands on the controls or (☐ On the object ☐ At your sides), except when filing or polishing.
5. Make sure work is (☐ Loose ☐ Secure) and lathe is set at correct speed and feed rate before you start turning.
6. You (☐ Can ☐ Cannot) SAFELY adjust tool bit when tool holder is hand held.
7. Bring lathe to a (☐ Half ☐ Full) stop before reversing.
8. Remove tool holder and post (☐ After ☐ Before) you begin to file or polish.
9. Remove chips with (☐ A table broom ☐ Your hands).
10. You (☐ Should ☐ Should not) stop a lathe chuck with anything.
11. You (☐ Do ☐ Do not) need to keep hands and any other body parts away from all moving parts.
12. It (☐ Is ☐ Is not) SAFE to wear loose clothing.

List five (5) SAFETY procedures you should do before you operate this machine:

13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_
17. \_\_\_\_\_

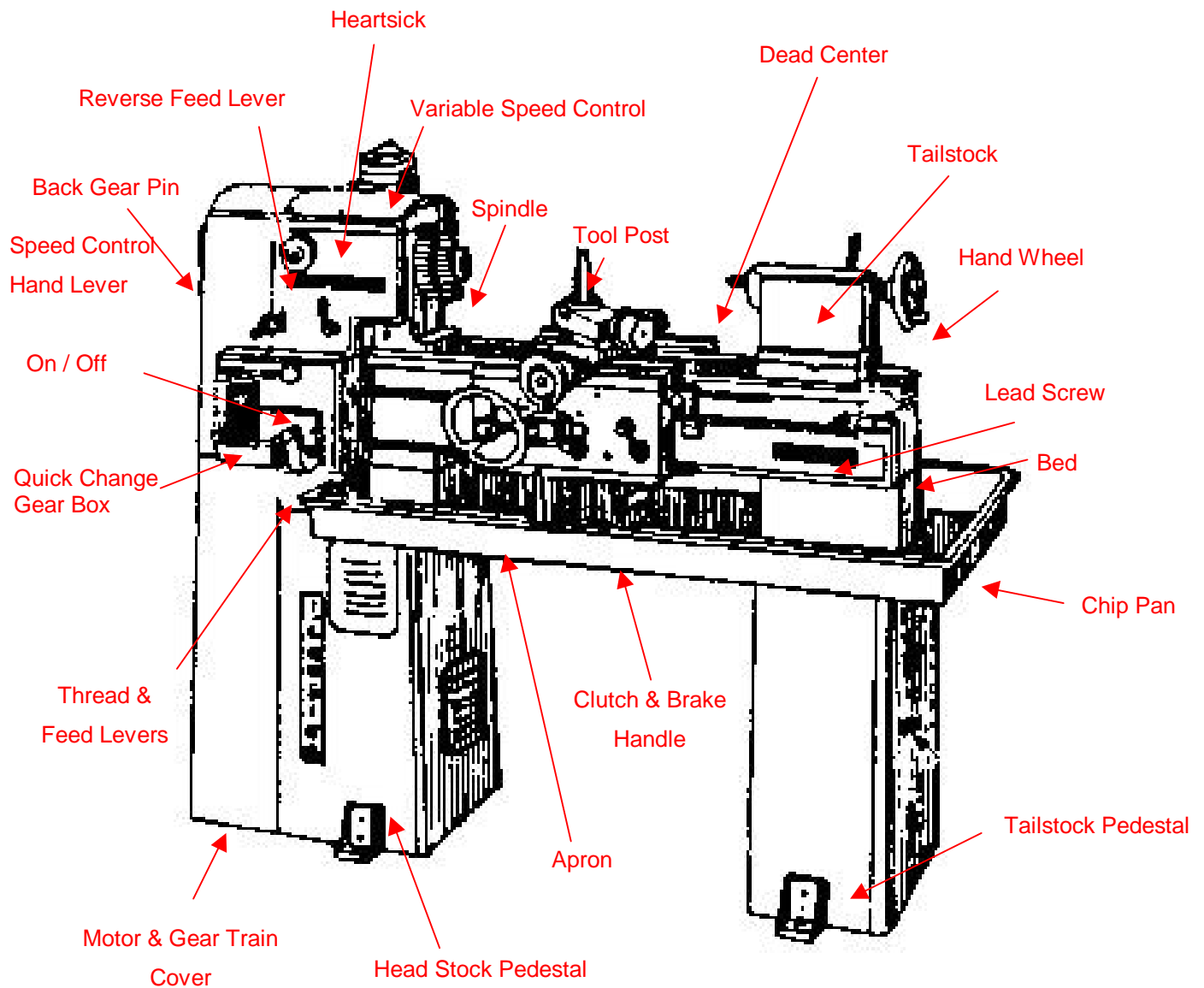
## ***Metal Lathe Written Test Key***

1. Face shield
2. Remove
3. Clear
4. At your sides
5. Secure
6. Cannot
7. Full
8. Before
9. A table broom
10. Should not
11. Do
12. Is not

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## Metal Lathe Parts



## ***Motorized Miter Box Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Disconnect power before making angle adjustments or changing blades.
2. Always hold the work firmly against the fence and table.
3. Allow the motor to reach full speed before starting a cut.
4. Keep fingers outside of blade guards.
5. Remove scrap stock from table when making multiple cuts. Make sure to use scrap to do this and not your fingers.
6. Use the brake to stop the blade.

## Motorized Miter Box Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. Always hold the work firmly (☐ Away from ☐ Against) the fence and table.
2. The machine (☐ Should ☐ Should not) be stopped by pushing a piece of scrap against the side of the blade.
3. The guard sections can easily be checked for proper operation (☐ Before ☐ After) using the machine.
4. The trigger switch and the brake button (☐ Can ☐ Cannot) be used together to gain better control.
5. Fingers should be kept (☐ Inside ☐ Outside) of the blade guards.

If the machine is not working properly you should:

6. \_\_\_\_\_

List five (5) SAFETY procedures you should do before you operate this machine:

7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_

## ***Motorized Miter Box Written Test Key***

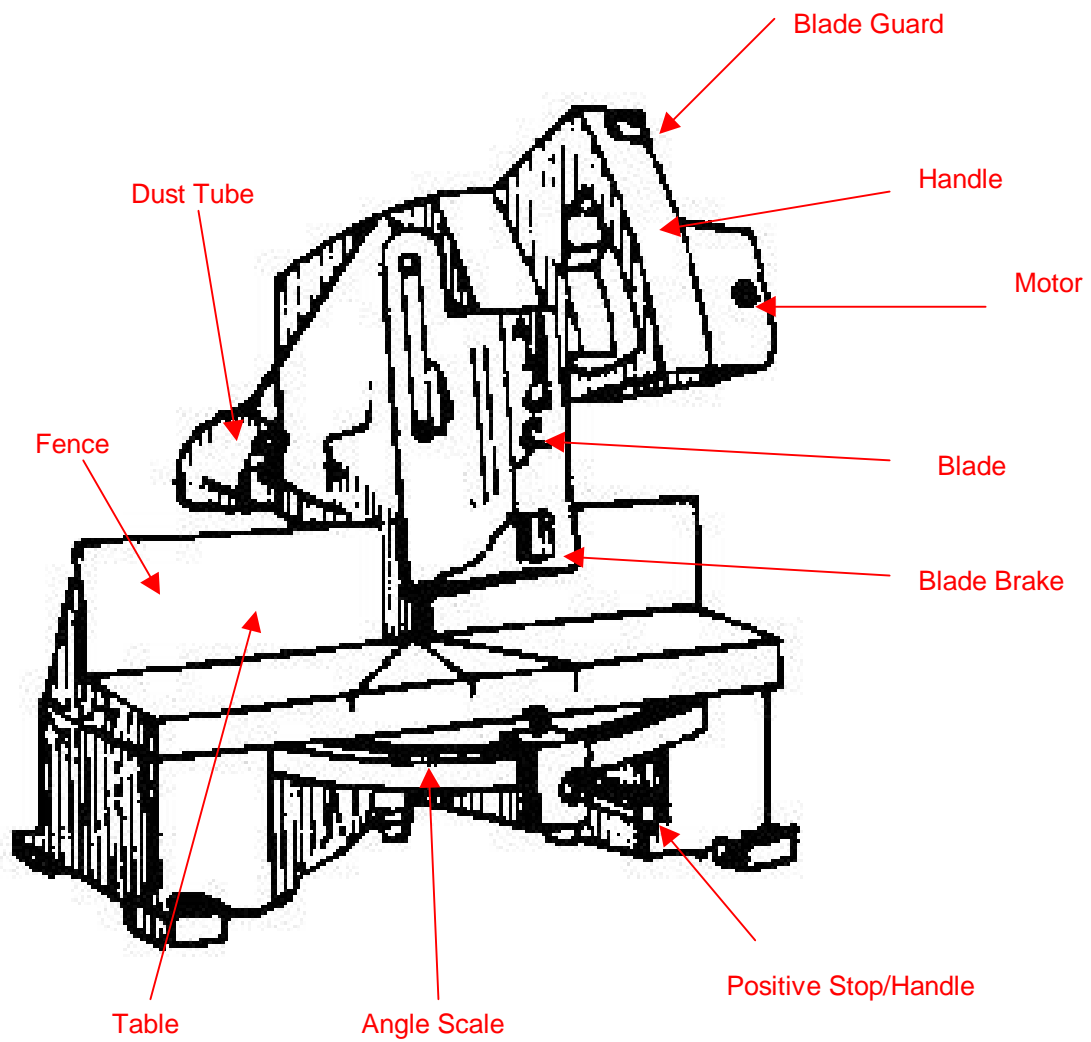
1. Against
2. Should not
3. Before
4. Cannot
5. Cannot
- 6.

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.



## ***Motorized Miter Box Parts***



## ***Oxyacetylene Welder Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Be sure cylinders are fastened with a chain as a protection against falling or rolling.
2. Always close the cylinder valve and replace protective cover before moving the cylinder.
3. Keep welding equipment free of oil and grease.
4. Protective goggles and spark-resistant clothing must be worn when welding.
5. Make sure that hoses are properly connected and all connections are tight.
6. Keep all flammable material away from working area.
7. Do not weld or cut on a closed container without instructor's approval.
8. The acetylene must never exceed 15-psi outlet pressure.
9. Only use a friction torch lighter to ignite the torch.
10. Close the acetylene valve first if the torch backfires.
11. Close cylinder valves when completing a welding job. Release or drain hoses.
12. The exhaust system must be turned on prior to igniting the torch.

## Oxyacetylene Welding Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. ☐ Never ☐ Always wear spark-resistant clothing.
2. Closed containers ☐ Are ☐ Are not hazardous to weld or repair.
3. Eye protection ☐ Must be worn ☐ Is not necessary for all welding, cutting, and chipping operations.
4. The equipment should not be wiped down with ☐ Dry ☐ Oily rags.
5. Acetylene pressure should be set at ☐ 20 ☐ 15 psi.

List five (5) SAFETY procedures you should do before you operate this machine:

9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_

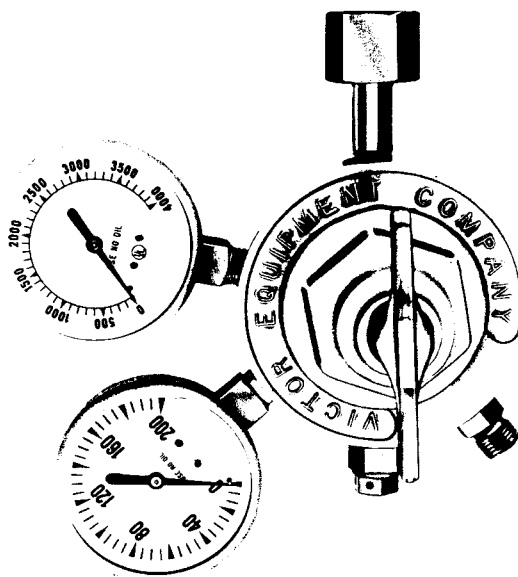
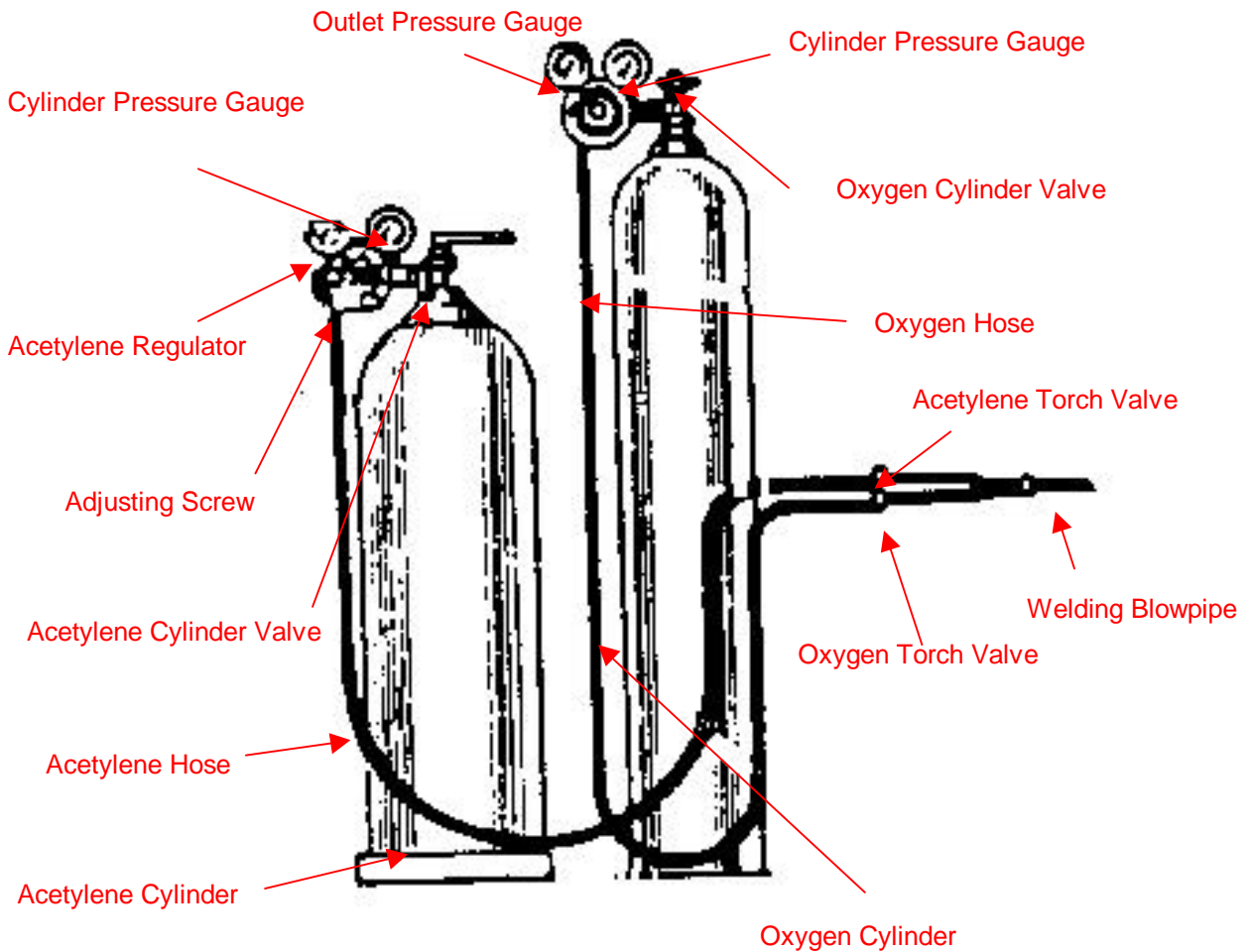
## ***Oxyacetylene Welding Written Test Key***

1. Always
2. Are
3. Must be worn
4. Dry
5. 15

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## Oxyacetylene Welder Parts



**NOTE:** What a regulator looks like.

## ***Planer/Surfacer Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Keep your fingers away from the underside of the board as it is fed through the planer. Keep your hands away from the top of the board near the infeed roller.
2. Never stand directly behind the board or in front of the machine when planing, in case of a kickback.
3. Do not look into the throat of the planer from either side, when the machine is in operation.
4. Always surface wood with the grain. NEVER run a piece cross grain
5. Support long pieces of wood, these could throw the planer out of adjustment.
6. Make sure the board is longer than the distance between the centers of the infeed and outfeed rolls.
7. Scrape all glue off the stock before running it through the planer.
8. Before you make any adjustments turn the power off and the check to make sure that the cutterhead is standing still. Do not remove shavings while cutterhead is revolving.
9. Do not force stock into the planer, never lower the table when a piece of stock will not feed through. Turn off the power. After the cutterhead has stopped completely, then the necessary corrections.
10. Do not take cuts deeper than 1/16". 1/16" is the maximum SAFE cut depth. Plane to one desired thickness at a time.
11. Check all stock for knots, splits, metal particles, and other imperfections. Remove them before you plane the stock. Always use the exhaust system.

## Planer/Surfacers Written Test

Use the correct heading and write the answer on your own paper! Using the BEST answer to complete the following:

1. NEVER stand directly behind the board or in front of the machine when planing, in case of a \_\_\_\_\_
2. It (☐ Is ☐ Is not) SAFE to look into the throat of the planer from either side, when the machine is in operation.
3. Plane your board down to (☐ One ☐ Two ☐ Three) desired thickness at a time.
4. Support long pieces of wood, because these could \_\_\_\_\_
5. Make sure the board is (☐ Longer ☐ Shorter) than the distance between the centers of the infeed and outfeed rolls.
- 6/7. Before you make any adjustments turn the power (☐ On ☐ Off), and the check to make sure that the cutterhead is (☐ Moving ☐ Standing still).
8. DO NOT take cuts deeper than (☐ 1/4" ☐ 1/8" ☐ 1/16").
9. ALWAYS surface wood (☐ Against ☐ With) the grain. NEVER run a piece cross grain.
10. You (☐ Can ☐ Cannot) SAFELY use the planer on plywood or particleboard.
11. You (☐ Should ☐ Should not) check your wood for imperfections like metal, and scrape off excess glue before you plane it.
12. You (☐ Should ☐ Should not) panic if your wood gets stuck.

List five (5) SAFETY procedures you should do before you operate this or any machine:

12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_

## ***Planer/Surfacer Written Test Key***

1. Kick back
2. Is not
3. One
4. Throw the planer out of alignment
5. Longer
6. Off
7. Standing still
8. 1/16"
9. With
10. Cannot
11. Should
12. Should not

List five (5) safety procedures you should do before operating this or any machine:

13. Tuck in your shirt.
14. Secure your hair
15. Remove jewelry.
16. Wear Z87 safety glasses.
17. Work with a partner.
18. Listen for and report any problems immediately.
19. Make sure that any guards are in place and working.
20. No horseplay.
21. Keep work area clean.
22. Protect hands.



## Planer/Surfacers Hands-On Test

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Subject: \_\_\_\_\_

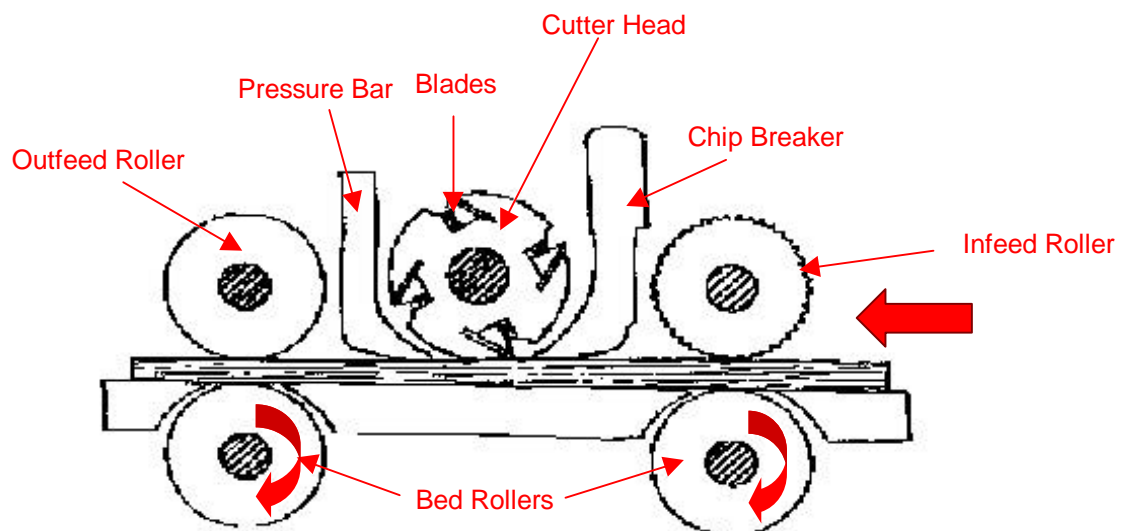
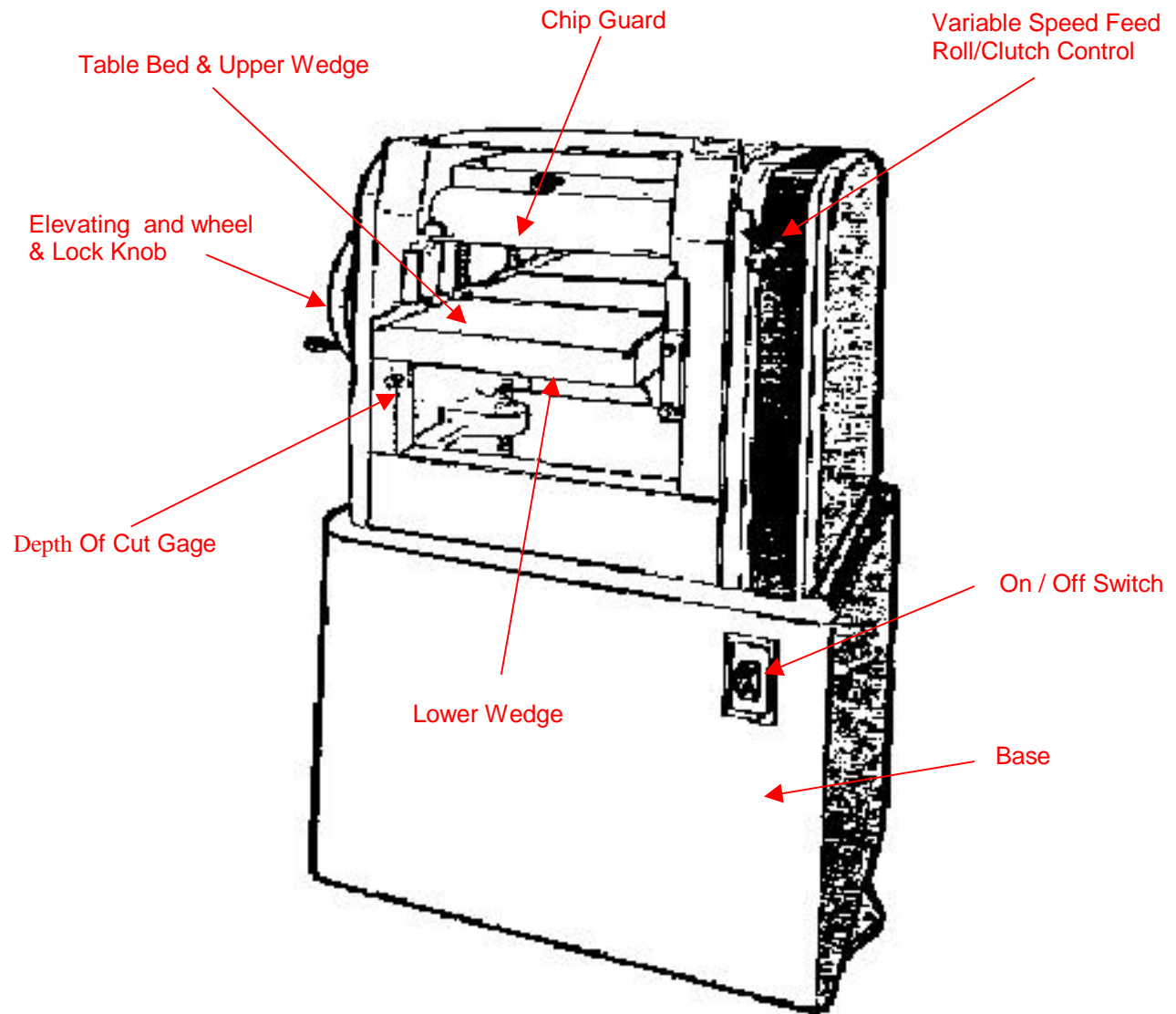
Per: \_\_\_\_\_

1. What does it do? \_\_\_\_\_
2. Why is it useful? \_\_\_\_\_
3. Can the student identify this machine (point to it)? (☐ Yes ☐ No)
4. Identify the following parts:

<input type="checkbox"/> On/Off Switch	<input type="checkbox"/> Chip Breaker	<input type="checkbox"/> Outfeed Rollers
<input type="checkbox"/> Infeed Table	<input type="checkbox"/> Cutter Head	<input type="checkbox"/> Outfeed Table
<input type="checkbox"/> Infeed Rollers	<input type="checkbox"/> Pressure Bar	<input type="checkbox"/> Clutch
<input type="checkbox"/> Elevating Wheel		
5. Safety procedures followed before using the machine:

<input type="checkbox"/> Shirt tucked in	<input type="checkbox"/> Z87 safety glasses
<input type="checkbox"/> Hair secured	<input type="checkbox"/> Checks kick back zone
<input type="checkbox"/> Remove jewelry	<input type="checkbox"/> Gets help from/helps partner as needed
6. Procedures for operating machine (teacher designate):
  - ☐ Fingers – kept away from the underside and inside of the machine.
  - ☐ Does not look into the throat of the machine.
  - ☐ Keeps the wood straight and flat against the table.
  - ☐ Vents – double checks to make sure that they are open.
  - ☐ Does not force the wood, takes time to readjust as needed.
  - ☐ Does not panic if wood gets stuck, just readjusts.
  - ☐ Feet – stands to the side.
7. Makes two (2) safe and successful operations:
  - 1) ☐ Yes ☐ No
  - 2) ☐ Yes ☐ No
8. Makes sure that the machine has been shut down properly, that the area is clean, and puts tools away. ☐ Yes ☐ No

## Planer/Surfacers Parts



## ***Portable Belt Sander Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Check to see if the belt is worn or torn, tracking properly, and is the correct grit size for the job.
2. Before connecting to a power source, make sure the switch is "OFF."
3. Start sander above the work, let rear of belt touch first then level the tool.
4. Keep the sander moving back and forth in the direction of the grain. Do not pause in one spot.
5. Lift the sander off the stock when stopping.
6. Always allow the sander to come to a complete stop before placing the sander on the table.
7. Keep electrical cord and dust bag away from working area.
8. When changing belts make sure the new belt runs as the arrow indicates.

## ***Portable Belt Sander Written Test***

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. Safety glasses (☐ **Are** ☐ **Are not**) the only protective clothing that you need to wear.
1. Check belt (☐ **Tracking** ☐ **Tension**) carefully before starting work.
2. The machine should be (☐ **Still moving** ☐ **At a complete stop**) before placing it on the workbench.
3. The sander should be started (☐ **Before** ☐ **After**) it is on the work.
4. See that the trigger switch is (☐ **Off** ☐ **On**) before plugging in the machine.
5. Keep the sander (☐ **Moving back and forth in the direction of the grain** ☐ **Pause in one spot**).
6. Keep the electrical cord (☐ **Wrapped around your neck** ☐ **Away**) from working area.
7. If the machine is not working properly you should:  
\_\_\_\_\_

List five (5) SAFETY procedures you should do before you operate this machine:

8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_

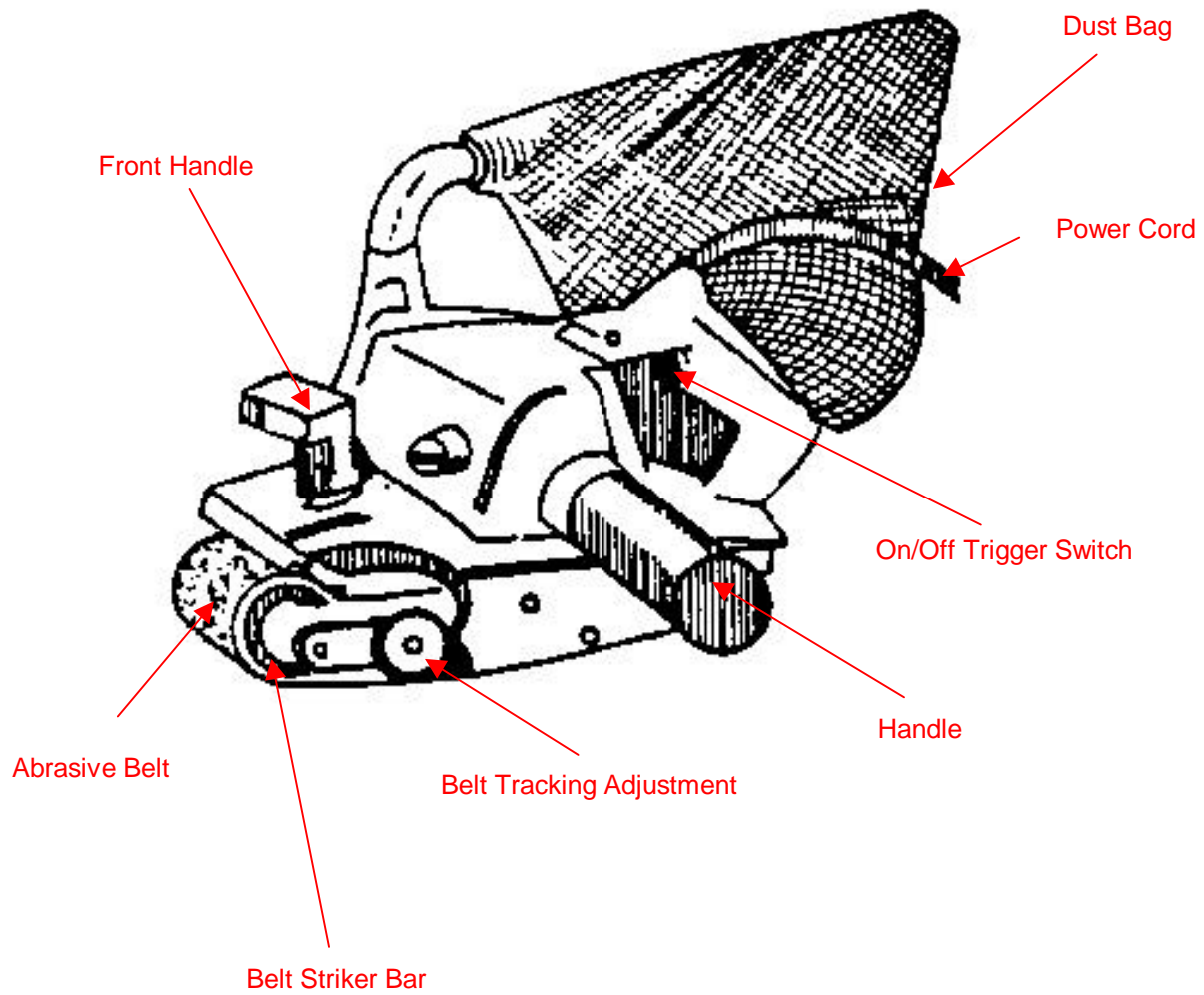
## ***Portable Sander Written Test Key***

1. Tracking
2. At a complete stop
3. Before
4. Off
5. Moving back and forth in the direction of the grain
6. Away
- 7.

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## ***Portable Belt Sander Parts***



## ***Portable Drill Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Select the correct drill bit just like you would for the drill press.
2. Secure a piece of scrap wood and the good wood to the table so that it will not move around while drilling.
3. Make sure that the switch is OFF, the chuck key is removed, and that your work area is clean and dry BEFORE you plug the drill in and turn it ON!
4. Drill with a straight, even, and steady pressure.
5. When drilling deep holes, withdraw the drill bit several times to clear the area, this helps to provide a SAFE and even drilling process.
6. As with any machine DO NOT PANIC if something "goes wrong." Turn it OFF, unplug it, and tell a teacher.

## Portable Drill Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. You (☐ Should ☐ Should not) secure a piece of scrap wood to your worktable.
- 2/3. Make sure that the drill is switched (☐ On ☐ Off) and that the work area is clean and (☐ Dry ☐ Wet).
4. You (☐ Should ☐ Should not) drill with straight, steady, even pressure.
5. To provide for a SAFE and even drilling process, you need to clear the area as you drill. To do this you need to \_\_\_\_\_.
6. As with any machine, if it is NOT working properly you should:  
\_\_\_\_\_

List five (5) SAFETY procedures you should do before you operate this machine:

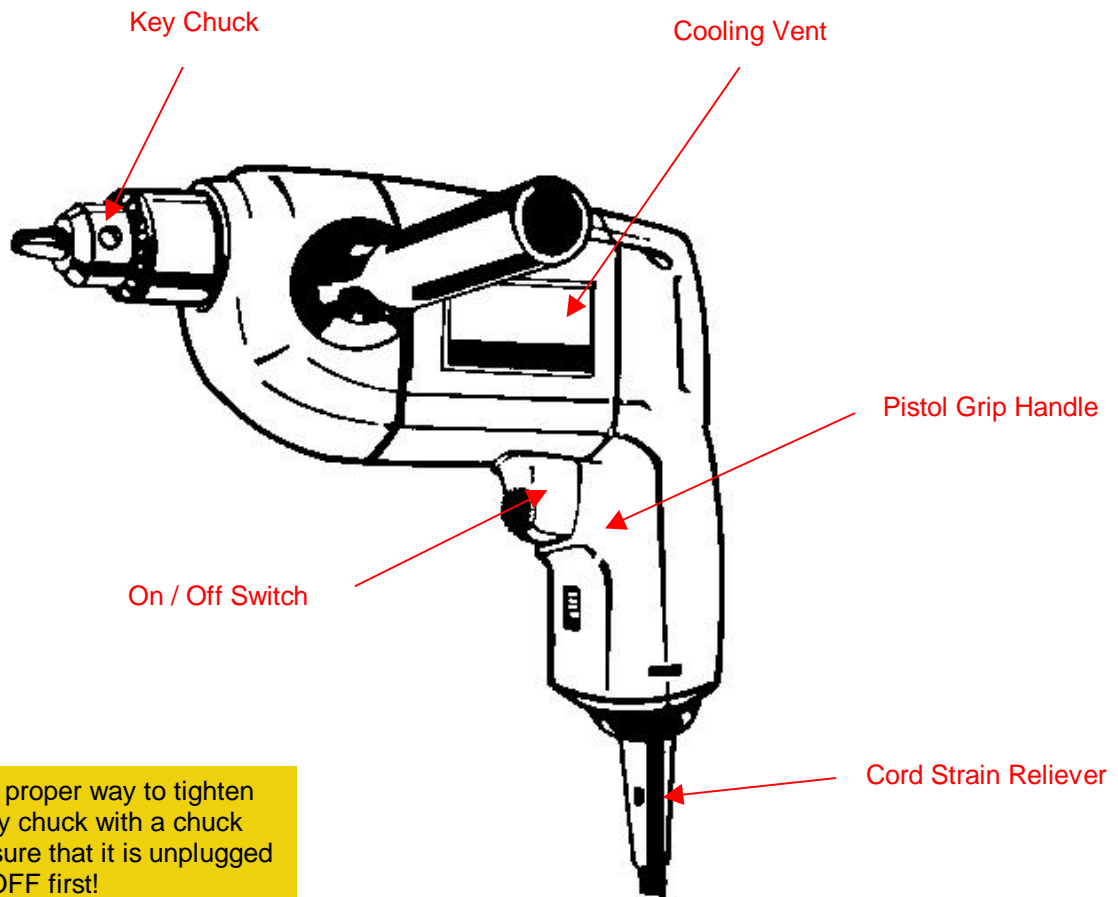
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_



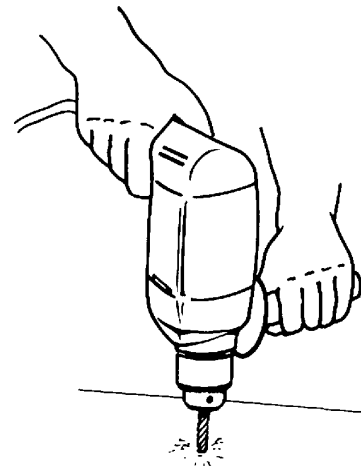
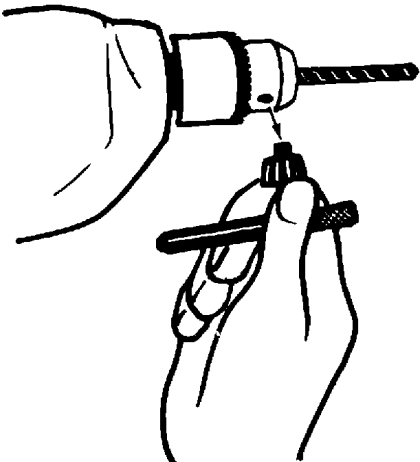
## ***Portable Drill Written Test Key***

1. Should
2. Off
3. Dry
4. Should
5. Withdraw the bit to remove the sawdust

## Portable Drill Parts



**NOTE:** The proper way to tighten down the key chuck with a chuck key. Make sure that it is unplugged and turned OFF first!



**NOTE:** The correct and SAFE way to drill.

## ***Portable Finishing Sander Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Before connecting the power cord be sure the power switch is "OFF."
2. Check to see that the abrasive sheet is in good condition and installed properly.
3. Start the sander above the work and set it down evenly; move slowly over a wide area.
4. Lift the sander from the work before stopping the motor.
5. Be sure the sander has stopped before placing the sander on the work bench.
6. All work must be securely fastened in the holding device.
7. Never carry any tool by its power cord.

## ***Portable Finishing Sander Written Test***

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. Be sure the trigger switch is in the (☐ Off ☐ On) position when plugging it in.
2. Check the abrasive sheet to see if it is (☐ Loose ☐ Secure).
3. Hold the sander by the (☐ Cord ☐ Handle).
4. Pull the (☐ Plug ☐ Power cord) to remove the plug from the socket.
5. Turn (☐ Off ☐ On) the sander before placing it on the work.
6. Turn the sander off while it is (☐ On ☐ Off) the work piece.
7. If the machine is not working properly you should:  
\_\_\_\_\_

List five (5) SAFETY procedures you should do before you operate this machine:

8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_

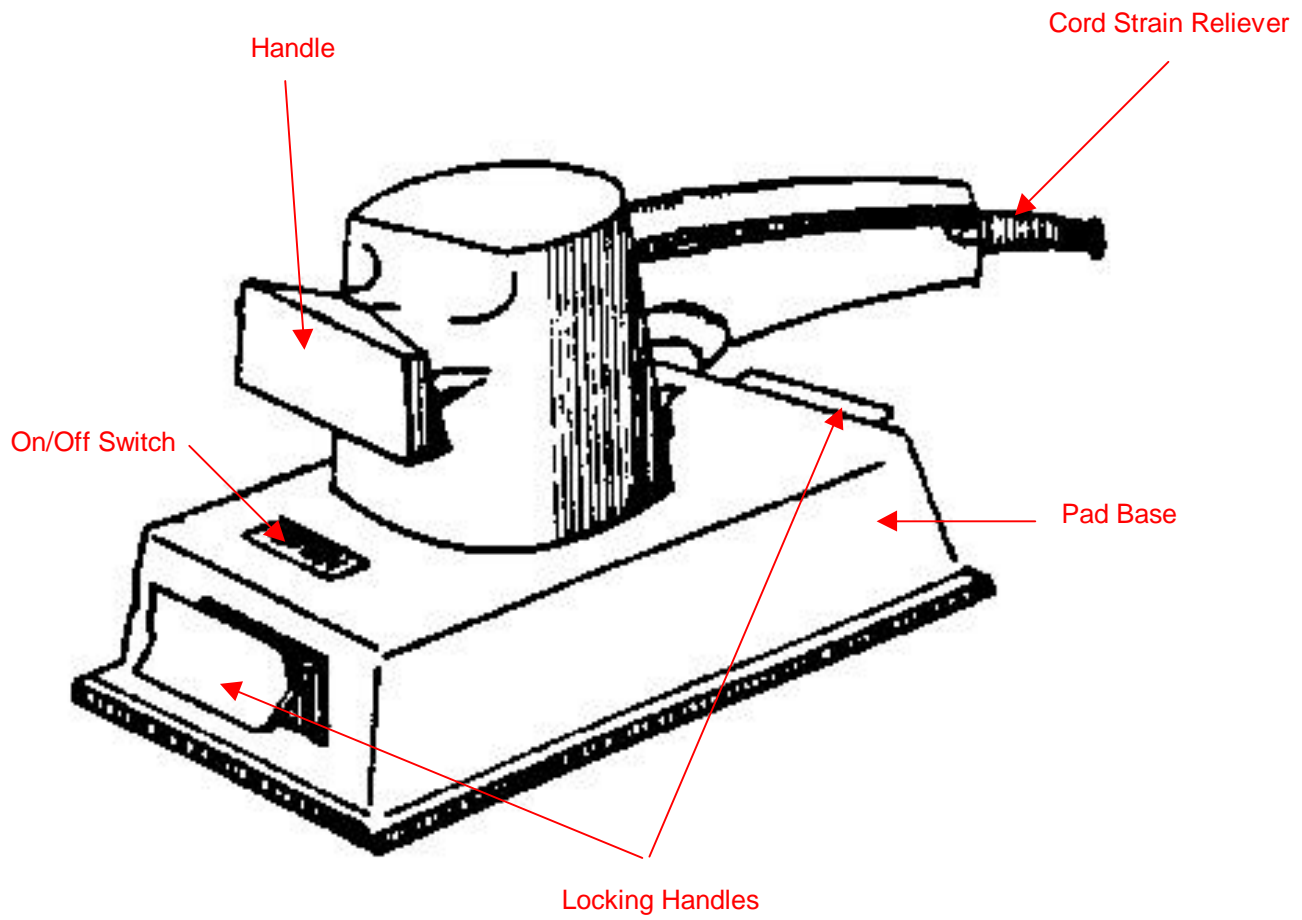
## ***Portable Finishing Sander Written Test Key***

1. Off
2. Secure
3. Handle
4. Plug
5. On
6. Off
- 7.

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## ***Portable Finishing Sander Parts***



## ***Portable Grinder Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Be sure switch is in the "OFF" position before connecting the power source.
2. Make all adjustments to pad and disc before turning on the power.
3. Do not allow the edge of the disc to touch the edge of the stock.
4. Stand clear of the spark line or spark area.
5. Sand with a stroking motion; do not pause in one spot.
6. When finished, disconnect the sander from power source and place the sander on its back.

## ***Portable Grinder Written Test***

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. The sparks caused by grinding or sanding are (☐ Warm but not ☐ Hot and are) dangerous.
2. It (☐ Never is ☐ Is) safe to grind steady in one spot.
3. You (☐ Are ☐ Are not) required to wear protective clothing while using this tool.
4. Make all adjustments before turning (☐ Off ☐ On) the power.
5. Never sand free handed. Use the (☐ Table ☐ Your hands) to support the material.
6. If the machine is not working properly you should:  
\_\_\_\_\_

List five (5) SAFETY procedures you should do before you operate this machine:

7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_



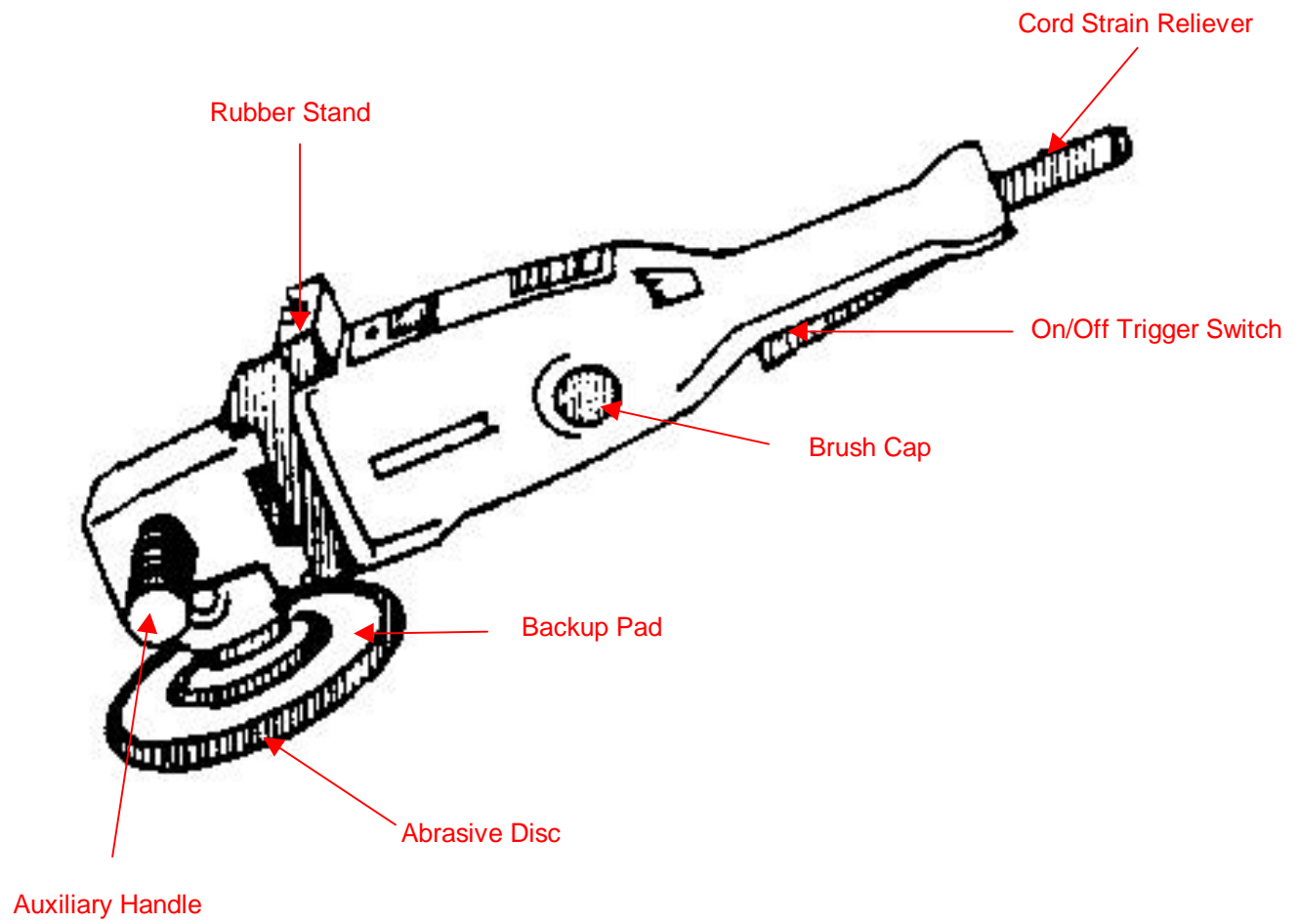
## ***Portable Grinder Written Test Key***

1. Hot and are
2. Never is
3. Are
4. On
5. Table
- 6.

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## ***Portable Grinder Parts***



# ***Portable Power Tool Safety***

## **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Portable power tools produce a lot of wood chips and dust. You can prevent eye injuries by wearing eye protection. Wear safety glasses, safety goggles or a face shield.
2. You must have the instructor's permission before you use any of the power tools.
3. Use power tools only when the instructor is present in the shop.
4. Don't wear loose clothing. Keep shirts tucked in and shirtsleeves rolled up neatly.
5. Remove rings, watches, bracelets and necklaces.
6. Long hair must be tied back out of the way or tucked under a cap.
7. The tool has to be sharp and in good condition. Check the blade, knives, or bit to make sure that they are sharp and in good condition.
8. Don't over-load or force a portable power tool. Use it only for what it was designed to do.
9. Electricity should never be used around water or moisture. It can cause a severe electric shock. Be sure your hands are dry and you're standing on a dry floor when you handle electric power tools.
10. Electrical power tools must be grounded or double insulated to prevent a possible electric shock. Don't use equipment that isn't properly insulated or grounded.
11. Check the power cord to make sure the insulation is in good condition. Don't use the tool if the insulation is broken, cut, or damaged in any way.
12. Keep the tool disconnected when it is not in use. Plug it in when you are ready to use the tool, and pull the plug as soon as you are finished.
13. Check the switch before you plug in the tool. Always check the switch first to make sure it's in the "off" position before you plug it in.

14. Keep the power cord well out of the way when the tool is operating. Keep the cord out of the path of the tool.
15. Always disconnect the tool before you make any changes or adjustments. Don't make any changes or adjustments while the tool is plugged in.
16. When you disconnect a power tool, pull the plug. Don't yank on the cord.
17. Fasten the work down. Avoid holding the work with one hand and operating the tool with the other hand.
18. Hold the tool firmly. It may twist when you turn it on. Hold the tool so you always have control of it.
19. Wait until the tool comes up to full speed before you start the cut.
20. Don't over-reach. Keep yourself balanced.
21. Wait until the tool has come to a complete stop before you set it down.
22. Using a power tool will require all your attention. Don't let anyone distract you. Keep your attention on what you are doing so you can work safely at all times.

## ***Portable Power Tool Safety Written Test***

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. You can prevent eye injuries by wearing eye (☐ Protection ☐ Glasses).
2. Power tools may be used only with the instructor's (☐ Protection ☐ Permission).
3. The instructor must be (☐ Present ☐ Outside of) in the shop when you use power equipment.
4. Do not wear (☐ Tight ☐ Loose) clothing in the shop.
5. (☐ Safety equipment ☐ Jewelry) should be removed before you do any work in the shop.
6. Long hair must be tied back or worn under a (☐ Cap ☐ Helmet) to keep it out of the way.
7. The blades, knives or bits used with power tools must be (☐ Sharp ☐ Dull) and in good condition.
8. Use the power tool only for what it was designed to do, and don't force the tool or (☐ Overload ☐ Twist) it.
9. Be sure your hands are dry and you are standing (☐ Dry ☐ Wet) on a floor when you use electric power equipment.
10. Electric power tools must be (☐ Uninsulated ☐ Grounded) or double insulated to prevent a possible shock.
11. Never use a power tool that has a (☐ Damaged ☐ In good condition) power cord.
12. Power tools should be (☐ Plugged In ☐ Disconnected) only while they are in use.
13. Be sure the switch is in the (☐ Off ☐ On) position before you plug in the power tool.
14. Keep the (☐ Power cord ☐ Material) out of the path of the tool.
15. The power tool must be (☐ Disconnected ☐ Plugged in) before making any changes or adjustments on the tool.
16. When you disconnect the tool, pull the (☐ Power cord ☐ Plug), not the cord.

17. The material you are working on should be (☐ Loose ☐ Fastened down).
18. Hold the tool firmly so you always have (☐ Control ☐ Feel) of it.
19. Be sure the tool is running at (☐ Slow speed ☐ Full speed) before you start the cut.
20. Plan the cut so you don't have to over-reach. Keep yourself (☐ Balanced ☐ On tip toe).
21. Wait until the tool has come to a (☐ Almost ☐ Complete) stop before you set it down.
22. Don't let anything distract you. Pay (☐ Attention ☐ Distract) to what you are doing so you can do it safely at all times.

## ***Portable Power Tool Safety Written Test Key***

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.
- 15.
- 16.
- 17.
- 18.
- 19.
- 20.
- 21.
- 22.

## ***Portable Router Notes***

### **Requirements:**

1. You should never carry any portable tool by its power cord.
2. Always check your wood for any defect that could cause the stock to tear out and then throw that wood, potentially causing injury.
3. Always use a fence to guide your wood and cut with the grain.
4. Only when your work area is prepared should you plug it in and begin cuffing.
5. Always use a face shield to protect your face.
6. Always check to make sure that you are using the correct big. Check the chart.



## ***Portable Router Written Test***

1. You (☐ **Should** ☐ **Should not**) carry any portable tool by its power cord.
2. You should router to the (☐ **Left** ☐ **Right**) and remember to use the \_\_\_\_\_ as a guide.
3. You (☐ **Do need** ☐ **Do not need**) to use a face shield when cutting on the router.
4. It (☐ **Is** ☐ **Is not**) safe to touch the router bit after you have used it because it will be (☐ **Cold** ☐ **Hot**)
5. As with any machine, if it is not working properly, you should:  
\_\_\_\_\_

List five (5) safety procedures you should do before you operate this or any machine:

6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

## ***Portable Router Written Test Key***

1. Should not
2. Left
3. Fence
4. Need
5. Is not
6. Hot
7. Turn it off, unplug, and tell your teacher.

List five (5) safety procedures you should do before you operate this or any machine:

8. Tuck in your shirt.
9. Secure your hair.
10. Remove jewelry.
11. Wear Z87 safety glasses.
12. Work with a partner
13. Listen for and report any problems immediately.
14. Make sure that any guards are in place and working.
15. No horseplay.
16. Keep work area clean.
17. Protect hands.

## Portable Router Hands-On Test

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Subject: \_\_\_\_\_

Per: \_\_\_\_\_

1. What does it do? \_\_\_\_\_
2. Why is it useful? \_\_\_\_\_
3. Can the student identify this machine (point to it)? (☐ Yes ☐ No)
4. Identify the following parts:

<input type="checkbox"/> On/Off Switch	<input type="checkbox"/> Cord Strain Reliever	<input type="checkbox"/> Sub-Base
<input type="checkbox"/> Locking Handle	<input type="checkbox"/> Housing	<input type="checkbox"/> Collet Type Chuck
<input type="checkbox"/> Guide Knob	<input type="checkbox"/> Depth Adjustment	<input type="checkbox"/> Motor Safety Disconnect
5. Safety procedures followed before using the machine:

<input type="checkbox"/> Shirt tucked in	<input type="checkbox"/> Z87 safety glasses
<input type="checkbox"/> Hair secured	<input type="checkbox"/> Checks kick back zone
<input type="checkbox"/> Remove jewelry	<input type="checkbox"/> Gets help from/helps partner as needed
6. Procedures for operating machine (teacher designate):
  - ☐ Router Adjustment – makes sure that it's tightened down and makes a test cut on scrap wood.
  - ☐ Fence Adjustment – checks the height and secures it.
  - ☐ Left Hand – holds the wood flat and guides it through, but stays away from the bit.
  - ☐ Right Hand - Same
  - ☐ Feet – facing the machines and side steps.
  - ☐ Eyes – watches to see where the bit is going and makes sure that the hand is no      where near the bit.
  - ☐ Routers to the left when at all possible.
7. Makes two (2) safe and successful operations:
  - 1) ☐ Yes ☐ No
  - 2) ☐ Yes ☐ No
8. Makes sure that the machine has been shut down properly, that the area is clean, and puts tools away. ☐ Yes ☐ No

# ***Power Equipment Safety***

## **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Always wear eye protection.
2. You must have the instructor's permission before you use the equipment.
3. Don't use any of the power tools unless you've been shown how to use them correctly and safely. Don't use a tool until you understand how to use it properly.
4. Power equipment may be used only when the instructor is in the shop. No power equipment may be used unless the instructor is present.
5. If you don't feel well or if you can't concentrate, tell the instructor. Don't use any of the tools unless you can give your full attention to what you are doing.
6. Your hands must be dry when you work around electricity, and you must be standing on a dry floor.
7. When you approach a machine, be sure the person who used it before you has turned it off and it's completely stopped.
8. Check the cutting tool in the machine. The cutting tool must be sharp and in good condition.
9. The cutting tool must be installed correctly and properly adjusted for the work.
10. Check to see that all the safety guards are in place and working properly. Use all the safety guards whenever possible.
11. Never remove a guard unless you have the instructor's permission.
12. If the machine doesn't sound right or if it doesn't work properly don't use it. Turn it off and tell the instructor.
13. Use the machine only for what it was designed to do. For example: don't overload the machine or use it on something too small to be safe.
14. If you have to make any adjustments or changes, get permission.

15. Before making any major changes or adjustments, disconnect the power. Pull the plug or disconnect the power at the circuit breaker.
16. If you disconnect a machine at the circuit breaker panel, put up a sign that says: "Don't connect."
17. Minor adjustments should always be made with the machine turned off and completely stopped.
18. Work in a well-lighted area. Stand so you can see clearly.
19. Keep yourself balanced. Don't over-reach or put your weight on a machine.
20. Check the condition of the material. The wood must be clean and free of defects. It must be clear of hardware, paint or finishes.
21. Always wait for the machine to come up to full speed before starting the cut.
22. Use an even, steady pressure to make the cut. Don't force it or over-load the machine.
23. If the material is large or heavy, get help. Ask someone to "tail-off" for you. The tail-off helper should support the material while you control how it is moved into the cut.
24. Get permission to use special set-ups, jigs, or attachments. Ask the instructor to double-check special set-ups before you use them.
25. Don't let anyone distract you while you're operating the machine. Keep your full attention on what you are doing.
26. Use a piece of scrap wood, a push stick or a brush to remove scraps around the cutting tool. Never use your hands to clear away scraps or dust.
27. Stay out of the danger zones when someone is using the equipment. Make sure that others stay clear when you're operating the equipment.
28. When you are finished using equipment, turn it off and stay with it until it has come to a complete stop.
29. Remove any special attachments or special cutting tools you may have used. Replace the guards if you've removed them and readjust settings to their normal position.
30. Use a brush to clean off the equipment, then sweep the area around the machine.

## Power Equipment Safety Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. Always wear eye (☐ Protection ☐ Contact Lenses).
2. You must have the instructor's (☐ Goggles ☐ Permission) before you use any of the equipment.
3. Use the power equipment only if you understand how to use it correctly and (☐ Safety ☐ Automatically).
4. The (☐ Principal ☐ Instructor) must be present in the shop whenever you use the power equipment.
5. Use the power tools only when you can give your full (☐ Attention ☐ Balance) to what you are doing.
6. When you work with (☐ Electricity ☐ Wood), you must make sure your hands are dry and the floor you stand on is dry.
7. When you approach a machine to use it, make sure the person who used it before you turned it off and it is completely (☐ Stopped ☐ Running).
8. The cutting tool in the machine must be (☐ Dull ☐ Sharp) and in good condition.
9. Be sure the (☐ Cutting Tool ☐ Brush) is installed properly and adjusted correctly for what you want to do.
10. Check to see that the (☐ Blades ☐ Guards) place and working properly.
11. Do not (☐ Remove ☐ Attach) any of the safety guards unless you have the instructor's permission.
12. If a machine doesn't work properly, or if it doesn't (☐ Sound ☐ Remove) right, turn it off and tell the instructor.
13. Power tools should be used only for what (☐ You think ☐ They are designed) to do.
14. Get permission before you make any major (☐ Adjustments ☐ Signs) or changes on the equipment.

15. ☐ Turn on ☐ Turn off) the power to the machine before you make any major changes or adjustments.
16. If you disconnect the power at the circuit breaker panel, put up a ☐ Sign ☐ Piece of material) that warns others not to connect it.
17. The machine must be turned off and ☐ Completely ☐ Almost) stopped before any minor adjustments are made.
18. Work in ☐ Well Lighted ☐ Dimmed) areas so you can see clearly.
19. Keep yourself ☐ On tip toe ☐ Balanced). Don't over-reach or lean on a machine.
20. The material must be clean, free of ☐ Defects ☐ Electricity), hardware or finishes.
21. The cut must not be started until the machine is running at ☐ Slow ☐ Full) speed.
22. Use an even, steady pressure to make the cut. Don't ☐ Force ☐ Take it easy) it or over-load the machine.
23. If the material is large or heavy, get help. Ask someone to ☐ Watch ☐ Tail Off) for you.
24. Ask the instructor to ☐ Check ☐ Ignore) any special set-ups or attachments before you use them.
25. Don't let anyone ☐ Distract ☐ Use the equipment) you while you operate the equipment.
26. Use a piece of scrap wood, a push stick or ☐ A brush ☐ Your hands) to clear away scraps or dust. Don't use your hands.
27. Stay clear of the ☐ Danger Zones ☐ Tail-off) when someone is operating a machine.
28. Never leave a machine while it is still ☐ Running ☐ Stopped). The machine must be stopped before you leave it.
29. When you are finished, remove any ☐ Attachment ☐ Materials) or special set-ups you may have used.
30. ☐ Walk away from ☐ Sweep) the equipment and the area around it when you are finished with the work.

## ***Power Equipment Safety Written Test Key***

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.
- 15.
- 16.
- 17.
- 18.
- 19.
- 20.
- 21.
- 22.
- 23.
- 24.
- 25.
- 26.
- 27.
- 28.
- 29.
- 30.



# ***Radial Arm Saw Notes***

## **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Make all adjustments with the power off and the cutter head behind the fence.
2. Make sure that the cutter is off, place the wood against the fence and slowly "walk" the blade forward to check your cut mark.
3. Before you make any cut, wait until the exhaust system is turned on and the cutter head is turning at full speed.
4. If cutting long pieces of wood get your partner to help support the length to your left.
5. Never attempt to cut wood that is wider than 1'-0" Get teacher assistance for stock that is wider.
6. Place the wood against the fence, use your left hand to hold it flush and flat against the table. Stand to the left of the blade and use your right hand to guide the blade across the wood.
7. Always make sure that the blade guard and kick back fingers are properly adjusted before you attempt to rip the wood.
8. Feed the blade into the wood only as fast as it can smoothly cut with out binding or "sticking."
9. Always pull the blade through the wood and return it back behind the fence before making your next cut.
10. Always make sure that the machine is turned off and that the blade has stopped before you leave the machine.
11. As with any machine if you think that it is not working properly turn it off, unplug it and get the teacher(s) to inspect it.
12. Always use common sense when operating this and any machine. Remove your jewelry, tuck your shirt in, wear Z87 safety glasses, work with a partner, and always keep your fingers and body away from the path of the blade.
13. Never ever place any part of your body directly in front of or behind the blade.

## Radial Arm Saw Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

- 1/2. Make adjustments with the power (☐ On ☐ Off), and the cutter head (☐ Behind ☐ In front of) the fence!
3. BEFORE making any cut, wait until the cutter head is turning at (☐ One-half ☐ Full) speed.
4. The maximum SAFE width/size of a board that you can cut is (☐ 1' – 0" ☐ 12 – 0" ☐ 1 – 6").
- 5/6. ALWAYS make sure that the machine is turned (☐ On ☐ Off), and that the blade has stopped (☐ After ☐ Before) you leave the machine!
7. As with any machine if you think that it is not working correctly you should  
\_\_\_\_\_

List five (5) basic steps you should follow before and during the use of the arm saw:

8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_

List five (5) safety procedures you should do before you operate this machine:

13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_
17. \_\_\_\_\_

## ***Radial Arm Saw Written Test Key***

1. Off
2. Behind
3. Full
4. 1 – 0"
5. Off
6. Before
7. Turn it off and tell the teacher immediately.
8. Walk the blade forward to check that it is lined up with your cut mark.
9. Check to make sure that the guards are in place and working.
10. Left hand holds the wood flat. Right hand guides the blade across.
11. Allow blade to come to full speed.
12. Cut all the way through the wood and return the blade behind the fence.

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## Radial Arm Saw Hands-On Test

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Subject: \_\_\_\_\_

Per: \_\_\_\_\_

1. What does it do? \_\_\_\_\_
2. Why is it useful? \_\_\_\_\_
3. Can the student identify this machine (point to it)? (☐ Yes ☐ No)
4. Identify the following parts:

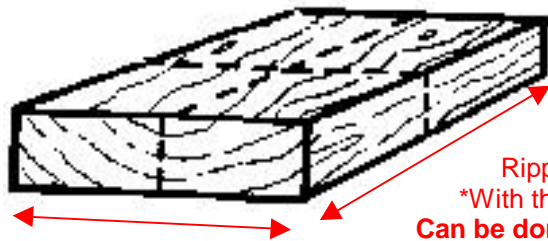
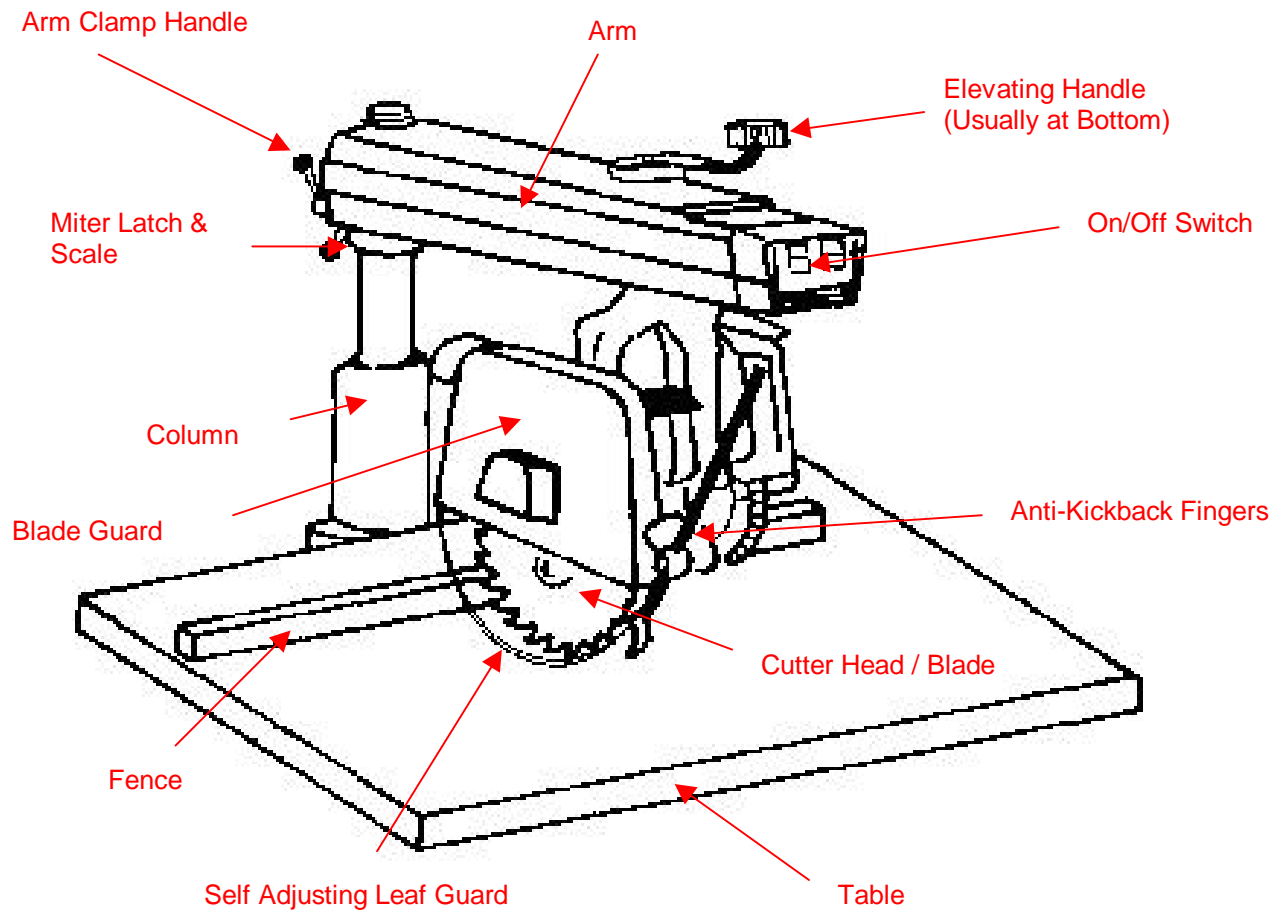
<input type="checkbox"/> On/Off Switch	<input type="checkbox"/> Dept of Cut Gage	<input type="checkbox"/> Cutter Head
<input type="checkbox"/> Table	<input type="checkbox"/> Miter Cut Scale	<input type="checkbox"/> Fence
<input type="checkbox"/> Guard	<input type="checkbox"/> Miter Lock Knob	<input type="checkbox"/> Dust Collector
<input type="checkbox"/> Kick Back Zone		
5. Safety procedures followed before using the machine:

<input type="checkbox"/> Shirt tucked in	<input type="checkbox"/> Z87 safety glasses
<input type="checkbox"/> Hair secured	<input type="checkbox"/> Checks kick back zone
<input type="checkbox"/> Remove jewelry	<input type="checkbox"/> Gets help from/helps partner as needed
6. Procedures for operating machine (teacher designate):

<input type="checkbox"/> Right Hand – guides the blade, but stays far away from it.
<input type="checkbox"/> Feet – facing machine.
<input type="checkbox"/> Vents – double check to see that they are on and open.
<input type="checkbox"/> Left Hand – keeping board flush with fence, but staying far away from the blade.
<input type="checkbox"/> Blade Adjustment – make sure that it is set to the angle that is required (90, 45, etc.) to set up for a cut.
<input type="checkbox"/> Board Cut Adjustment – 1' 0" is maximum cut.
<input type="checkbox"/> Eyes – watches to see where the blade is going and makes sure that the hand is no where near the blade.
7. Makes two (2) safe and successful operations:

1) <input type="checkbox"/> Yes <input type="checkbox"/> No
2) <input type="checkbox"/> Yes <input type="checkbox"/> No
8. Makes sure that the machine has been shut down properly, that the area is clean, and puts tools away. ☐ Yes ☐ No

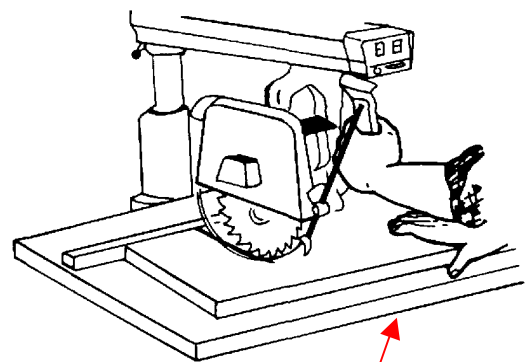
## Radial Arm Saw Parts



### Cross Cutting:

\*Against the grain.  
Remember MAX  
SAFE cut is 1'-0"

Ripping:  
\*With the grain.  
Can be done, but  
**SAFER** to use a  
Table Saw.



**NOTE:** Correct and  
safest way to cut.

# ***Robotics Notes***

## **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. When in the teach mode, use slow movements to jog the arm from point to point.
6. Be sure the emergency stop button is functioning properly by testing it early in the teach cycle.
7. Care should be taken that the operator's fingers and other body parts are kept out of the work envelope.
8. The operator must understand the program of robot actions and motions prior to the use of the robot.

## Robotics Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. Move the robot arm (☐ Slowly ☐ Quickly) from point to point when in the teach mode.
2. The operator (☐ Does not ☐ Does) need to understand the program of robot actions and motions prior to use of the robot.
3. Eye protection (☐ Is not ☐ Is) required when operating robots in the technology lab.
4. The operator must (☐ Stay clear ☐ Within) the work envelope when the robot is executing the program.

List five (5) SAFETY procedures you should do before you operate this machine:

5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_

## ***Robotics Written Test Key***

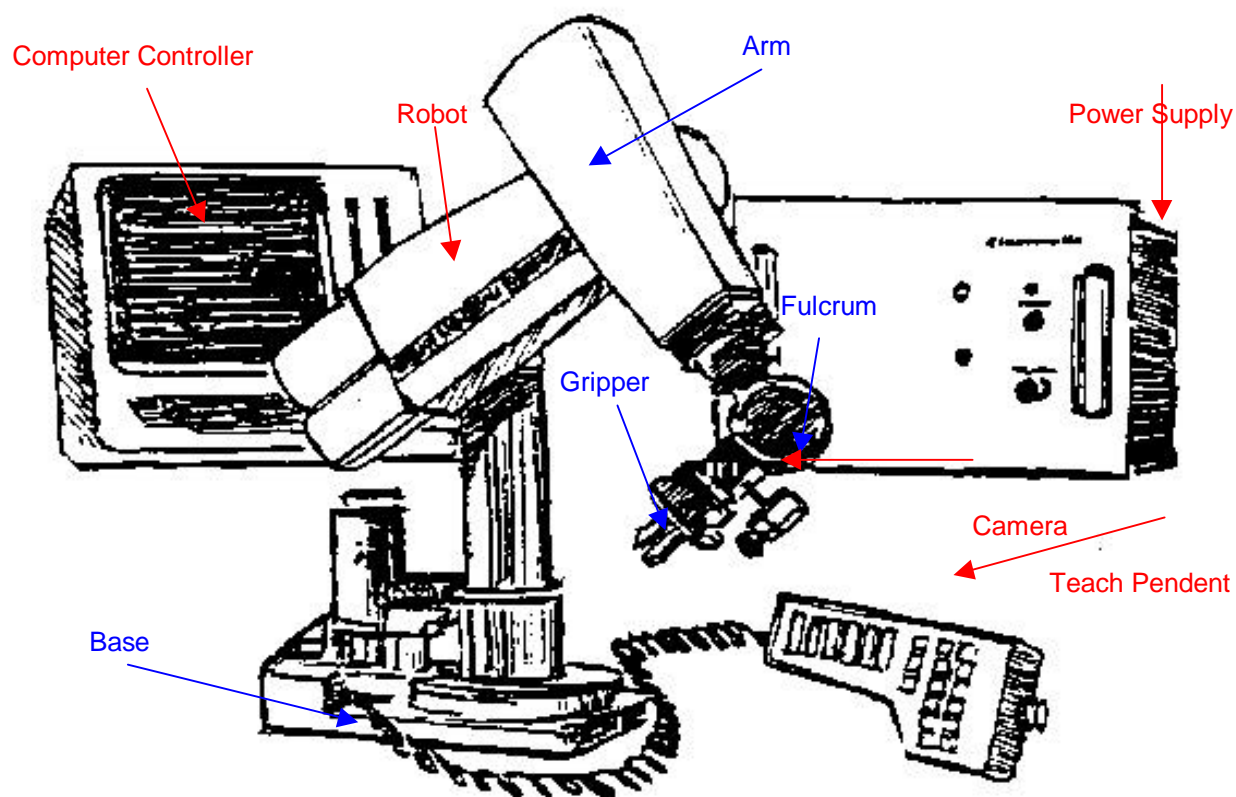
1. Slowly
2. Does
3. Is
4. Stay clear of

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.



## Robotics Parts



## Sand Blaster Safety Notes

### Safety Rules:

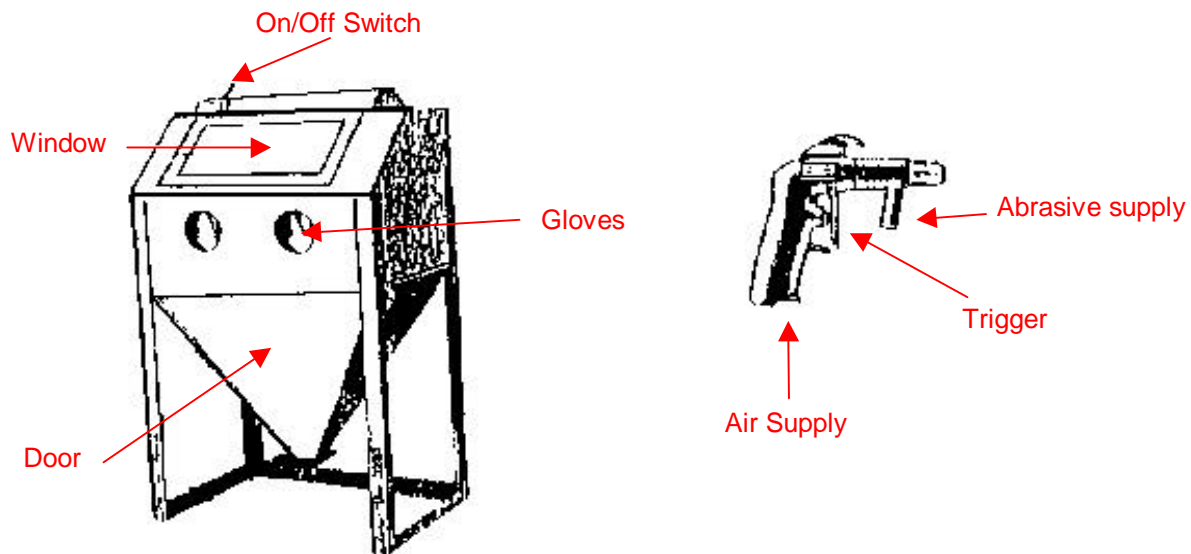
1. Always wear Z87 safety glasses.
2. Keep the access door closed when blasting.
3. Be sure that the exhaust system is working and the bag is attached.
4. Point the nozzle at your project only.
5. Never blast a wet object
6. Remove all loose paper before blasting.

*Note: Do not etch the window. If you do, you will buy a new one!*

### Procedure/Steps:

1. Remove all loose materials that could clog the intake line.
2. Open the door and place your project inside the cabinet.
3. Close the door.
4. Turn on the light and exhaust fan.
5. Hold the blasting nozzle approximately 1 inch away from the project.
6. Keep moving the blasting nozzle around the project. Do not hold in one place for longer than 5 seconds.
7. Stop when you have blasted your project design to the desired depth.
8. Remove the project from the cabinet and check the design.
9. Reblast the project if needed.
10. Close the door to the cabinet and turn off the light and exhaust fan.

### Parts Identification:



## Sand Blaster Safety Written Test

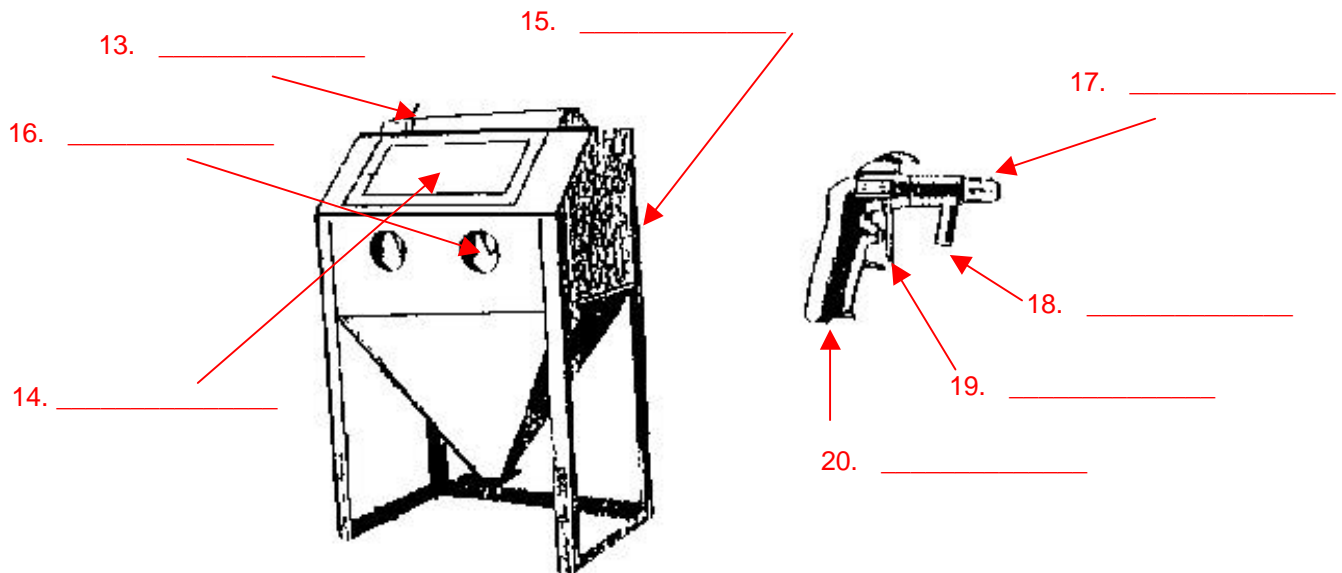
Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

### WORD BANK

Abrasive supply	Gloves	Sand blaster	Wet
Air supply	Lights	Safety glasses	Window
Door	Nozzle	Silica sand	1 Inch
Exhaust system	Paper	Switch	3 Inches
Glass etching	Pressure gage	Trigger	5 Inches

1. What is the name of this machine? \_\_\_\_\_
2. We will use this machine for? \_\_\_\_\_
3. These are worn to protect your eyes \_\_\_\_\_
4. This must be closed to use the machine \_\_\_\_\_
5. This helps to remove dust from the air \_\_\_\_\_
6. You should not blast objects that are \_\_\_\_\_
7. Before blasting, remove all loose \_\_\_\_\_
8. Do not point the nozzle toward the \_\_\_\_\_
9. These protect your hands when using this machine \_\_\_\_\_
10. We use this material for our abrasive \_\_\_\_\_
11. Hold the nozzle this far away from your project \_\_\_\_\_
12. Check this object if there is no air pressure \_\_\_\_\_

### Parts Identification:



## Scroll Saw Notes

### Requirements:

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Make all adjustments with the power OFF.
2. Make sure that you are lightly holding the wood flat against the table, to keep the wood from bouncing around and possibly being thrown out.
3. Check to make sure that the teeth of the blade are pointing down, and that the guide assembly is flush with the wood.
4. Use both hands to guide the wood through the cut. However, they should remain to the side of the blade, never in direct line with the blade.
5. The scroll saw can hurt you as badly as the band saw. The smaller blade will not save your hand or fingers.
6. Never use your hand to clear the table. Always use a table broom or the chip blower.
7. Scroll saw blades break very easily, so take your time to make the right cuts. Remember never force the wood and use the correct speed.
8. "Hard" woods, and tight curves should be cut using the slower speed.
9. If the blade breaks turn the machine off, unplug it, and tell the teacher immediately. Never try to fix it yourself.
10. You have to wait patiently and quietly for your turn on this machine, behind the yellow line, just like with any machine.
11. If for any reason you are not sure the way to cut out an object get your teachers assistance. You may have to wait a little while, but you will be helped as soon as possible. Remember, have patience!

12. The machine must be turned off and at a complete stand still before you can leave it.

## Scroll Saw Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. The scroll saw can be SAFELY used to cut (☐ Slight ☐ Tight) curves.
2. Make any adjustments with the power (☐ On ☐ Off).
3. Use (☐ Both ☐ One) hand(s) to guide the wood through the blade.
4. "Hard" woods and tight curves should be cut with a (☐ Faster ☐ Slower) speed.
5. You should wait (☐ Patiently ☐ Impatiently) for your turn to use the machine.
6. Picking the correct speed for cutting a design (☐ Is ☐ Is not) necessary.
7. You (☐ Should ☐ Should not) force wood into the blade.
8. If you are unsure of how to cut a design you (☐ Try it anyway ☐ Get assistance).
- 9/10. The machine should be turned (☐ On ☐ Off), and (☐ Still going ☐ Standing still) before you leave it.

Blades do occasionally break on this machine, if it does break you should:

11. \_\_\_\_\_

List five (5) SAFETY procedures you should do before you operate this machine:

10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_

## ***Scroll Saw Written Test Key***

1. Tight
2. Off
3. Both
4. Slower
5. Patiently
6. Is
7. Should not
8. Get assistance
9. Standing still

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## Scroll Saw Hands-On Test

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Subject: \_\_\_\_\_

Per: \_\_\_\_\_

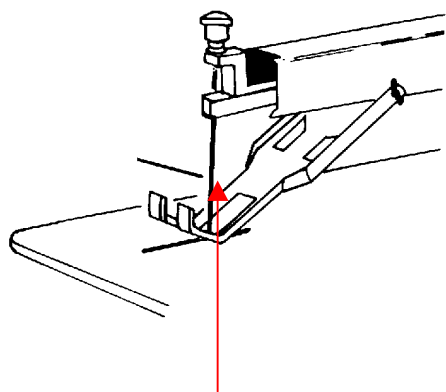
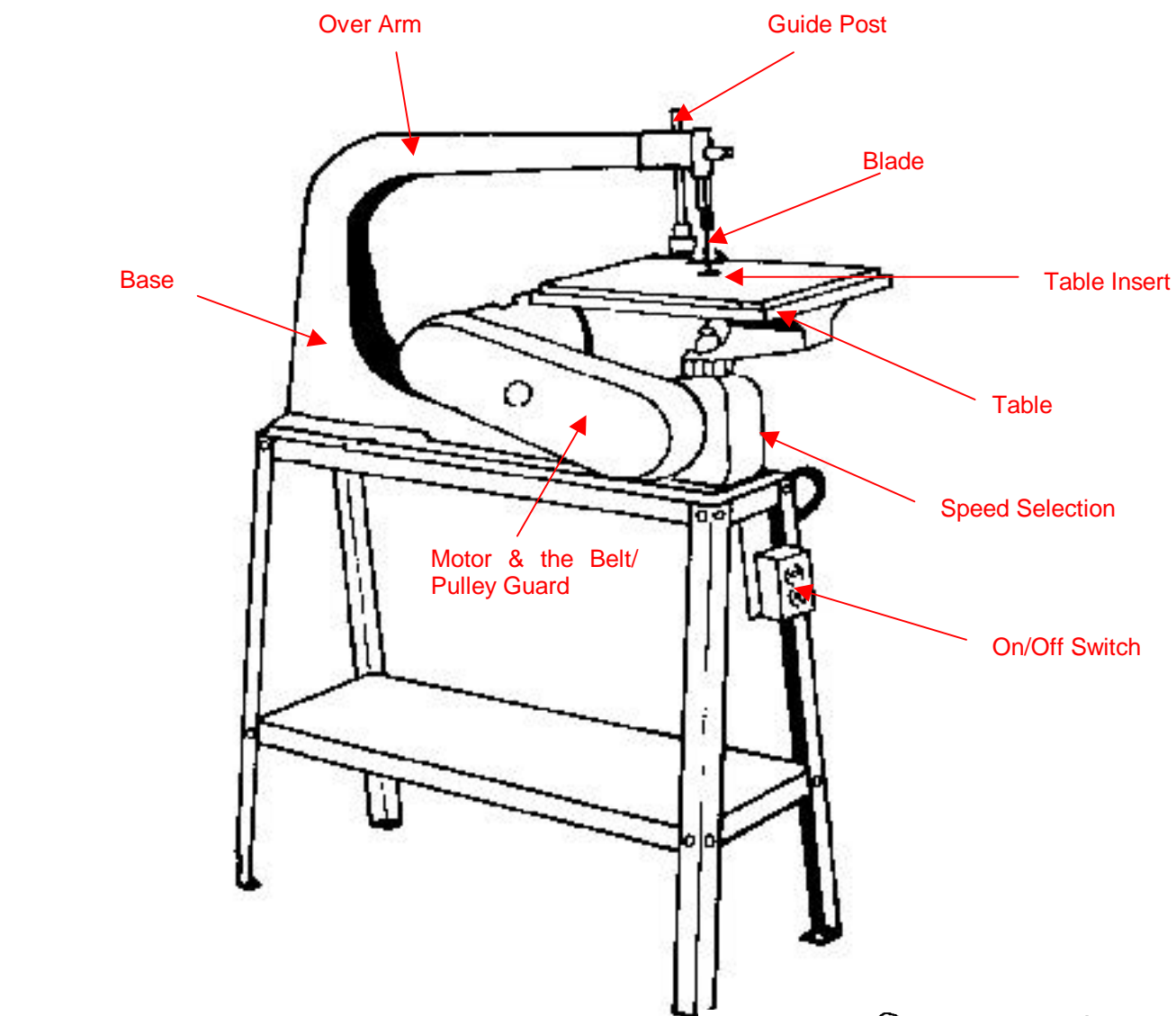
1. What does it do? \_\_\_\_\_
2. Why is it useful? \_\_\_\_\_
3. Can the student identify this machine (point to it)? (☐ Yes ☐ No)
4. Identify the following parts:

<input type="checkbox"/> On/Off	<input type="checkbox"/> Hold Down	<input type="checkbox"/> Table Insert
<input type="checkbox"/> Table	<input type="checkbox"/> Guide Post	<input type="checkbox"/> Upper Chuck
<input type="checkbox"/> Blade	<input type="checkbox"/> Guide Assembly	<input type="checkbox"/> Base
<input type="checkbox"/> Over Arm	<input type="checkbox"/> Belt and Guard Pulley	
5. Safety procedures followed before using the machine:

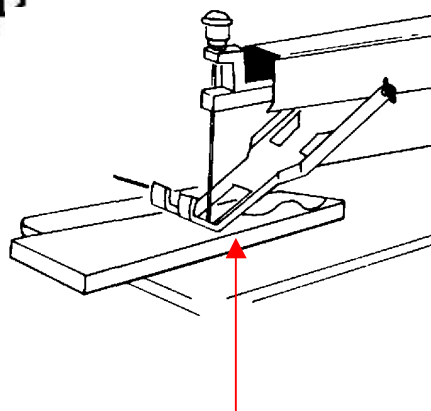
<input type="checkbox"/> Shirt tucked in	<input type="checkbox"/> Z87 safety glasses
<input type="checkbox"/> Hair secured	<input type="checkbox"/> Checks kick back zone
<input type="checkbox"/> Remove jewelry	<input type="checkbox"/> Gets help from/helps partner as needed
6. Procedures for operating machine (teacher designate):
  - ☐ Wood Against – uses both hands to hold the wood flat on the table to keep it from bouncing around.
  - ☐ Hands – fingers stay to the side of the blade, not in front of it.
  - ☐ Scrap Wood – uses to remove scrap wood.
  - ☐ Lowers Guard – lowers the guide assembly by hand; does not let it just drop.
  - ☐ Feet – facing machine.
  - ☐ Eyes – watches to see where the blade is going and makes sure that the hand is no were near the blade.
7. Makes two (2) safe and successful operations:
  - 1) ☐ Yes ☐ No
  - 2) ☐ Yes ☐ No
8. Makes sure that the machine has been shut down properly, that the area is clean, and puts tools away. ☐ Yes ☐ No



## Scroll Saw Parts



**NOTE:** Tension should be adjusted until it is 90°.



**NOTE:** Guide should fit flush like this.

## ***Sheet Metal Machines Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Keep hands and fingers clear of clamps, jaws, and rotating parts.
2. Never bend, roll, crimp, or bead metal which exceeds the capacity of the machine.
3. Make all rolls and bends smoothly and steadily.
4. Work with only one piece of metal at a time.
5. Remove burrs from the metal before attempting to work it in the machine.
6. Obtain help when working with large pieces of stock.
7. Never force levers or handles.

## Sheet Metal Machines Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. Sheet metal machines (☐ Cannot ☐ Can) be damaged by overloading.
2. Sharp burrs and edges (☐ Do not need to ☐ Should) be removed before attempting to place stock in machine.
3. Fingers must be kept (☐ Clear or ☐ Close to) moving parts.
4. Quarter-inch thick, mild steel stock (☐ Can ☐ Cannot) be formed on the sheet metal machine.
5. If a handle jams, it (☐ Can ☐ Cannot) be tapped lightly with a hammer.
6. If the machine is not working properly you should:  
\_\_\_\_\_

List five (5) SAFETY procedures you should do before you operate this machine:

7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_

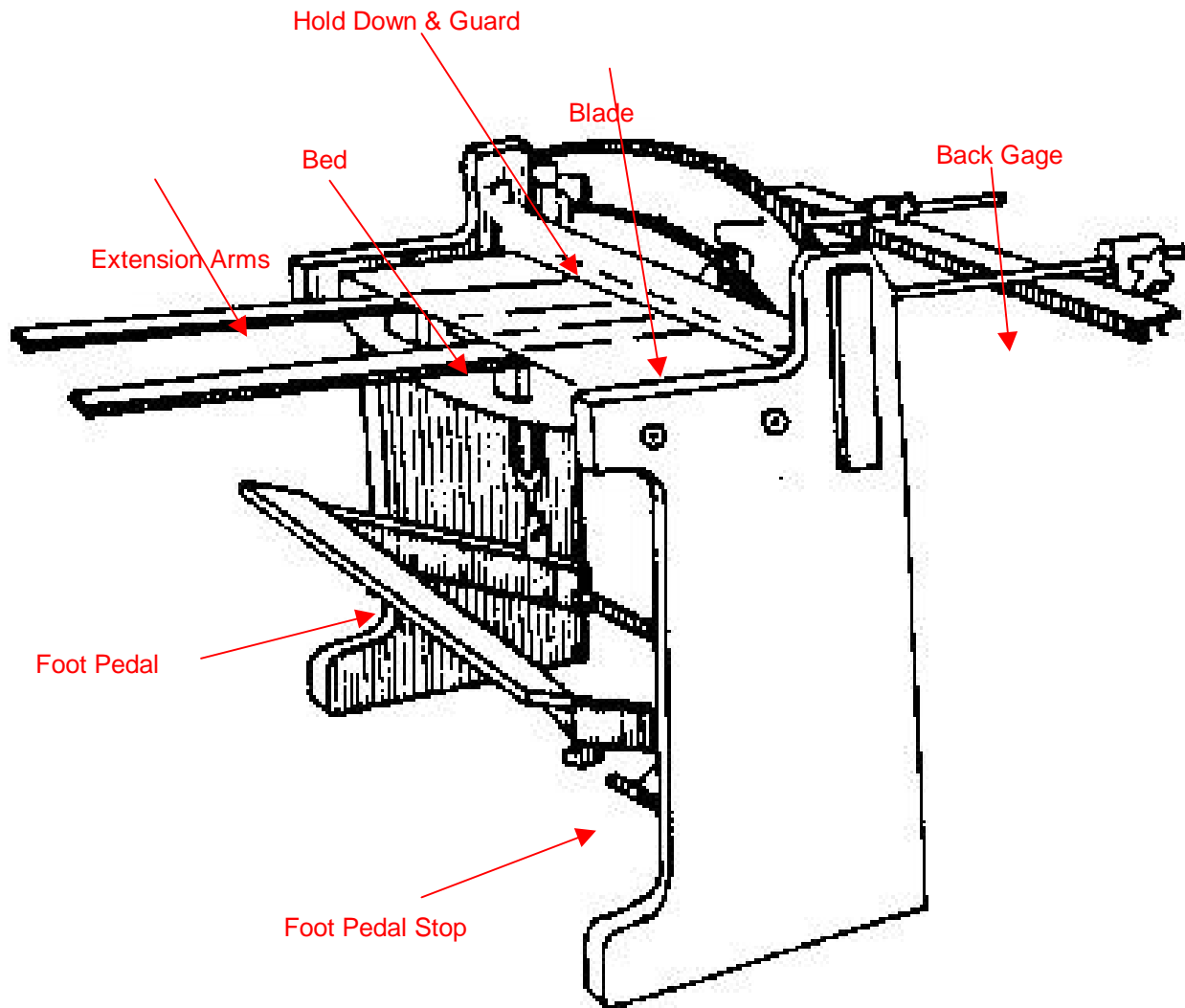
## ***Sheet Metal Machines Written Test Key***

1. Can
2. Should be
3. Clear of
4. Cannot
5. Cannot

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## ***Squaring Shear Parts***



## ***Soldering Station/Pencil Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always wear eye protection.
5. Avoid serious burns by treating all soldering equipment as though it was hot.
6. Always place equipment back in holder after use. Never lay it on the bench.
7. Handle all soldering equipment with caution.
8. Solder over the bench top to prevent hot solder from dropping on the operator's legs.

## ***Soldering Station/Pencil Written Test***

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. Eye protection (☐ **Should** ☐ **Should not**) be worn at all times in the laboratory.
2. (☐ **Only the tip** ☐ **All of**) of the soldering equipment is hot when it is on.
3. The soldering equipment should be (☐ **In its holder** ☐ **Laid on the bench**) after use.
4. (☐ **It feels cool to** ☐ **Do not**) let any of the melted solder touch your skin.

List five (5) SAFETY procedures you should do before you operate this machine:

5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_

## ***Soldering Station/Pencil Written Test Key***

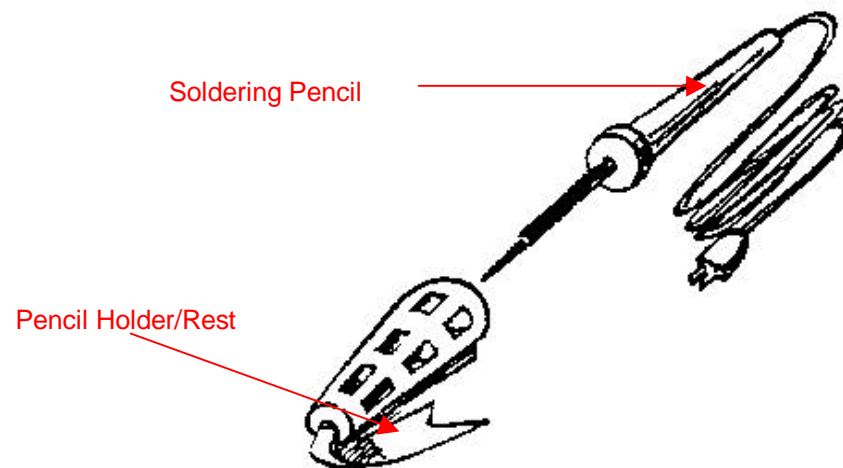
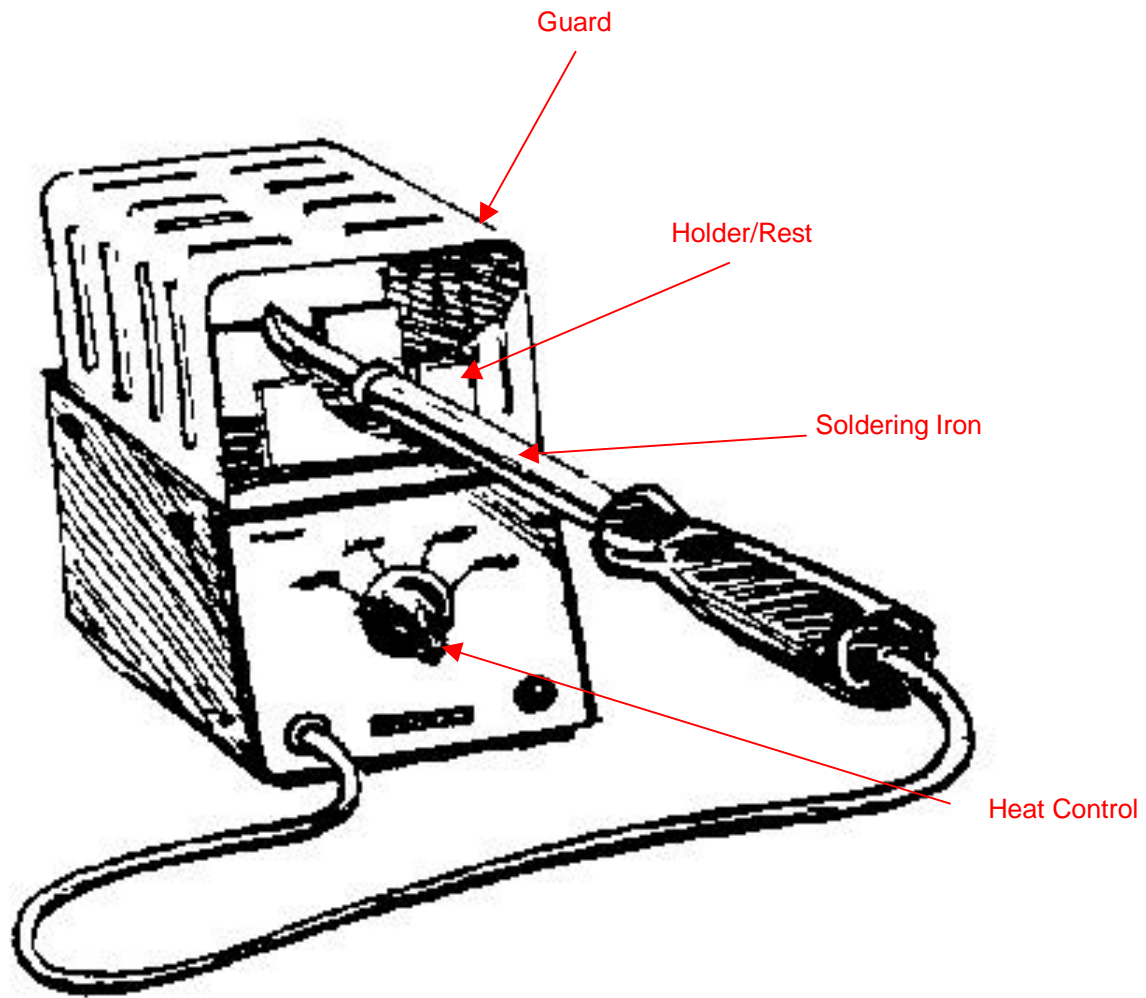
1. Should
2. All of
3. In its holder
4. Do not

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.



## Soldering Station/Pencil Parts



# ***Spinning Lathe Notes***

## **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Beware of sharp-pointed metal edges when cutting metal discs to size and when getting them ready for spinning.
2. Make sure that the tool rest base, tool rest, and fulcrum pin are securely tightened in place before attempting to spin.
3. Never stand in line with the disc during a centering operation.
4. Make certain the spinning tools are fitted solidly to the handle.
5. Do not touch a spinning disc by hand.
6. Use the correct tool for the operation and slowly force material to match the forming chuck.
7. Remove tool rest and pin when using steel wool or polishing.
8. Seek instructor's help
9. if in doubt about a specific operation.

## Spinning Lathe Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. You (☐ Do ☐ Do not) need to watch out for sharp-pointed metal edges when cutting the metal disc to size and when getting it ready for spinning.
2. Make sure that the tool rest base, tool rest, and fulcrum pin are (☐ Loosely ☐ Securely) tightened in place before attempting to spin.
3. It is SAFE to (☐ Stand to the side ☐ Stand in line with) the disc during a centering operation.
4. Make certain the spinning tools are fitted solidly to the (☐ Handle ☐ Rest base).
5. You (☐ Can ☐ Can not) SAFELY touch a spinning disc by hand.
6. Use the correct tool for the operation and (☐ Slowly ☐ Quickly) force material to match the forming chuck.
7. You (☐ Should ☐ Should not) remove tool rest and pin when using steel wool or polishing.
8. If you have any doubts you should: \_\_\_\_\_

List five (5) SAFETY procedures you should do before you operate this machine:

9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_

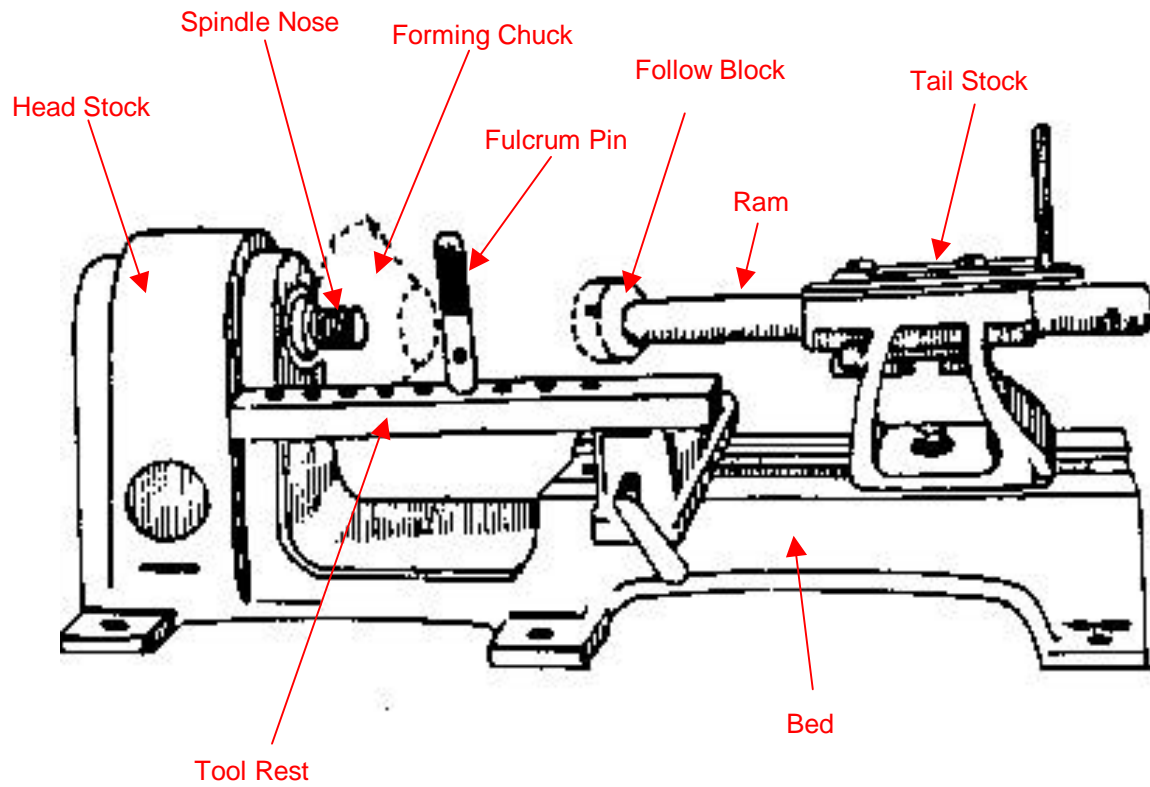
## ***Spinning Lathe Written Test Key***

1. Do
2. Securely
3. Stand to the side
4. Handle
5. Can not
6. Slowly
7. Should
8. Seek instructor's help

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## ***Spinning Lathe Parts***



## ***Table Saw Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Make sure you are dressed correctly for the job. Remove ties, scarves, jewelry, gloves, and keep long hair tied back.
2. Always wear safety goggles when operating a table saw.
3. Keep guards in place at all times while using a table saw.
4. Stand to the side of the saw during operation. Do not stand in line with the blade.
5. Do not raise the blade more than ¼" inch above the wood's surface.
6. When you are cutting long stock, a helper should support the weight of the wood while the operator does the pushing.
7. Have your instructor inspect all special set-ups and dado heads.
8. Adjustments on the machine should be made with power off and the blade stopped.
9. Use a push stick when ripping narrow pieces of stock.
10. Turn on the exhaust system before beginning work.

## Table Saw Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. Adjust the blade, just high enough to cut through the stock, (☐ Before ☐ After) the power is turned on.
2. Keep fingers (☐ Away from ☐ Close to) moving parts and never reach over the saw blade.
3. (☐ Always ☐ Never) make a cut without using the proper fences or gauges
4. Be sure that the blade will clear both sides of the (☐ Fence ☐ Throat plate) before turning on the power.
5. Make (☐ No ☐ Any) adjustments while the machine is running.
6. Never attempt to clear away scraps while the blade is (☐ Running ☐ Still).
7. Before beginning any "special" cuts, always have (☐ The instructor ☐ Another student) check the setup.
8. Do not allow fingers to (☐ Come into direct line with ☐ Be on the side of) the blade.
9. (☐ Get help ☐ Just be careful) when sawing large stock.
10. (☐ Do not ☐ Do) cut cylindrical stock on this machine.
11. When starting work or on special setups, (☐ Cycle the switch quickly to see that everything is working properly ☐ Have your instructor check your set-up).
12. Clean the machine and the area around it with (☐ Your hands ☐ A brush) when finished using.

List five (5) SAFETY procedures you should do before you operate this machine:

13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_
17. \_\_\_\_\_

## ***Table Saw Written Test Key***

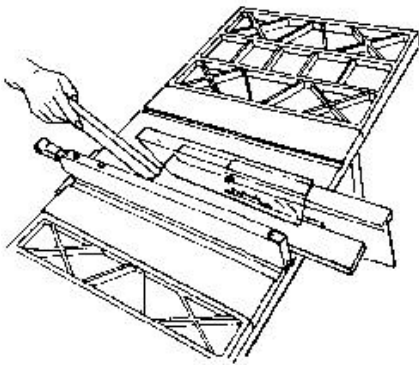
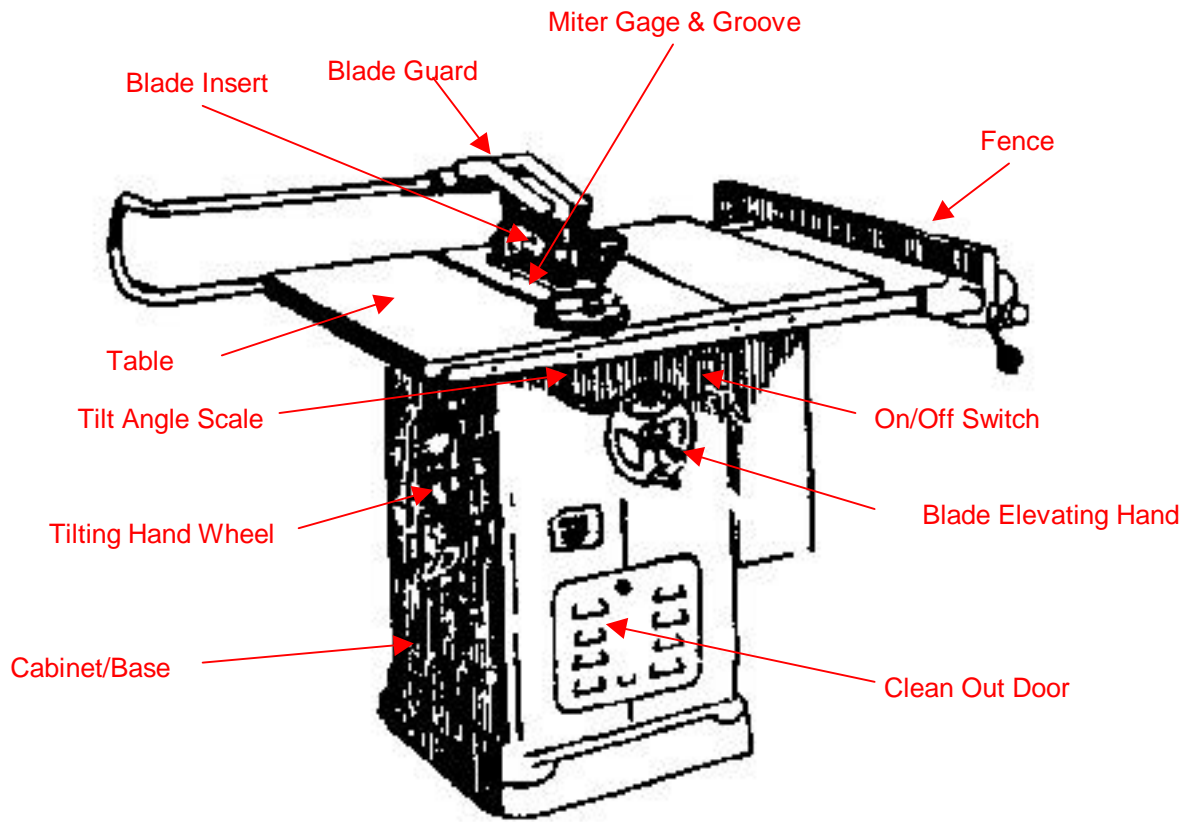
1. Before
2. Away from
3. Always
4. Throat plate
5. No
6. Running
7. The instructor
8. Come into direct line with
9. Get help
10. Do not
11. Have your instructor check your set-up
12. With a brush

List five (5) safety procedures you should do before you operate this or any machine:

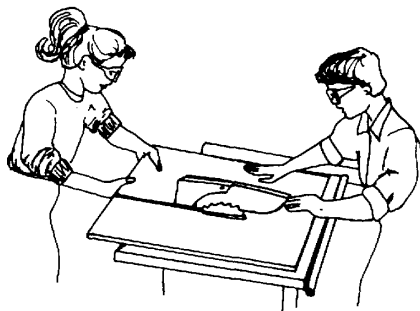
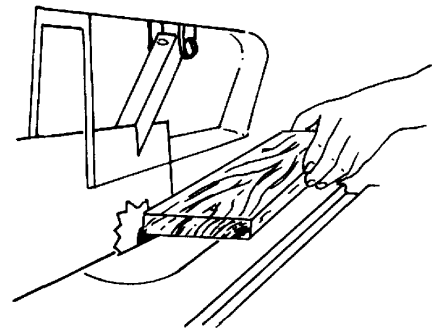
1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.



## Table Saw Parts



**NOTE:** To be safe always use a Push Stick, Guards, and Help your partner when you cut!



## ***TIG and MIG Welder Notes***

### **Requirements:**

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. Additional protective welding clothing, including a helmet, long sleeve jacket, and gloves must be worn to prevent burns from ultraviolet and infrared rays emitted while arc welding.
2. The helmet used for TIG and MIG welding should be equipped with a minimum number twelve-density shade.
3. Be certain that the welder equipped with a high frequency stabilizing unit is installed, maintained, and used according to the recommendations of both the manufacturer and the federal communication commission.
4. Never touch the tungsten electrode or MIG wire while the welder is turned on. It is electrically 'hot' and can cause a serious shock.
5. The exhaust system must be turned on prior to welding.

## ***TIG and MIG Welder Written Test***

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. It is okay to do TIG or MIG welding (☐ Without ☐ With) a welding helmet.
2. You (☐ Can ☐ Cannot) be shocked by touching the tungsten electrode while the TIG welder is turned on.
3. The high frequency switch must be turned (☐ Off ☐ On) while performing regular arc welding.
4. Both metal-arc welding and gas-shielded arc welding, give off ultra-violet and infrared radiation which (☐ Can ☐ Cannot) burn unprotected skin.
5. The helmet used for TIG and MIG welding should be equipped with a minimum number (☐ 12 ☐ 15) density shade

List five (5) SAFETY procedures you should do before you operate this machine:

6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

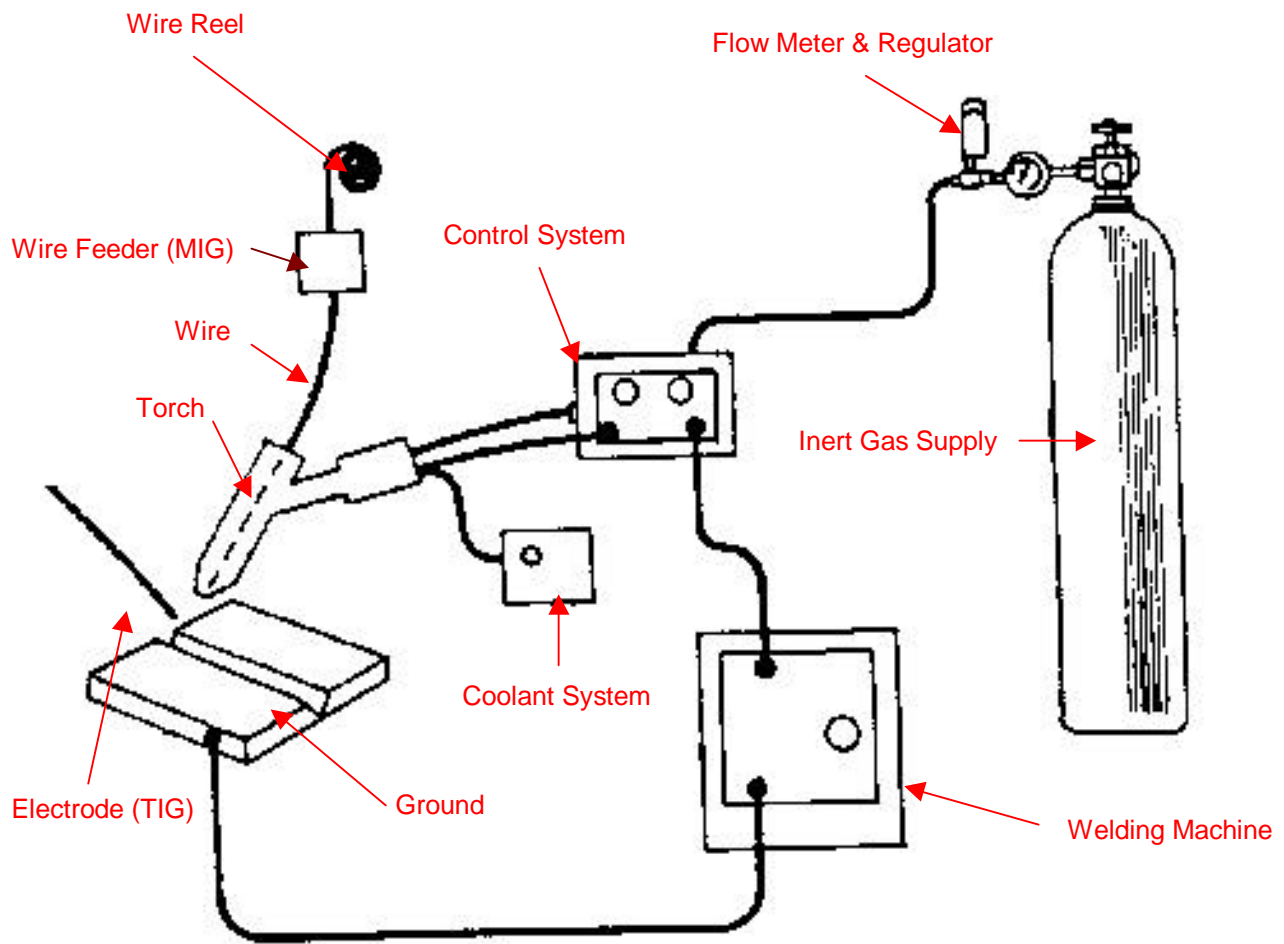
## ***TIG and MIG Welder Test Key***

1. With
2. Can
3. Off
4. Can
5. 12

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.

## TIG and MIG Welder Parts



NOTE: MIG = Metal Inert Gas. TIG = Tungsten Inert Gas

# Wood Lathe Notes

## Requirements:

Proper eye protection must be worn - operate only with instructor's permission and after proper instructions have been received.

1. When operating this machine you must wear proper eye protection, a face shield, pass ALL tests with 100%, and have your teacher's permission to operate it.
2. Carefully examine all wood for checks, knots, or other defects before putting it on the lathe.
3. Work must be balanced and securely held between centers or mounted on a faceplate.
4. Rotate spindle by hand to check to make sure that you have enough clearance before start the turning.
5. Tool rest must be set 1/8" away from the work piece and adjusted to the proper height for the tool being used.
6. Be sure the lathe is running at the proper speed for the operation.
7. You should use caution and commonsense to prevent turning tools from catching in the stock.
8. Select and use the correct tool for the cut you plan to make.
9. Even when wearing a face shield, you should also make sure that the safety shield is properly in place.
10. Remove tool rest and base before sanding or polishing.
11. Use a table broom brush to clean off lathe when finished.

## Wood Lathe Written Test

Use the correct heading and write the answer on your own paper. Using the BEST answer to complete the following:

1. When operating this machine you must wear proper eye protection, a \_\_\_\_\_, pass ALL tests with 100%, and have your teacher's permission to operate it.
2. You (☐ Should ☐ Should not) examine all wood for checks, knots, or other defects before you put it on the lathe.
3. Work must be balanced and securely held between (☐ Ends ☐ Centers) or mounted on a faceplate.
4. Rotate spindle by (☐ Hand ☐ Turning it on) to check to make sure that you have enough clearance before start the turning.
5. Tool rest must be set (☐ 1/8" ☐ 1/4" ☐ 1/2") away from the work piece and adjusted to the proper height for the tool being used.
6. Be sure the lathe is running at the (☐ Half ☐ Full) proper speed for the operation.
7. You should use caution and \_\_\_\_\_ to prevent turning tools from catching in the stock.
8. You (☐ Do ☐ Do not) need to select and use the correct tool for the cut you plan to make.
9. Since you will be wearing a face shield, you (☐ Should ☐ Should not) also make sure that the safety shield is properly in place.
10. Remove the tool rest and base (☐ After ☐ Before) sanding or polishing.
11. Use (☐ A table broom ☐ Your hands) to clean off lathe when finished.

List five (5) SAFETY procedures you should do before you operate this machine:

13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_
17. \_\_\_\_\_

## ***Wood Lathe Written Test Key***

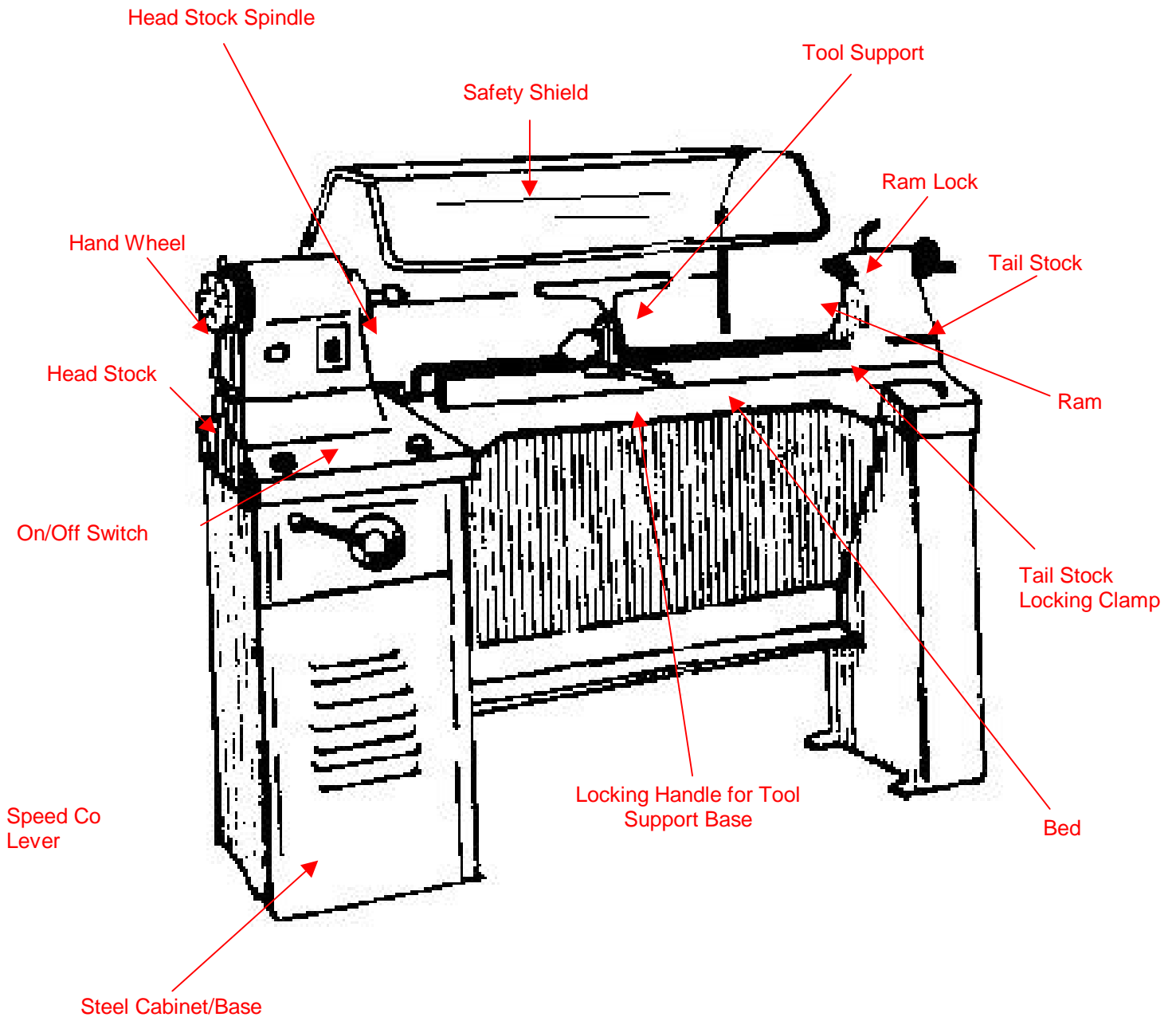
1. Face shield
2. Should
3. Centers
4. Hand
5. 1/8"
6. Full
7. Common sense
8. Do
9. Should
10. Before
11. A table broom

List five (5) safety procedures you should do before you operate this or any machine:

1. Tuck in your shirt.
2. Secure your hair.
3. Remove jewelry.
4. Wear Z87 safety glasses.
5. Work with a partner.
6. Listen for and report any problems immediately.
7. Make sure that any guards are in place and working.
8. No horseplay.
9. Keep work area clean.
10. Protect hands.



## Wood Lathe Parts



# Student Medical Information Sheet

All information must be completed and this form returned before a student will be allowed to operate any power equipment in the laboratories. This information will be used to help make this class as safe as possible and to expedite emergency help if needed.

(Student Name)

(City)

(State)

(Zip)

(Subdivision)

(Parent's/Guardian's Name)

(Address if different from above)

(City)

(State)

(Zip)

(Mother's Home Telephone Number)

(Mother's Work Telephone Number)

(Father's Home Telephone Number)

(Father's Work Telephone Number)

(Family Doctor)

(Address)

## In Case of Serious Accident, Please Notify:

(Name)

(Relation)

(Address)

(Telephone Number)

(Extension)

## Confidential Information

Are there any physical or mental impairments that may be of concern to me as a technology education instructor?

☐ Yes ☐ No. If yes, please specify: \_\_\_\_\_

During the school year does the student take medication of any type that may limit activities or affect vision, hearing, balance or other senses? ☐ Yes ☐ No. If yes, please specify: \_\_\_\_\_

Allergies to medicine? \_\_\_\_\_

I have read the attached information describing the technology education course. I promise the

information above is correct and true. I will inform the instructors of any changes that may occur this year relevant to my child and the safe operation of this course.

---

(Signature)

---

(Date)

If more space is needed for comments please continue on the back of this sheet.

# Authorization to Consent to Treatment of a Minor

\_\_\_\_\_  
(Name of Minor)

I authorize any of the sponsors/chaperones of the \_\_\_\_\_ to consent to medical  
(Name of school)  
treatment of the minor when I cannot be contacted and to consent such medical treatment to include,  
without Limitation, x-ray examination, anesthetic, medical, dental or surgical examination or treatment and  
general hospital care. No prior determination of life-threatening emergency or danger of serious or  
permanent injury resulting from delay of treatment need be made under this authorization.

## I SPECIFICALLY CERTIFY AND AGREE THAT:

Except as indicated at the end of this paragraph, this authorization is given in advance of any specific  
diagnosis, treatment or hospital care being required but is given to provide authority and power on the  
part of the Adult to give specific consent to any and all examinations, treatment or hospital care.

(Exception: \_\_\_\_\_  
\_\_\_\_\_

)

I will indemnify and hold harmless from any expenses or claims of any nature any person or entity which  
provide or causes to be provided examination, treatment or hospital care pursuant to this Authorization  
(except to the extent such person or entity is negligent therein) and conditionally agree to make or cause  
to be made, by assignment of third party benefits or otherwise, full and complete payment for such  
examination, treatment or hospital care.

I am the person having the power to consent to medical treatment of such minor.

This Authorization shall remain effective for the \_\_\_\_\_ school year, unless revoked by the  
physical destruction of the original hereof, such destruction being the only method of actual notice of the  
revocation of same.

All blanks of this Authorization were filled in before I signed this Authorization.

\_\_\_\_\_  
(Parent/Legal Guardian)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Insurance Company)

\_\_\_\_\_  
(Insurance Company Telephone Number)

\_\_\_\_\_  
(Group Number)

\_\_\_\_\_  
(Cert. Number)

\_\_\_\_\_  
(Social Security Number)

# Insurance Waiver

Although every attempt is made to ensure a safe learning environment for our students, accidents do occur. Parents and guardians should be aware that in the event your child is injured at school, the district does not carry *insurance* and will not cover the medical expenses from an accident, whether at school or at home. At the time your child enrolls, you should receive an enrollment brochure for OPTIONAL student accident insurance.

I, \_\_\_\_\_ the Parent/Guardian of \_\_\_\_\_  
(Parent/Guardian) (Name of  
Student)

acknowledge the opportunity to participate in the school insurance program. I do not want  
\_\_\_\_\_ to be enrolled in the school insurance program. He/she is covered  
under  
(Name of Student)

my family policy with our own insurance coverage

Please fill in the additional information in the event of an accident. If your child is enrolled in the school insurance program, please indicate school insurance as the company.

We, \_\_\_\_\_ carry accident and health insurance on \_\_\_\_\_  
(Name of Parent) (Name of  
Student)

with \_\_\_\_\_  
(Insurance Company) (Policy Number)

# Student Safety Performance Record

School: \_\_\_\_\_ Teacher: \_\_\_\_\_

Program: \_\_\_\_\_ Per.: \_\_\_\_\_ Yr.: \_\_\_\_\_

\_\_\_\_\_ has observed SAFE operating  
procedures, has  
(Student's Name)

passed the required SAFETY exam with 100%, and is permitted to operate the following items /  
equipment dated according to accepted SAFETY regulations.

Item / Tool / Equipment	Enter Date Completed		
	Teacher Demonstration	Written Test 100%	Performance Test 100%
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
24.			
25.			

*The teacher will keep this record until the student exits the program.*

# Teacher Observation Report of Students

Teacher(s): \_\_\_\_\_

School: \_\_\_\_\_

Class Period: \_\_\_\_\_ Subj.: \_\_\_\_\_

Unsafe Acts or Distractions	
✓ 100%	Demonstrates SAFE and good working habits and participation.
1. -20%	Failure to wear personal SAFETY gear.
2. -20%	Horseplay.
3. -20%	Poor house keeping practices.
4. -20%	Improper handling or disposal of hazardous materials
5. -10%	Poor participation
6. -10%	Using equipment without permission.

Student Names	Date(s)					Total Grade
	Mon / /	Tue / /	Wed / /	Thur / /	Fri / /	
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						
24.						
25.						
26.						

# Accident Report Form

Date of Report: \_\_\_\_\_

Name: \_\_\_\_\_ Address \_\_\_\_\_

School: \_\_\_\_\_ Sex \_\_\_\_\_ Age: \_\_\_\_\_ Grade: \_\_\_\_\_

Date and Time of Accident: \_\_\_\_\_

Describe the injury in detail and indicate the part of the body affected. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What was the person doing when injured?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

How did the accident occur?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Name the object or substance that directly injured the student.

\_\_\_\_\_

\_\_\_\_\_

If treated, name and address of the physician or hospital.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Prepared by: \_\_\_\_\_

Building Principal: \_\_\_\_\_



## Accident Report Summary

[illegible]

Out of  
Order



Technology  
Education  
Visitors  
Must Wear  
E-Y-E Protection

# Work Safely



No Horseplay  
No Running

Safety Exam  
Required  
Before Using  
Tools  
or Equipment

# BEWARE !



HOT Metal  
Area

Do Not

Operate

Without

Protective

Clothing



Place  
Waste  
in this  
Container



**Do Not**

**Remove**

**G-U-A-R-D**



**DANGER !**

**FUEL GAS**

**Open Flames**

**Not Allowed**

Ask for  
Instructions  
Before  
Operating

**CAUTION !**

**Do Not Operate  
Unless**

**Safety Guards  
Are in Place**



# SAFETY FIRST

Carelessness  
Is  
Dangerous



# EAR PROTECTION

Required  
to Operate  
this Machine

# EYE PROTECTION

A stylized illustration of a person's head and shoulders, wearing safety glasses. The person has dark hair and a beard. The safety glasses are yellow with black frames. The illustration is centered within a large, light yellow circle that has a thick gray border. The background of the entire image is a solid yellow color.

Required  
to Operate  
this Machine



All Hands Are  
Requested  
To Help Keep  
this Place  
Safe  
and Clean



# Netiquette 101 - Rules of the Online

- ◆ Never give out personal information anywhere on the Internet.
- ◆ Be concerned about getting personal e-mail messages from anyone online asking you for personal information, attempting to arrange private meetings, etc.
- ◆ Do not bypass any security measures installed on this computer.
- ◆ Talk with your teacher immediately if you observe/are involved with any violations of the first three rules listed above.
- ◆ Never use the Internet to harm other people in any way.
- ◆ Always ask for permission to use pictures or text from someone's Web site in your work.
- ◆ Treat other online users as you would like to be treated – with respect.
- ◆ Protect your password(s).
- ◆ “Lurk” before you leap; read what others have written before you post your comments.
- ◆ While at school, use the Internet only for school-related activities, homework, research, etc.

# Computer- Usage Guidelines

- ◆ Treat this computer like you'd treat your own – with respect.
- ◆ Always ask permission before using this computer.
- ◆ Use this computer only for school related activities: homework, research, etc.
- ◆ Respect other people's files on this computer. Do not change, copy, delete, read, or otherwise access files that are not yours.
- ◆ Do not install or remove any software on this computer.
- ◆ Remember that others need to use this computer, too. Do not monopolize it.
- ◆ All software on this computer is copyrighted. Do not copy, distribute, or alter it in any way.