

Name: ANSWER KEY

Date: SPRING 2022

Grade: 400 /400

Machine Safety

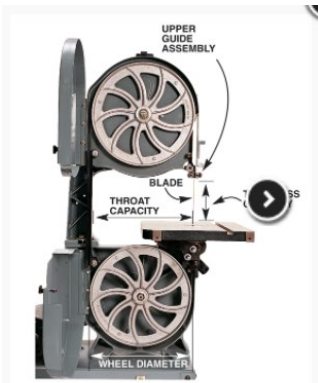
Use <https://nickcornwell.weebly.com/machinelab-safety.html> if you do not get every answer you need from the class presentation. Each question is worth 4 points.

Band Saw

1. The blade guard should be 1/4" inches above the wood you are cutting.
2. How do you adjust the band saw blade guard? Untighten the screw knob on the side or back and pull on the blade guard.
3. TPI stands for Teeth per inch
4. Teeth on any saw should be facing DOWN!
5. What is resawing? What additional saw will help you resaw faster? Draw a picture as example and label how it is done. Make sure you reference the fence or a wood clamp in your drawing. Resawing is slicing wood thinner. The table saw is often used to start the resaw, and the bandsaw is used to finish it. Photo attached.



6. Band saws are sized by how big the Throat is. Draw a picture explaining this.



Band Saws are sized by how big the throat capacity is.

7. Your hands should never be in line with the Blade.

8. What is a steering stick? It is a scrap piece of wood that steers your wood into the blade, much like riding a bicycle, thus making your fingers and hands safe and far from the blade.

9. If the band saw starts to squeal, it means the blade is Binding/bending and you should use Relief cuts.

10. What is a relief cut? Explain why it is important to use relief cuts.

Relief cuts are straight cuts that cut curved areas out in chucks instead of one continuous curved cut. Relief cuts are safer and cause less stress on the blade.

11. How do you cut out a circular piece of wood on the bandsaw? By standing on the right side of the band saw and cutting several chunks off the stock, eventually making it round. Do not try to cut a circle out in one continuous cut on the band saw. Use the scroll saw at slow speed if you wish to do that.

12. Explain how you hold your fingers when you are cutting stock on the bandsaw. Much like you are typing or playing the piano. NEVER have your fingers flat on the stock, table, etc.

13. Stock should be FLAT on the band saw table when cutting.

Drill Press and drilling

14. Draw the outline of a forstner bit



15. Draw the outline of a paddlewheel or spade bit



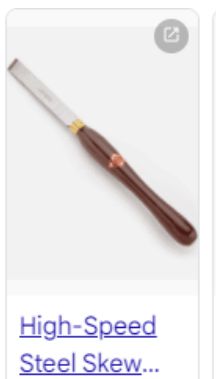
16. Draw the outline a brad point bit



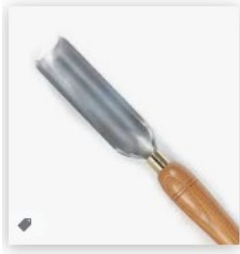
17. Explain when and how you should clamp something down on the drill press. If the bit were to seize/get stuck and you are holding your work tightly, it could break your wrist. Much better to break the clamp than your wrist.
18. What should be under your work when drilling? A flat scrap piece of wood. Do not drill into the metal table.
19. Draw a chuck key and explain what it does. Where do we keep the chuck key? The chuck tightens and loosens the drill bits. We keep the chuck key on the left side of the drill press in the machined hole. DO NOT LEAVE IT ON A TABLE.
20. How do you change a bit in a cordless drill? Hand tighten. Righty tighty, lefty loosey.

Wood Lathe

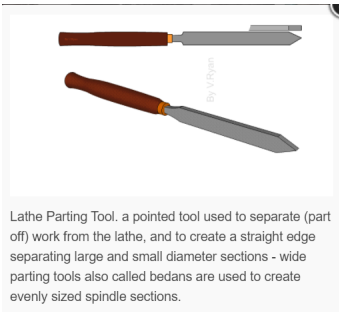
21. Where should long hair and long sleeves be when using the lathe? In a pony tail and rolled up.
22. Draw the shape of a skew and what it is used to shape. A skew tapers and smooths turned work.



23. Draw a gouge and state its purpose. The main purpose of a gouge is to make rectangular stock round.



24. Draw a parting tool and state its purpose



25. Draw a spur center and state its purpose. The spur center holds your work on the lathe.



26. Always hold lathe tools in TWO hands. Never Grab turning wood stock.

27. Draw and caliper and explain how to measure with it. A caliper can measure inside and outside diameters.

28. When using the lathe, large chips of wood/sawdust means you are Going too fast/pushing too hard or your tools are dull. Small chips/sawdust means you are Pushing the tool adequately and your tools are sharp.

29 & 30. Label the steps in order to mount wood on a lathe.

3	Use a rubber mallet (not a hammer!) to hit spur center into end of one side of wood	4	Insert spur center into head stock
7	Adjust tool rest so that it is 1/4" away from turning wood.	1	Draw perpendicular lines on the ends of each side of wood (corner to corner)
2	Saw perpendicular lines 1/8" deep so spur center will fit in cuts.	8	Rotate wood one time to see that it will not hit tool rest, then turn on.
6	Lock tail stock and tighten tail stock point so that the end of wood is dented (roughly 1/8" deep)	5	Adjust tail stock so point is in the center of the X on the end of wood.

Disc and Belt Sander and Orbital Sanders

31. What side of the disc sander should you use to sand on? The downward turning side.

32. What should be turned on before turning on the sander? The dust collector.

33. What is the maximum thickness of wood that should be sanded off? Draw a 1/4" line below and label it.

1/4" is roughly half the thickness of your finger.

34. Explain how to use the sander cleaner. The sander cleaner is much like an eraser.



A belt cleaner cleans the sawdust out of an abrasive pad.

35. The sander is only to sand WOOD. No metal, plastic, etc.

36. Draw the direction that a random orbital sander takes when sanding. Make a scribble mark. There is no planned direction.

Scroll Saw and Jig Saw

37. The maximum thickness of wood that a scroll saw or hand-held jig saw can cut is One INCH.

38. Explain how you cut out the middle of a piece of stock using the scroll saw. Drill a hole in the center of the wood, feed the blade through the hole, retighten the blade, cut, take blade off, then remove work.

39. What is the pressure foot and what does it do? The pressure foot holds your work down so your wood doesn't slap annoyingly against the table of the saw.

40. When cutting thick stock, you should go SLOW, you can go FASTER when cutting thin stock.

41. If the blade breaks, turn the scroll saw off, release the tension, unclamp the blade, remove broken blade, insert new blade with teeth pointing DOWN, re-clamp the bottom clamp first, clamp the top, then retighten the tension.

General Wood Shop Safety Questions

42. Explain the difference between a push stick and push pad. Draw and label an example of each below.



Push Pads hold stock down on the work table. Push Sticks push stock past a cutting blade.

43. What should you do before you use any machine in the shop? Put on safety glasses.

44. List the general safety rules needed for every machine in the lab. No running, no horseplay, don't stand too close to someone working on a machine or tool, carry wood below your waist.

Portable Power and Hand Tools

45. Explain the difference between 80, 120, 220 and 400-grit sandpaper.



400 sandpaper has 400 pieces of "sand" per square inch. 80 grit has 80 larger pieces of "sand" per square inch.

46. Draw and label a bar clamp and a wood clamp.



A bar clamp is a the top. A wood clamp is made of wood. The other clamps in the photo are spring clamps, C clamps and quick clamps.

47. Explain the difference between hook and loop orbital sanders and peel and stick sanders.



Hook and Loop sanders are Velcro stick pads. Peel and stick are sticker-like sanding pads.

48. What tools are needed to properly open a paint can? What tools are needed to properly close a paint can?



Open paint/wax cans with a paint can opener, not a screwdriver.



close cans with a rubber mallet. The can will dent and paint will dry out if you bend the top of the can.

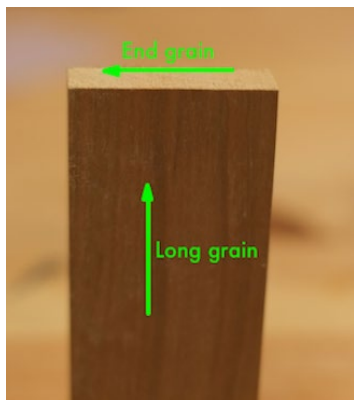
Important woodworking terms and information

49. What is the difference between ripping and crosscutting a piece of lumber?



50. Explain what wood grain is. Draw a picture below to help illustrate your definition.

Wood grain is the lines in the wood.



51. Softwoods come from ___Evergreen___ trees; Hardwoods come from ___Deciduous___ trees.

52. Define kerf- The thickness of a saw blade.

53. What is a vise? What are vise dogs and bench dogs and how are they used with a vise?



54. Steel wool is classified in 0, 00,000, and 0000. Which size is the finest? 0000

55. What should you do if you find a broken tool or machine?

Tell Mr. Cornwell BEFORE the end of the period

56. Where are the emergency stop buttons in the shop? Why should you use them? What will happen if you push the button and there is no emergency.



Red Emergency stop buttons turn off all machines except the lights. Do not use these buttons unless it truly is an emergency.

57. What is the only thing that should be swept in the dust collector? **DUST** What happens if you put nails or scrap wood in it? **Screws will clog or break the dust collector**

58. Wood glue is completely cured/dried after 24 hours.

59. Correctly clamped and cured wood glue will hold 1700 pounds.

60. What should you do during a school lock down?

Lock and barricade the door, turn the lights off, cover the door window, crouch low near Mr. Cornwell's desk. BE SILENT.

61. How do you change the belt on a belt sander or drum sander? **Pull the spring-loaded clamp lever**

62. How do you change the blade on a jig saw or saws-all? Pull the spring-loaded clamp lever, insert blade, release.

63. What should you never do with pressurized air? Blow the air in your face or in your hair.

Table Saw

64. Never FREEHAND cut on the table saw. Only straight cuts! Use a rip fence or a miter gauge.

65. Never use the RIP fence and MITER gauge at the same time. Use one or the other.

66. What does the height adjusting handwheel do? How far above the stock should the blade be set to?

Raises and lowers the blade. 1/4" above the work you are cutting.

67. What does the blade tilt handwheel do? What is the angle range of cuts for each table saw?

Rips miter cuts, or chamfer cuts. 0-45 degrees.

68. Is it safe to cut round stock on the table saw? FALSE

69. True or False: You should never stand in line with the blade or have your hands in line with the blade.

70. The miter head gauge is calibrated in Degrees

71. True or False: You should cut boards that visibly have nails or screws in them.

72. The large part of the wood being cut should be on the fence side of the wood. True

73. What does the splitter/riving knife do? Separates the cut wood to prevent kickbacks.

74. How do you cut dados and grooves on a table saw? Take the riving knife off, make the height of the sawblade lower than the thickness of the wood, use a push pad and push your wood over the blade making sure it stays up against the rip fence. Each pass will dado out 1/8". So you will need to go through at least 8 times to make a 1" groove.

Jointer

75. What is a Byrd head on a jointer? Multiple square razors vs. having 3 large razor blades.

76. To joint wood, the direction of our machine is from right to left.

77. Always stand to the SIDE and out of line of the cutterhead knives. Always use the Blade guard when jointing.

78. Do not allow the hand to pass directly above the cutterhead while applying pressure to the stock. Keep hand(s) at least 6 inches away from the cutterhead.

79. Never joint END grain on the jointer. Only edge or face jointing.

80. Keep stock flush against the Fence when jointing.

81. The minimum length of stock you can joint is 12 inches.
82. When face jointing, you must use a Push Pad.
83. For our class, keep the jointer fence set to 90 degrees.
84. Before using the jointer, make sure no one is standing behind it (by the large bandsaw).

Planer

85. The maximum amount of wood you can plane off in one pass is 1/16". One complete turn on the bed elevating handwheel = 1/16".
86. Two basic safety rules for the planer: Wear eye & Ear protection. Never LOOK into the machine while it is running.
87. The minimum length of board you should run through the planer is 12 inches. If it is shorter it could spin like a frisbee and shoot out of the planer at over 70 mph.
88. Never send wood through the planer where the end grain has been GLUED together to other pieces.







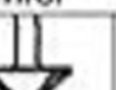

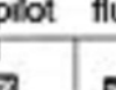
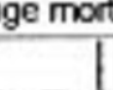
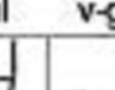
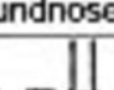
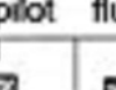
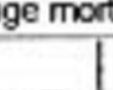
89. The only direction that wood should go into the planer is with the grain!.
90. Where should you stand when using the planer? To the side of the stock you are inserting into the planer.
91. How many boards can you plane at one time? As many as can fit in the infeed table.
92. Never plane wood CROSS grain when planing glued pieces.
93. When should you use a helper on the planer? What does the helper do?
When planing long lumber, a helper can help pull/catch lumber coming out the back side of the planer.
94. Explain what to do if the wood stops halfway through the machine.
95. Make sure your wood does not have screws or Nails before you run it through the planer. Also never put Painted wood into the planer.
96. How do you adjust the planer before you start?
Measure the thickness of the wood you are starting with. Then set the infeed table to the same thickness and rotate the wheel one to two times counterclockwise to start. You should barely see daylight above your wood before you start. The first time you send your wood through the planer, it should barely cut/plane any wood.
97. Your hands should never go past the front of the Infeed table.

98. When panel gluing after jointing pieces, a biscuit jointer is often used. Explain how to use a biscuit jointer. A biscuit jointer is used to cut football shaped openings where wood panels are glued to assure they stay aligned when gluing.



Router

99 & 100. Draw the 10 types of most common router profiles in the table below.

roundover	cove	rabbet	roman ogee		
					
3/8"R	1/2"R	1/2"GR	5/32"R		
chamfer	straight				
					
45° x 5/8"	3/4"LD	1/2"LD	3/8"LD	1/4"LD	
panel pilot	flush trim	hinge mortise	dovetail	v-groove	roundnose
					
3/8"LD	1/2"LD	1/2"LD	1/2" x 14°	3/8"LD	1/4"LD

101. The part used to hold bits in a portable router is the Collet.

102. When starting a cut with the router, the bit should NOT be touching the wood you wish to rout. You should also have both hands on the router.

103. What should you do with the power cord to the router while routing stock? Make sure it is behind you, so you do not cut it in half while using the router.

104. A major safety precaution to observe when changing router bits is Unplug the router when changing bits.

105. To prevent splintering at the corners, one should cut the Middle portion first.

Miter Saw

106. How must the saw blade be held after the cut is finished and before the blade stops rotating? **Hold the blade down until it stops moving!**

107. Your fingers should be at least **4** inches away from any stock you are cutting.

108. Always hold or clamp stock to the miter saw to the **LEFT** when cutting.

109. Never **cross** your arms when cutting.

110. What should you do if there is a kickback on the miter saw? Do not let go. **Calmly hold the blade down until it stops spinning.**

111. What is a compound miter? An angle cut on an angle. **Both planes of the wood are cut on an angle other than 90 degrees.**

112. Long stock should be supported by **table/extension**. Never a **person holding the wood**.

113. True or **false**: You can rip on a miter saw.

114. Align the saw blade on the **waste** side of the cut line.

115. Never cut anything smaller than **6** inches in length.

116. True or **false**: You can cut boards wider than 12" on a miter saw.

117. **True** or false: Never reach behind or across the blade while the miter saw is plugged in.

118. What is a stop block used for on a miter saw? **To cut multiple pieces of wood at the exact same length.**

LASER MACHINE

119. The LASER machine beam is focused when it is exactly **2** inches above the work plane.

120. Never leave the **LID or Top window** of the LASER machine open/up.

121. The **fume** extractor must be on to use the LASER machine.

122. Do not look **directly** into the LASER.

123. LASER is an acronym that stands for **Light amplified sensory emitted radiation**

124. The LASER machine will only cut or etch in 8 colors of RGB. List the three most common.

0,0,0 Black 0,0,255 Red 0,0,255 Blue

125. **True** or False: You may use glass, metal, wood, and plastic in the LASER machine.