

**Before using a table saw alone, you must be able to:**

1. Identify the major parts of the table saw.
2. Check to ensure the table saw is properly set-up.
3. Understand & Pass a written test on safety and operating procedures of the table saw with a minimum of 100% accuracy.
4. Demonstrate acceptable ability to safely crosscut, rip, bevel, miter and dado with the table saw.

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**Supplemental Video:**



Welcome to the BenchTop Basics Series, I hope you enjoy this series of instructional videos and pamphlets on setup and safety! Thank you for taking the time to learn or re-fresh on the fundamentals of shop safety. As many new woodworkers enter the craft, its important to make sure you build a solid foundation of fundamentals in safety and correct procedure so that you can enjoy the hobby safely for many years to come. I hope this helps you to Maximize Your Shop's Safety & Quality!

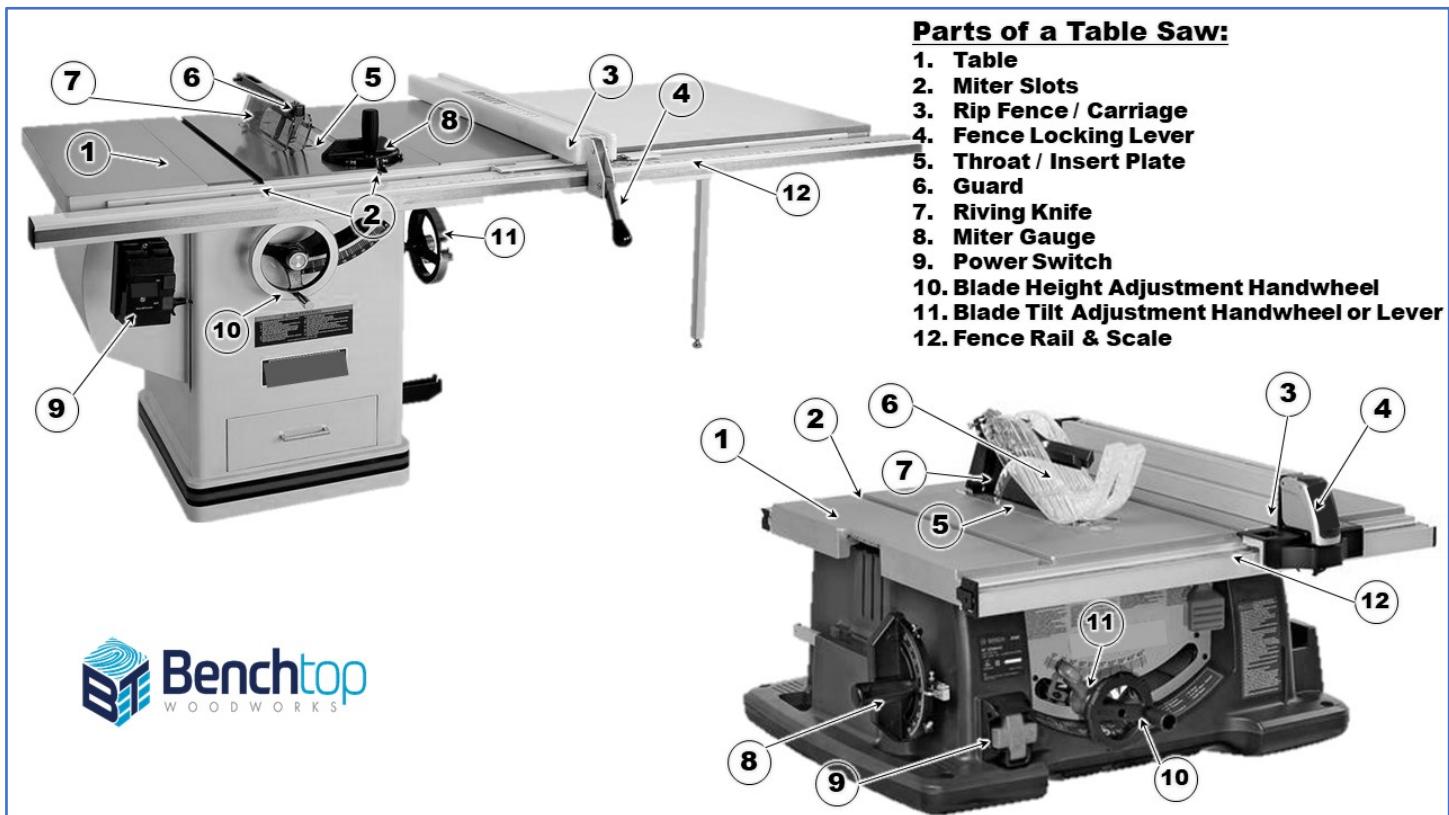
I strongly recommend you seek an experienced mentor that can teach you; its the best way to learn. In-person classes, books, machine manuals and woodworking magazines are also great ways to learn & supplement instruction. For those who don't have a mentor or local classes, my goal is to provide a resource for the fundamentals of shop safety and setup. A Table Saw is a powerful tool that should be respected, not feared. Respect for this tool is built by understanding and setting it up correctly with confidence gained by learning correct procedures. This is not meant to be complete stand-alone instruction but should provide a solid foundation to get you or another new woodworker started. Be sure to read and test on all material before using the table saw. Ensure you are familiar with the components and setup of your specific saw. This series is part of a planned goal to digitize my father's (deceased 2018) shop class curriculum. We never had a chance to record those videos, but this is a little way for me to honor his legacy as a shop teacher. Please feel free to share this resource with new woodworkers or instructors.

Happy Building,

-Chris Harpster

**Disclaimer:** Your safety is important to me & Woodworking is inherently dangerous. Using machines without proper training is not a practice I endorse. By using this instructional pamphlet you agree to assume all liability for your own actions and to fully release BenchTop Woodworks and its associates from any liability related to your actions or the use of this material. I strongly encourage all new woodworkers to take a foundational course in woodworking or seek a mentor who can teach you the fundamentals.

## Common Parts of a Table Saw



## Basic Safety & Operations

### Before Operation

1. Learn the parts of your saw and how to adjust each one. Learn how the saw works and what happens during each type of cut. Each cut-type has slightly different procedures.
2. Remove or fasten loose articles of clothing & hair such as long sleeves, coats, etc.
3. Gloves, rings, bracelets and other items which have the potential for getting caught on the table saw or material should not be worn when operating a table saw.
4. Wear industrial quality eye and ear protection while using the table saw. FOR **EVERY CUT**
5. Keep the saw table and floor free of tools, wood stock scraps, sawdust, oil and grease.
6. Disconnect power to the saw before handling the blade or when setting up the saw.
7. Use the correct blade type for your operation, a general combination blade works well for many cuts. Check the saw blade periodically for missing teeth and cracks.
8. Inspect your gear & work area: Make certain the saw guard, splitter (or riving knife), anti-kickback device and push stick are used for all possible sawing operations and within reach. Make a dedicated spot for them when possible.

### Rules for All Cuts

1. Plan & mark your cuts. Mentally visualize or rehearse your cut.
2. Use flat, dry, and milled stock. Bowed, cupped, twisted, or round material can bind, roll, or curve into the blade. Special preparation or jigs should be made to support uniquely shaped stock, and rough lumber these are advanced techniques.
3. Adjust your blade height to the material for every cut. The blade should be raised so that the bottom of the gullets are even with the top edge of the work-piece (teeth approx.  $\frac{1}{4}$ " or 6mm higher than the workpiece). Lower the blade below the tabletop before leaving the saw work area.
4. Stand to one side of the saw blade when cutting; do not allow others to stand in direct line behind the saw blade while the saw is operating.
5. Avoid standing in between the miter slots or between the blade and rip fence.
6. Never reach over the saw blade to remove or hold down a piece of stock.
7. Wait until the blade comes to a complete stop before retrieving pieces or leaving the table saw work area.
8. Devote your undivided attention to the work being performed on the table saw. Do not talk to others or look away while using the table saw. Do not use the table saw after consuming alcohol.
9. Avoid awkward work positions which may result in slips, changes in feed pressure, or contact with the saw blade.
10. Fully support long and wide stock & off-cuts when sawing. Always use a helper, outfeed table or roller stands to off-bear when cutting. Your helper should simply support and not pull, push, or guide the material.
11. Control the work-piece all the way through the blade, allow the offcut to stay in place, or fall away and do not grab or push it.
12. Never remove small scraps from the saw until the blade has come to a complete stop. Use a push stick to remove scrap from the saw blade.
13. Remember the rear of the blade is rising, it is the most dangerous portion of the blade. Keep downward pressure on the workpiece and push it completely clear of the blade. Use a push stick to extend your reach when required

14. All cuts will require a combination of downward, inward (toward reference fence) and forward pressure. Never apply pressure into the side of the blade or in a way that will pinch the blade.

## Rules for Rip Cutting (Cutting with the grain / long axis of a board)

1. Always use the saw guard, splitter/riving knife, and anti-kickback device. If a splitter is available, make sure it is aligned with the blade before being used.
2. Before making cuts, align and lock the rip fence in position. Position the rip fence to the right of the saw blade; ensure it is set parallel to the blade.
3. If the work piece does not have a straight edge, fasten an auxiliary board to the top of the work piece to provide a straight edge for the first cut.
4. For materials shorter than 12 inches or narrower than 6 inches always use a push stick or push block to push material between the fence and the saw blade. Avoid cutting materials shorter than 12" without clamping them to an auxiliary sled.
5. Set the rip fence for desired width of cut using the scale on the front rail or, for more accurate cuts, measure the distance between the blade teeth and the fence.
6. **READ THIS ONE TWICE:** When feeding material, use the left hand to hold the board against the fence and table until within 12" of the blade. Use the right hand to push the material through the saw. When the stock is less than 6 inches in width, use a push stick to push the trailing end through the saw. Position the right hand so it is NOT in direct line with the saw blade, a good practice is to "hook" your right pinky over the fence. This provides a guide to prevent you from ever placing your pushing hand too close to the blade. Remove the hand holding the stock down as it approaches the saw blade guard. Transition to using a push stick if necessary. For narrow ripping cuts, where a push stick cannot be used, use a push block or an auxiliary fence. (Use reverse procedure for left-handed persons).
7. Always push the work piece completely past the blade at the end of a cut to reduce the possibility of kickback.
8. When ripping long boards use a support at the front of the table or an off-bearer, roller stand or outfeed table to support the cut stock as it comes through the saw. The off-bearer never pulls the stock, he/she only supports and move with the stock as it comes through the saw.
9. Never attempt to set the rip fence when the locking carriage extends beyond the end of the front rail.
10. Make sure the correct blade is used for ripping cuts.
11. If the lumber is warped, turn the curved side down when ripping so the cut wood will not pinch on the blade. This is an advanced technique.
12. Round stock should not be ripped on a table saw.
13. Place your push stick off-set closer to the blade than the fence on the heel/trail edge of the board. This ensures your forward force also pushes the board toward the fence rather than the blade.

## Rules for Crosscutting

1. Make sure the saw guard and splitter are in place when crosscutting.
2. Always use the miter gauge when crosscutting. Be sure the miter gauge is set at the proper angle for the desired cut and securely clamped.
3. Most workers prefer to use the left table slot for the miter gauge when crosscutting.
4. Hold the stock against the miter gauge with the left hand and use the right hand to advance the miter gauge and material through the cut.
5. Use the right table slot for making bevel or chamfer cuts. The right table slot is used for this operation so the blade will tilt away from the operator's hands and the miter gauge.
6. Always hold or clamp the material firmly against the miter gauge to prevent vibration and binding when the cut is made.

7. To improve the effectiveness of the miter gauge, some workers mount an auxiliary extension to the fence of their miter gage. This extension should not extend beyond the left edge of the saw table.
8. Provide support for any material which extends beyond the edge(s) of the saw table.
9. The miter gauge should be used when making cuts from 90 degrees to 45 degrees. The miter gauge should be adjusted relative to the slot in the saw table. If needed, change the position of the pointer and stops on the miter gauge gauge to accurately read the degrees for miter cuts.
10. Never use the fence and miter gauge together to guide a cut. This will create a near certain situation for binding and kickback. If you need to reference a stop for repeatable length cuts, set your length stop on the miter gauge fence or place a stop to reference prior to the workpiece contacting the blade. This is a slightly advance technique.

### **Rules for Bevel and Miter Cutting:**

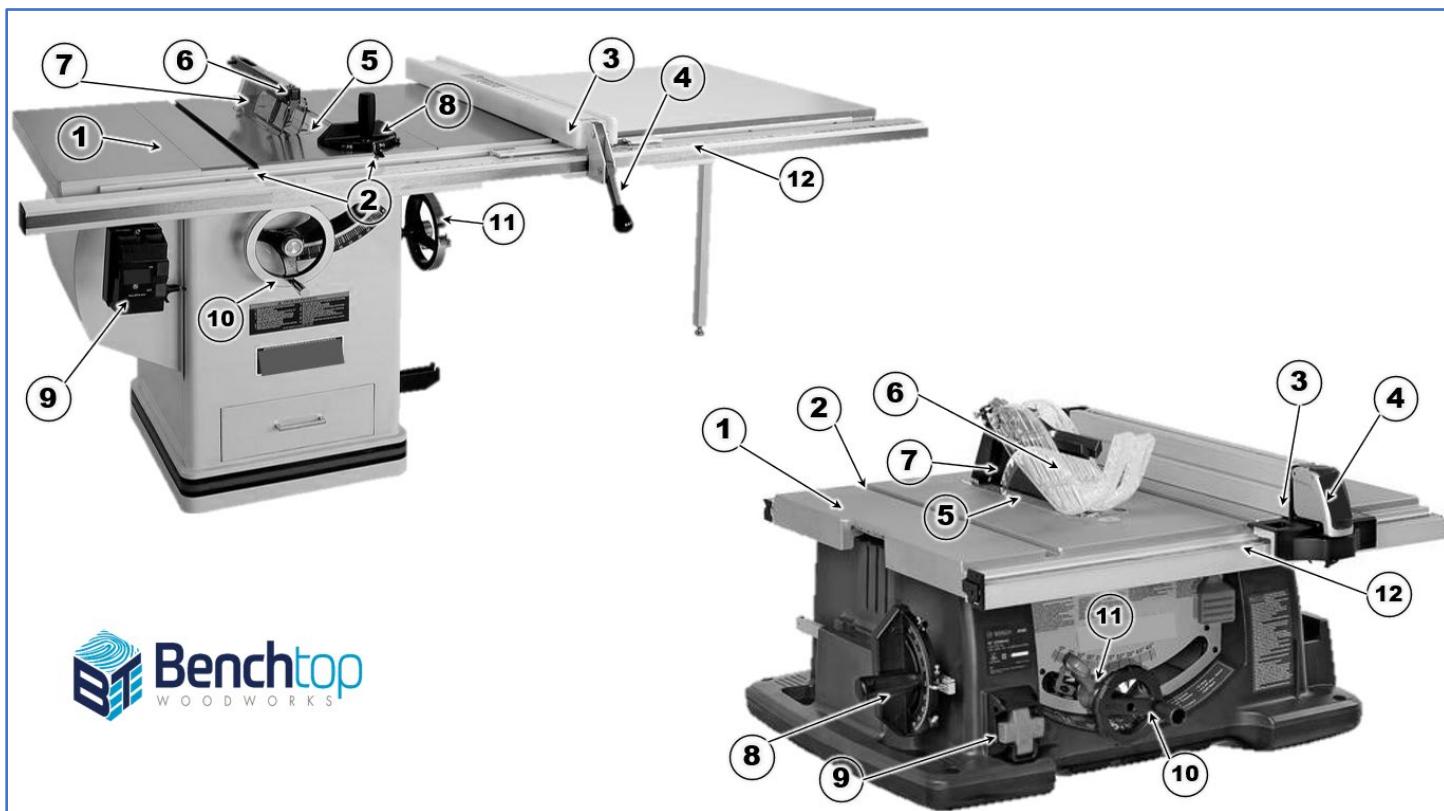
1. The saw guard, splitter (if available) should be in place when making bevel and miter cuts
2. When beveling or making compound miter cuts always use the fence or the miter gauge on the opposite side from which the blade is tilted. This will maximize the distance the hands will be from the blade and help avoid binding between the saw blade and the tabletop.
3. Bevel cutting is performed the same as described for ripping; miter cutting is performed the same as described for crosscutting.
4. Miter gauge hold down clamps may be used to hold stock in place for accurate miter cuts.

### **Rules Dados Rabbets, & Grooves:**

1. Make sure the electrical service is turned off in the circuit breaker before installing dado blades
2. Use a table insert which fits the dado cut being made. Several wood table inserts, with varying slot widths, should be made and kept on hand for use with the dado blades.
3. Use Hold down blocks or pad to keep downward pressure while making groove cuts with the dado blade.
4. Use of an auxiliary board mounted on the rip fence is recommended of cutting groove joints with the dado head.
5. The miter gauge is used to hold stock for making dado cuts.
6. Replace the saw blade, guard, splitter, anti-kickback device, and table insert immediately after dado cuts are completed.
7. Always make a test cut in a piece of scrap to check fit and depth for dados and grooves.

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EXAMS FOR CHECK ON  
LEARNING FOLLOW

## Table Saw Parts Identification Test



### Match the Parts of a Table Saw to the Correct Number:

- Power Switch**
- Guard**
- Fence Locking Lever**
- Blade Tilt Adjustment Handwheel or Lever**
- Throat / Insert Plate**
- Table**
- Miter Slots**
- Fence Rail & Scale**
- Rip Fence / Carriage**
- Miter Gauge**
- Blade Height Adjustment Handwheel**
- Riving Knife**

**SEE ANSWERS**

## Table Saw Safety and Operation Test

Multiple Choice – Choose the letter of the most correct answer.

1. What should be done with articles of clothing, jewelry and hair when operating the table saw?
  - a. Keep them away from the saw blade
  - b. Remove, roll, or fasten them out of the way
  - c. Do not get close to the saw
  - d. Have a someone hold them out of the way
2. Which of the following items should NOT be worn when operating the table saw?
  - a. Rings
  - b. Gloves
  - c. Bracelets
  - d. All of these
3. Personal protective equipment which SHOULD be worn when operating the table saw is/are \_\_\_\_\_?
  - a. gloves
  - b. hearing protection
  - c. safety glasses
  - d. both b and c
4. When setting the table saw up for a job, the saw blade should be checked for \_\_\_\_\_?
  - a. Stripped threads
  - b. Loss of temper
  - c. Cracks and missing teeth
  - d. Distorted arbor
5. The arbor nut on a table saw is tightened only when \_\_\_\_\_?
  - a. It becomes loose
  - b. The saw is unplugged or disconnected from power
  - c. Performing monthly maintenance
  - d. Permission is granted
6. To prevent accidentally contacting the table saw blade \_\_\_\_\_?
  - a. Turn the saw off before removing material
  - b. Never reach over the blade
  - c. Do not over-reach when feeding material through the saw
  - d. All of the above
7. When sawing with the table saw, which of the following would not be a safe practice?
  - a. Use the blade guard
  - b. Get help to support the material being sawed
  - c. Push the material through the saw with the right hand and a push stick
  - d. Stand in line with the saw blade

8. After a cut has been completed, what should the operator do before leaving the table saw?
  - a. Turn the electrical service off at the circuit breaker or fuse box
  - b. Raise the blade to its full height
  - c. Make sure the saw blade has stopped turning & lower the blade
  - d. Lock the blade
  
9. When making a rip or crosscut, the saw blade should extend no more than \_\_\_\_\_ above the stock being cut.
  - a. 1" (25mm)
  - b. 3/8 (1 cm)
  - c. ½ (1.25cm)
  - d. bottom of gullet between teeth
  
10. When bevel or chamfer cuts are made, the hands of the operator should be \_\_\_\_\_.
  - a. Slightly to the right of the table edge
  - b. In front of the saw blade
  - c. Opposite side from which the blade is tilted
  - d. One hand on the right and one hand on the left of the blade
  
11. Which type of stock should never be ripped on the table saw?
  - a. Square stock
  - b. Thick stock
  - c. Round, bowed, cupped, or warped\*
  - d. Flat stock
  
12. What area of the saw is known as the “Caution” or “Danger Zone” for the operator where you should avoid standing?
  - a. To the side of the cut
  - b. Between the miter slots
  - c. To the left of the blade
  - d. It does not matter where the operator stands
  
13. Which of the following operations require the use of a push stick on the table saw?
  - a. Ripping narrow materials
  - b. Crosscutting
  - c. Mitering
  - d. Dadoing
  
14. Which table saw accessory gives width settings for the rip fence?
  - a. Front rail
  - b. Rear table rail
  - c. Table ruler
  - d. Miter head / gauge
  
15. 14. A push stick must be used if material is less than \_\_\_\_\_ inches in width?
  - a. 3
  - b. 6
  - c. 8
  - d. 10

16. The purpose of an off-bearer(helper) or roller stand, in table saw operation, is to \_\_\_\_\_.  
a. pull the stock through the saw  
b. support the stock as it is pushed through the saw  
c. support and pull the stock through the saw  
d. remove scraps, support and help pull stock through the saw
17. The maximum distance the rip fence can safely be set from the saw blade is \_\_\_\_\_.  
a. 36 inches (1m)  
b. based on the table/fence capacity of the saw  
c. 48"(1.3m)  
d. 12 inches (300mm)
18. The accessory used when crosscutting on the table saw is the \_\_\_\_\_.  
a. front rail  
b. miter gauge  
c. fence  
d. table slot
19. When crosscutting, most table saw operators prefer to work on the \_\_\_\_\_ side of the saw blade.  
a. right  
b. left  
c. both of these  
d. neither of these
20. The miter gauge / gauge is calibrated in \_\_\_\_\_.  
a. inches/centimeters  
b. increments  
c. degrees  
d. miters
21. The miter gauge and right-hand table slot are recommended for use when \_\_\_\_\_.  
a. right angle rip cuts are to be made  
b. beveled cuts where the blade is tilted  
c. ripping short pieces  
d. ripping multiple cuts of the same size
22. When stock is held loosely against the miter gauge one may experience \_\_\_\_\_.  
a. poor cuts  
b. binding of the blade  
c. material vibration  
d. all of these
23. When long materials are crosscut on the table saw the operator needs \_\_\_\_\_.  
a. auxiliary support  
b. a push-stick  
c. a properly adjusted fence  
d. all of the above

24. What dangerous condition can occur when the workpiece binds or rotates into the blade?
- a. Burn marks
  - b. Kickback
  - c. A cut that's not straight
  - d. Nothing
25. What safety accessories should always be on the saw or within reach of the operator?
- a. a push stick
  - b. a push block or pad
  - c. the riving knife
  - d. blade guard
  - e. All of the above
26. Which two accessories should never be used together as a general rule \_\_\_\_\_?
- a. Riving knife and blade guard
  - b. Miter gage and rip fence
  - c. Push stick and rip fence
  - d. Rip fence and auxiliary fence
27. What is the best way to retrieve an off-cut after cutting?
- a. Push it away from the blade with a push-stick
  - b. Wait for the blade to completely stop rotating
  - c. Have a friend grab the pieces in between cuts
  - d. Carefully reach over the blade and nudge it away from the guard
28. True or False, before cutting, it is important to check your stock for objects that might damage the saw?
- a. True
  - b. False
29. True or False, before cutting, it is important to check your blade angle and height?
- a. True
  - b. False

## SEE ANSWERS

## Hands-On Performance Test for the Table Saw

The student performs the following while ripping, crosscutting, mitering, beveling and dadoing with the table saw.

(**Yes** **No** **N/A**)

1. Eye and ear protection are used all times. \_\_\_\_\_
2. Loose clothing and jewelry are not worn. \_\_\_\_\_
3. The saw blade height is adjusted properly for ripping, crosscutting and dadoing. \_\_\_\_\_
4. The saw guard is in place. \_\_\_\_\_
5. The saw splitter and anti-kickback devices are in place (when applicable). \_\_\_\_\_
6. The saw table top is clear of tools and materials. \_\_\_\_\_
7. Other students are outside the operator safety zone. \_\_\_\_\_
8. The fence is adjusted and locked in place for ripping cuts. \_\_\_\_\_
9. The miter gauge is properly adjusted and the ripfence is out of the way for crosscutting. \_\_\_\_\_
10. The material is on the correct side of the blade when making bevel cuts. \_\_\_\_\_
11. The dado blade is properly installed and adjusted when making dado cuts. \_\_\_\_\_
12. The correct table insert is in place for ripping, crosscutting and dadoing. \_\_\_\_\_
13. A push stick is used for all ripping cuts less than 6 inches in width. \_\_\_\_\_
14. A helper or support stand is used for cutting long and wide stock. \_\_\_\_\_
15. Correct procedures are used in cutting stock. \_\_\_\_\_
16. All work procedures are safe and acceptable. \_\_\_\_\_

### Work Cited & Additional Resources:

Some of the machine introduction & Test Questions were sourced from:

**Virginia Tech Teacher Resources:**

<https://www.alce.vt.edu/signature-programs/team-ag-ed/teacher-resources.html>

**Cerritos College:**

<https://www.cerritos.edu/woodworking/>

<https://www.osha.gov/SLTC/handpowertools/index.html>

[https://www.iteea.org/Resources/Safety/Table\\_Saw\\_Test.htm](https://www.iteea.org/Resources/Safety/Table_Saw_Test.htm)

## Additional Resources

Check out ways to Maximize your Shop space on my Websites:

[My Website](#)

[My Youtube Channel](#)

[My Instagram](#)

[Find out about Unlimited Plans on Patreon](#)

[All of my plans are available on Etsy](#)

## Plans to Help You Maximize Your Shop:

My Shop's Mobile Base:



My Mobile Tool Wall:



My Planer Mount:



My Dust Collection Set-Up:

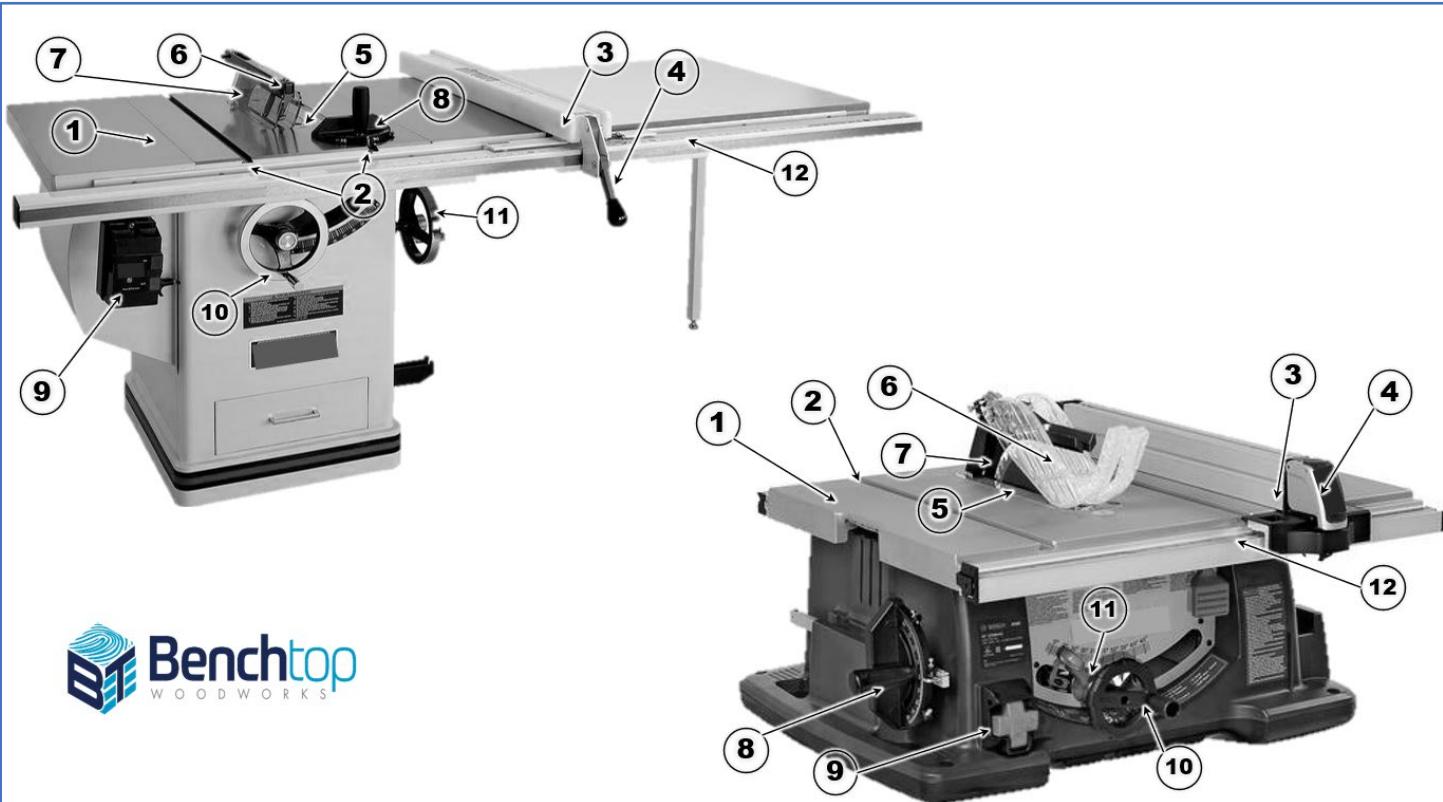


**ANSWER KEYS ON NEXT PAGE**

## TEST ANSWER KEY

1. What should be done with articles of clothing, jewelry and hair when operating the table saw?  
 a. **Remove, roll, or fasten them out of the way**
2. Which of the following items should NOT be worn when operating the table saw?  
 a. **All of these**
3. Personal protective equipment which SHOULD be worn when operating the table saw is/are \_\_\_\_\_?  
 a. **both b and c**
4. When setting the table saw up for a job, the saw blade should be checked for \_\_\_\_\_?  
 a. **Cracks and missing teeth**
5. The arbor nut on a table saw is tightened only when \_\_\_\_\_?  
 a. **The saw is unplugged or disconnected from power**
6. To prevent accidentally contacting the table saw blade \_\_\_\_\_?  
 a. **All of the above**
7. When sawing with the table saw, which of the following would not be a safe practice?  
 a. Stand in line with the saw blade
8. After a cut has been completed, what should the operator do before leaving the table saw?  
 a. **Make sure the saw blade has stopped turning & lower the blade**
9. When making a rip or crosscut, the saw blade should extend no more than \_\_\_\_\_ above the stock being cut.  
 a. **bottom of gullet between teeth**
10. When bevel or chamfer cuts are made, the hands of the operator should be \_\_\_\_\_.  
 a. **Opposite side from which the blade is tilted**
11. Which type of stock should never be ripped on the table saw?  
 a. **Round, bowed, cupped, or warped\***
12. What area of the saw is known as the "Caution" or "Danger Zone" for the operator where you should avoid standing?  
 a. **Between the miter slots**
13. Which of the following operations require the use of a push stick on the table saw?  
 a. **Ripping narrow materials**
14. Which table saw accessory gives width settings for the rip fence?  
 a. **Table ruler**
15. A push stick must be used if material is less than \_\_\_\_\_ inches in width?  
 a. **6**
16. The purpose of the off-bearer(helper) or roller stand, in table saw operation, is to \_\_\_\_\_.  
 a. **support the stock as it is pushed through the saw**
17. The maximum distance the rip fence can safely be set from the saw blade is \_\_\_\_\_.  
 a. **based on the table/fence capacity of the saw**
18. The accessory used when crosscutting on the table saw is the \_\_\_\_\_.  
 a. **miter head/gage**
19. When crosscutting, most table saw operators prefer to work on the \_\_\_\_\_ side of the saw blade.  
 a. **left**
20. The miter gauge / gauge is calibrated in \_\_\_\_\_.  
 a. **degrees**
21. The miter gauge and right hand table slot are recommended for use when \_\_\_\_\_.  
 a. **beveled cuts where the blade is tilted**
22. When stock is held loosely against the miter gauge one may experience \_\_\_\_\_.  
 a. **all of these**
23. When long materials are crosscut on the table saw the operator needs \_\_\_\_\_.  
 a. **auxiliary support**
24. What dangerous condition can occur when the workpiece binds or rotates into the blade?  
 a. **Kickback**
25. What safety accessories should always be on the saw or within reach of the operator?  
 a. **All of the above**
26. Which two accessories should never be used together as a general rule \_\_\_\_\_?  
 a. **Miter gage and rip fence**
27. What is the best way to retrieve an off-cut after cutting?  
 a. **Wait for the blade to completely stop rotating**
28. True or False, before cutting, it is important to check your stock for objects that might damage the saw?  
 a. **True**
29. True or False, before cutting, it is important to check your blade angle and height?  
 a. **True**

## ANSWER KEY



### Match the Parts of a Table Saw to the Correct Number:

- 9 Power Switch
- 6 Guard
- 4 Fence Locking Lever
- 11 Blade Tilt Adjustment Handwheel or Lever
- 5 Throat / Insert Plate
- 1 Table
- 2 Miter Slots
- 12 Fence Rail & Scale
- 3 Rip Fence / Carriage
- 8 Miter Gauge
- 10 Blade Height Adjustment Handwheel
- 7 Riving Knife