Production Technology

The Toolbox Project **Name**

Page			Safety	Measurement	Design & Planning
2-3	Safety quiz: Mitre saw	☐ Ready to mark	____ redo	____ passed	
4-5	Safety quiz: Jointer	☐ Ready to mark	____ redo	____ passed	
6-7	Safety quiz: Planer	☐ Ready to mark	____ redo	____ passed	
8-9	Safety quiz: Table saw	☐ Ready to mark	____ redo	____ passed	
10-11	Safety quiz: Bandsaw	☐ Ready to mark	____ redo	____ passed	
12-13	Safety quiz: Biscuit joiner	☐ Ready to mark	____ redo	____ passed	
14-15	Safety quiz: Drill press	☐ Ready to mark	____ redo	____ passed	
16-17	Safety quiz: Stationary sander	☐ Ready to mark	____ redo	____ passed	
18-19	Safety quiz: Palm sander	☐ Ready to mark	____ redo	____ passed	
20	Measurement: Wholes and halves I	☐ Ready to mark		____/10	
21	Measurement: Wholes and halves II	☐ Ready to mark		____/10	
22	Measurement: Halves and quarters I	☐ Ready to mark		____/10	
23	Measurement: Halves and quarters II	☐ Ready to mark		____/10	
24	Measurement: Quarters and eighths I	☐ Ready to mark		____/10	
25	Measurement: Quarters and eighths II	☐ Ready to mark		____/10	
26	Measurement: Eighths and sixteenths I	☐ Ready to mark		____/10	
27	Measurement: Eighths and sixteenths II	☐ Ready to mark		____/10	
28	Measurement: Sixteenths only I	☐ Ready to mark		____/10	
29	Measurement: Sixteenths only II	☐ Ready to mark		____/10	
30	Measurement: Mixed I	☐ Ready to mark		____/10	
31	Measurement: Mixed II	☐ Ready to mark		____/10	
32	Basic workshop drawing I	☐ Ready to mark			____/10
33	Basic workshop drawing II	☐ Ready to mark			____/10
34	Basic workshop drawing III	☐ Ready to mark			____/10
35	Tool box layout I				
36	Tool box drawing—box sides	☐ Ready to mark			____/10
37	Tool box drawing—box ends	☐ Ready to mark			____/10
38	Business: Toolbox project	☐ Ready to mark			____/10
40	What do I do next?				

Marks criteria for finished project

____/10 Measurement
____/10 Quality of joinery
____/10 Quality of finish

	Safety & clean up	Current mark
Week one	____%	____%
Week two	____%	____%
Week three	____%	____%
Week four	____%	____%
Week five	____%	____%
Week six	____%	____%

Mitre saw information

complete your training

wear safety glasses

get a spotter

Operate only with instructor's permission and after you have received instruction.

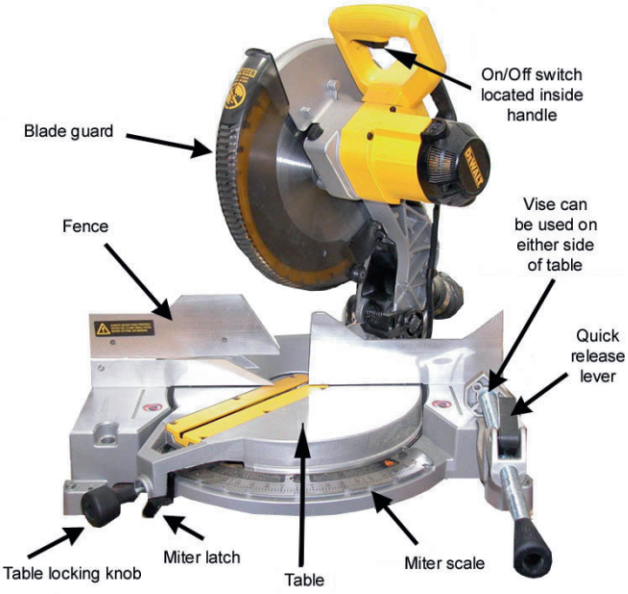
Remove any jewelry, secure loose clothing, and confine long hair. Make sure all guards are in place and operating correctly. Always use personal protective equipment (PPE).

All materials should be inspected for defects such as warps, knots and foreign objects.

Make certain the blade rotates in the correct direction and that the teeth at the bottom of the blade are pointing to the rear of the miter saw.

Do not perform any operation freehand and ensure small pieces are properly secured.

Hold the stock firmly against the fence and the table keeping your fingers at least 150 mm (6") away from the blade. Never hold work piece on the right side of the blade with left hand or vice versa. This is called cross-armed cutting and exposes the user to serious injury.



Allow the blade to reach full operating speed before letting the blade enter into the stock. Be aware that the saw moves up or down slightly upon startup and stopping.

Ensure that the saw is in the full upright position when starting and in the full down position when stopping. If the blade begins to bind while cutting stop immediately.

Disconnect the compound miter saw from the power source before beginning clean-up procedures.

Make all blade changes and angle adjustments with the power supply to the compound miter saw disconnected. Only install clean, sharp, cross-cut type blades in the compound miter saw. After changing a blade you should ensure the saw is turned off, the blade moves freely, and the guard is functioning properly before plugging in the saw.

Do not reach around, behind or underneath the saw unless it is turned off and unplugged.

Do not cut iron, steel, brick, or tile.

Mitre Saw Safety Quiz Name:

Check the box next to the most correct answer

1 When should permission be obtained from your instructor to operate the mitre saw?
- ☐ always
- ☐ never
- ☐ sometimes
- ☐ none of the above

2 What is proper dress when operating a mitre saw?
- ☐ remove any jewelry
- ☐ secure loose clothing
- ☐ confine long hair
- ☐ all of the above

3 When must personal protective equipment (PPE) be worn to operate the mitre saw?
- ☐ sometimes
- ☐ never
- ☐ always
- ☐ all of the above

4 What should you do before changing the blade or performing any other maintenance on the mitre saw
- ☐ turn off the machine
- ☐ turn off the machine and disconnect the machine from the power source
- ☐ ensure the saw arm is in the down, locked position
- ☐ keep the safety guard in place

5 What checks should be made after changing the blade on the mitre saw? Check all that apply.
- ☐ rotate the blade completely by hand before plugging in the machine
- ☐ be sure the switch is in the OFF position before inserting the plug into the outlet
- ☐ ensure that the safety guard is in place and operating correctly
- ☐ ensure that the teeth at the bottom of the blade are pointing away from the fence

6 What should you do before cutting stock on the mitre saw? Check all that apply.
- ☐ ensure that the safety guard is in place and operating correctly
- ☐ ensure that the stock is free from defects
- ☐ make sure the stock is held tightly against the fence
- ☐ let the motor reach full speed before allowing the blade to touch the stock

7 Where should your hands be placed when operating a mitre saw?
- ☐ on the right side with your left hand holding the stock (cross-armed)
- ☐ such that your fingers are at least 150mm (6") from the blade
- ☐ away from the saw, you don't need to hold the stock in place
- ☐ as close as possible to the blade

8 When finished cutting stock on the mitre saw, what should be the next step?
- ☐ turn OFF the saw and wait until the machine has come to a complete stop before unplugging
- ☐ leave your debris and off cuts lying around
- ☐ leave the saw immediately
- ☐ all of the above

9 What is the correct type of blade for the mitre saw?
- ☐ a cross cut blade
- ☐ any diameter blade
- ☐ a dull and dirty blade
- ☐ a blade with missing teeth

10 While cutting, when can you safely start and stop a mitre saw?
- ☐ in the full up position
- ☐ in the full down position
- ☐ starting in the full up position and stopping in the full down position
- ☐ in the half way position

Jointer information

complete your training

wear safety glasses

wear hearing protection

get a spotter

Operate only with instructor's permission and after you have received instruction.

Remove any jewelry, eliminate loose clothing, and confine long hair. Make sure all guards are in place and operating correctly. Always use proper eye and hearing protection.

All materials should be inspected for defects such as warps, knots and foreign objects.

Before starting the jointer ensure that table is cleared of objects, the stock is not in contact with the cutter heads and tighten the infeed and outfeed tables.

Never joint or plane a piece of stock that is shorter than 250 mm (10"), narrower than 19 mm (3/4"), or less than 13 mm (1/2") thick. The maximum depth of cut is 3 mm (1/8").

Make all adjustments with the power supply to the Jointer turned off. After making the correct depth of cut adjustment to the infeed table make sure the table is locked.

Always joint wood stock with the grain. Stock should be fed into the jointer from the infeed side only. The rotation of the cutter heads would make any other operation dangerous.

Use an appropriate push stick or safety blocks whenever fingers are expected to pass within 75 mm (3") of the cutters.

Hold the stock firmly against the fence and the table with even constant pressure to both the infeed and transfer to the outfeed table as the stock is being jointed.

Take a comfortable stance with your feet at shoulder width part when passing stock through the jointer and transfer your weight from the rear foot to the leading foot as your stock goes through its operation.

When finished wait until the machine has come to a complete stop before commencing clean-up procedures.

Jointer Safety Quiz

Name:

Check the box next to the most correct answer

1 When can a student operate a jointer?

- ☐ after they have received instruction
- ☐ after they have removed any jewelry
- ☐ once they have confined loose clothing and confined long hair
- ☐ all of the above

2 Which direction should wood stock be jointed?

- ☐ against the grain
- ☐ sideways to the grain
- ☐ with the grain
- ☐ all of the above

3 What should you do when you approach the jointer? Check all that apply.

- ☐ take a comfortable stance with your feet about shoulder width apart
- ☐ make sure the cutter safety guard is in full and proper operation
- ☐ ensure the fence is locked in the correct location
- ☐ have received instructor permission

4 What is the maximum depth of cut on a jointer?

- ☐ 3 mm (1/8")
- ☐ 9 mm (3/8")
- ☐ 19 mm (3/4")
- ☐ 25 mm (1")

5 What is the minimum length of work piece that can be safely used on a jointer?

- ☐ 125mm (5")
- ☐ 250mm (10")
- ☐ 300mm (12")
- ☐ 600mm (24")

6 What should you do before starting the jointer?

- ☐ make sure the guard is in place and is operational
- ☐ leave objects on the table (tools, scraps of wood etc..}
- ☐ loosen the in feed and out feed tables
- ☐ all of the above

7 Which one of the following statements is true?

- ☐ the workpiece should contact the cutter before the jointer is turned on
- ☐ feed the work piece into the outfeed end of the machine
- ☐ it is okay to feed a work piece that is warped, contains knots, or is embedded with foreign objects (such as nails)
- ☐ never perform freehand operations, always have the fence in proper position to guide the workpiece

8 What is an important procedure when using the jointer?

- ☐ apply pressure to the infeed table only
- ☐ apply pressure to the outfeed table only
- ☐ apply even constant pressure to both the infeed and transfer to the outfeed table as the stock is being jointed
- ☐ none of the above

9 Which of the following statements are true? Circle all that apply.

- ☐ operate only with instructor's permission and after you have received instruction
- ☐ remove jewelry, eliminate loose clothing, and confine long hair
- ☐ make sure all guards are in place and operating properly
- ☐ a safety test on the tool has been passed at 100%

10 How far can your fingers be away from the cutters before you use a push stick or safety blocks?

- ☐ 75mm (3")
- ☐ 100mm (4")
- ☐ 150mm (6")
- ☐ 200mm (8")

Planer information

complete your training

wear safety glasses

wear hearing protection

get a spotter

Operate only with the instructor's permission and after you have received instruction.

Remove jewelry, eliminate loose clothing, and confine long hair. Make sure all guards are in place and operating properly. Always use Personal Protection Equipment (PPEs) such as eye and ear protection, etc. Never look directly into the throat of a planer at table level while it is running or in operation.

All materials should be inspected for defects such as warps, knots and foreign objects. When planing bowed stock, place the concave (cup down) side of the stock on the table and cut with the grain to prevent kickback.

The minimum length of material is 300 mm (12”)

The maximum depth cut of material is 3 mm (1/8”). (Dependent on material width, this is only recommend for boards of 150 mm (6”) width or less.) The proper depth of cut and rate of speed is related to the material being planed. Check with your instructor. Thin stock, of 6 mm (1/4”), should be properly supported by a jig or back up board.

Make all adjustments with the power off and cord unplugged.

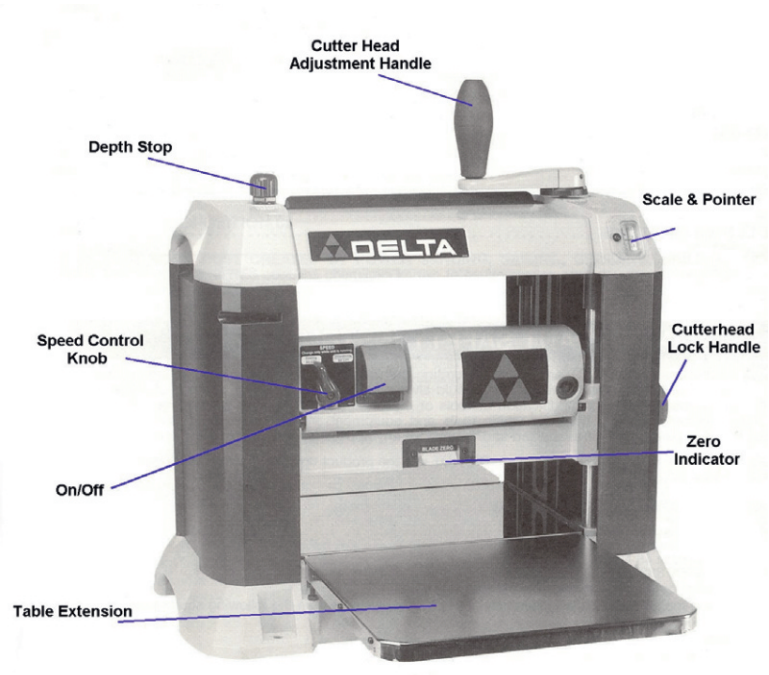
Do not force stock through the planer. Keep hands off the material & let the power feed operate. Allow the cutterhead to reach full speed before feeding a workpiece into the machine Changing speeds while planing can cause kickback.

Do not stand directly in front of the machine while it is in operation, the possibility of kick back exists.

Remove shavings or chips when the power is turned off. Keep hands away from the chip guard and the point of operation.

When finished job turn off planer, make sure cutter head has stopped and clean workspace.

If wood gets stuck turn OFF the planer. Do not use your hand to clear the blockage ask your instructor for assistance.



Planer Safety Quiz Name:

Check the box next to the most correct answer

1 Which statement is true?

- ☐ Keep knives sharp and free from rust and pitch. Dull, rusted knives work harder and can cause kick back.
- ☐ there is no minimum thickness of stock that can be planed safely
- ☐ the power does not have to be turned OFF to remove chips or shavings
- ☐ you can stand directly in front of the machine because kickback will not occur with this device

2 What should the user do when choosing stock to be planed?

- ☐ not worry too much about stock condition
- ☐ choose short stock under 300mm (12") in length
- ☐ check material for loose knots, nails and other foreign objects
- ☐ all of the above

3 What is the maximum amount of cut recommended for a thickness planer?

- ☐ 3 mm (1/8")
- ☐ 6 mm (1/4")
- ☐ 9 mm (3/8")
- ☐ 13 mm (1/2")

4 What should be done when attempting to plane thin stock?

- ☐ nothing - the planer will plane it safely
- ☐ double it up to make it thicker
- ☐ it should be properly supported by a jig or back up board
- ☐ you should never plane thin pieces

5 Which of the following statements are true?

- ☐ operate only with instructor's permission and after you have received instruction
- ☐ remove jewelry, eliminate loose clothing, and confine long hair
- ☐ make sure all guards are in place and operating properly
- ☐ all of the above

6 What should the user do when feeding stock into the planer?

- ☐ feed the wood by hand and force it into the machine
- ☐ not force wood through the planer, guide the material and let the power feed operate
- ☐ keep pressure on the stock pushing it into the machine
- ☐ stand directly in front of the machine

7 Which of the following is the correct procedure for planning bowed stock?

- ☐ there is no procedure just run it through as is
- ☐ place the concave (cup down) side of the stock on the table and cut with the grain to prevent kickback
- ☐ place convex (cup up) side of the stock on the table and cut against the grain to prevent kickback
- ☐ push it through as best you can and hold it tight with your hands

8 What are the proper depth of cut and rate of speed related to?

- ☐ the ability of the operator
- ☐ the hardness of the material being planed
- ☐ the time available
- ☐ none of the above

9 When must personal protective equipment (PPE) be worn?

- ☐ only when asked
- ☐ when the instructor is in the room
- ☐ always
- ☐ never

10 What should the user do before operating the planer? Check all that apply.

- ☐ received instruction
- ☐ passed a tool safety test with 100%
- ☐ received permission
- ☐ check that all guards are in place

Table saw information

complete your training

wear safety glasses

get a spotter

Operate only with the instructor's permission and after you have received instruction.

Always use personal protective equipment (PPE). Remove jewelry, secure loose clothing, and confine long hair. Make sure all guards are in place and operating properly. Always use guards, splitter, and anti-kickback pawls whenever possible.

Turn machine off and disconnect from power source before installing or removing accessories, before adjusting or changing set-ups, when making repairs or inspecting, or cleaning the work area. Always use the ripping fence or the cut-off guide (miter gauge). You must use one or the other...never freehand. You can never use both at the same time unless you use a "clearance block".

Inspect the blade before operation. Check for warping, cracks, teeth missing and that proper blade is in place. Remove debris before startup and when you are finished with power off.

All materials should be inspected for defects such as warps, knots and foreign objects. Only cut materials intended for cutting on the table saw (i.e. hardwood, softwood, plywood, OSB, other wood products, plastics). See instructor before cutting.

Never perform layout or setup work on the table saw.

Stand to one side of the saw while operating. If a board kicks back from binding it will not hit you if you are to one side of the saw. (Never have any part of your body in line with the blade.) Never start the machine with the stock touching the blade. Keep hands and fingers away from the blade. Never attempt to free a stalled saw blade without first turning the machine off. Always use a push stick when the fence is set under 75mm (3") to the blade.

Avoid kickback by:

- keeping the blade sharp;
- keeping the rip fence parallel to the blade;
- pushing the stock pass the saw blade before release;

To ensure safety set the saw blade 6mm (1/4") above the stock when cutting. Always turn the blade down to the lowest position when finished. Always use the proper blade designed for different operations...example a ripping blade for ripping material.

Table Saw Safety Quiz

Name:

Check the box next to the most correct answer

1 How high above the wood should you set the saw blade?

- ☐ 6mm (1/4")
- ☐ 13mm (1/2")
- ☐ 19mm (3/4")
- ☐ 25mm (1")

2 What equipment is found on a safe table saw? Choose all that apply.

- ☐ splitter
- ☐ guard
- ☐ anti-kickback device
- ☐ table insert

3 Which type of material can be cut using the table saw?

- ☐ metal
- ☐ softwood
- ☐ hardwood
- ☐ both softwood and hardwood

4 Which operation is safe when using the table saw?

- ☐ crosscutting with a miter gauge and fence at the same time
- ☐ cutting while having the miter gauge or fence in place
- ☐ freehand cutting
- ☐ ripping material without the fence

5 What should we do before operating the table saw?

- ☐ get teacher permission
- ☐ pass safety test with a score of l00%
- ☐ view the demonstration by the teacher
- ☐ all of the above

6 What should you do to avoid kickback?

- ☐ keep the saw blade parallel to the rip fence
- ☐ cut freehand
- ☐ saw a piece of wood with knots, nails, or other foreign objects
- ☐ use a dull blade with missing teeth

7 What should a student do before starting the table saw? Choose all that apply.

- ☐ inspect the blade
- ☐ have the wood touching the blade
- ☐ inspect the piece of stock
- ☐ ensure proper safety equipment is in place

8 Which one of the following statements is true?

- ☐ always start the machine with the wood touching the blade
- ☐ always attempt to free a stalled saw blade without first turning the machine off
- ☐ always perform layout on the table saw
- ☐ use the correct blade for the intended operation

9 What is the distance between the fence and the blade where the use of a push stick is indicated?

- ☐ 75mm (3")
- ☐ 150mm (6")
- ☐ 300mm (12")
- ☐ none of the above

10 What should you do before leaving the table saw after you have finished?

- ☐ just unplug the machine
- ☐ unplug the machine, lower the blade, clean up debris
- ☐ let someone clean it up at the end of the class
- ☐ just lower the blade

Bandsaw information

complete your training

wear safety glasses

get a spotter

Operate only with the instructor's permission and after you have received instruction.

Remove jewelry, secure loose clothing, and confine long hair.

Always use personal protective equipment (PPE) and proper eye protection.

All materials should be inspected for defects such as warps, knots and foreign objects.

Keep safety guards in place. Upper guide should clear stock by about 6 mm (1/4").

Make curved cuts gradually and use relief cuts for tight radius curves.

Never back out of curved cuts while machine is still running as this will result in the blade coming off. (You must wait until blade comes to a complete stop).

Make all cuts on the waste-side of the line.

Always keep your hands on the sides of the blade while operating.... never in front of blade!

Maintain a well-balanced position and feed work into blade firmly, but without pushing too hard.

Never start the machine with stock touching blade, never reach under the table, and never perform layout or setup on the table.

Turn machine off and disconnect from power source before installing or removing accessories, when finished cutting, before adjusting or changing set-ups, or when making repairs.

If blade breaks during operation immediately stop the saw, leave the stock where it is, unplug the saw and report the incident to the teacher.

Band Saw Safety Quiz Name:

Check the box next to the most correct answer

1 When is personal protective equipment (PPE) required to operate the band saw?
- ☐ never
- ☐ sometimes
- ☐ always
- ☐ most of the time

2 Which of the following are safe operating procedures for a band saw?
- ☐ ask for permission
- ☐ keep guard in place
- ☐ keep well-balanced
- ☐ all of the above

3 How far should the safety guard be above the stock?
- ☐ 13mm (1/2")
- ☐ 19mm (3/4")
- ☐ 6mm (1/4")
- ☐ 25mm (1")

4 What should you always use when making tight cuts on curves?
- ☐ relief cuts
- ☐ reverse cuts
- ☐ circular cuts
- ☐ radius cuts

5 Which side of the line should you always make cuts on?
- ☐ right
- ☐ left
- ☐ waste
- ☐ none of the above

6 Where should your hands be placed when using the band saw?
- ☐ in front of the blade
- ☐ behind the blade
- ☐ on the sides of the blade
- ☐ touching the blade

7 What should you do if the blade breaks while operating the band saw?
- ☐ remove your piece of stock from the machine
- ☐ complete your cut
- ☐ stop the machine, don't remove your stock, and report to the teacher
- ☐ remove the blade

8 What should you do before operating the band saw?
- ☐ receive instructional demonstration
- ☐ pass the safety test with 100%
- ☐ follow proper safety procedures (eye protection, confine long hair, etc...)
- ☐ all of the above

9 Which of the following are common safe practices for operating a band saw?
- ☐ hold work piece with one hand
- ☐ leave the machine running when not in use
- ☐ unplug the saw when finished
- ☐ perform layout operations or setup work on the table/work area when the machine is running

10 Which of the following is a safe practice?
- ☐ start the machine with the stock against the blade
- ☐ start the machine before clearing the table of all objects
- ☐ reach under the table while the machine is running
- ☐ turn off the saw before backing out of a cut

Biscuit joiner information

complete your training

wear safety glasses

wear hearing protection

get a spotter

Always obtain the teachers permission prior to using the joiner.

Always wear appropriate Personal Protective Equipment (PPE).

Confine any long hair, secure loose clothing and remove jewelry.

Avoid accidental starting. Be sure switch is off before plugging in.

Do not carry tool with your finger on the trigger.

Remove the power cord when changing the blade or performing regular maintenance.

Remove any adjusting keys or wrenches before turning power on.

A joiner ejects dust and wood chips at a high rate of speed, keep your face away from the chute and wear safety glasses. If equipped, ensure dust collection bag is in place.

Do not overreach. Keep proper footing and balance at all times.

Use clamps or other practical ways to secure the work piece.

Make sure the blades are sharp.

Check the operation of the guards before using the tool.

Do not disable any anti-kickback points on the faceplate. Make sure they are engaged in the work piece.

Keep hands away from blade when cutting.

Never hold the work piece in your hand.

After you cut, retract the blade fully and wait for it to stop.

Biscuit Joiner Safety Quiz Name:

Check the box next to the most correct answer

1 When should eye and ear protection be worn while using the biscuit joiner?

- ☐ always
- ☐ most of the time
- ☐ some of the time
- ☐ never

2 What must you do before using the biscuit joiner?

- ☐ check the tool for defects
- ☐ have received safety instruction
- ☐ have the instructor's permission
- ☐ all of the above

3 Which of the following is correct when using the biscuit joiner?

- ☐ carry tool with finger on trigger
- ☐ make all adjustments with the tool plugged in
- ☐ keep the switch in the OFF position before plugging in
- ☐ all of the above

4 What must be in place using the biscuit joiner? Circle all the apply.

- ☐ dust bag
- ☐ fence
- ☐ handle
- ☐ personal protective equipment

5 What should be done with the stock when using a biscuit joiner?

- ☐ must be at least 18" long
- ☐ must be held in your hand
- ☐ must be clamped in a suitable manner
- ☐ all of the above

Drill press information

complete your training

wear safety glasses

DO NOT wear gloves

Operate only with the instructor's permission and after you have received instruction.

Remove jewelry, eliminate loose clothing, and confine long hair.

Make sure all guards are in place and operating properly.

Always use proper Personal Protective Equipment (PPE's) such as eye protection

All materials should be inspected for defects such as warps, knots and foreign objects.

Do not wear gloves.

The belt guard should always be in place.

Clamp work to the table and long stock should be placed to the left to avoid being struck by the material if a jam occurs.

Make sure the chuck key is removed from the chuck before starting.

Make all adjustments with the power off and machine unplugged.

Adjust the table depth stop to avoid drilling into the table.

Never perform setup or layout work on the table.

Make sure that the drill bit or cutting tool is secure in the chuck and in good condition.

Use the recommended speed for the material you are drilling. (the harder the material the slower the speed).

When finished shut off power, remove drill bit or cutting tool and clean up debris.

Drill Press Safety Quiz

Name:

Check the box next to the most correct answer

1 What must you do before using the drill press? Check all that apply?

- ☐ wear personal protective equipment (PPE)
- ☐ confine long hair
- ☐ remove jewelry
- ☐ ask permission from your instructor

2 Long stock should be held on which side of the drill press

- ☐ left
- ☐ right
- ☐ front
- ☐ back

3 What should you do when operating a drill press

- ☐ leave the key in the chuck
- ☐ leave the machine running unattended
- ☐ never use drill bits and sanding drums that are damaged
- ☐ all of the above

4 How should stock be secured when using the drill press?

- ☐ not fastened at all
- ☐ held at an angle with your hands
- ☐ secured in safe manner (with clamps, etc)
- ☐ none of the above

5 What should happen before you use the drill press?

- ☐ passed the safety test with a 100% grade
- ☐ followed all safety procedures
- ☐ received teacher demonstration
- ☐ all of the above

6 Which statement is NOT TRUE for the safe operation of the drill press?

- ☐ use recommended speeds for all operations
- ☐ tighten all lock handles
- ☐ properly lock the bit in the chuck
- ☐ turn the machine on when changing a drill bit

7 Which statement is true for the safe operation of the drill press?

- ☐ adjust the table depth stop to avoid drilling into the table
- ☐ change the speed without asking for permission
- ☐ make adjustments with the machine still running
- ☐ remove stock when drill bit is still turning

8 What is the correct shut down procedure for the drill press?

- ☐ shut off power, remove the drill bit or cutting tool, and remove debris from the table
- ☐ turn the machine off, leave it plugged in, and do not remove drill bit or cutting tool
- ☐ turn off the machine, unplug, and leave the key in the chuck
- ☐ none of the above

9 What is the table stop used for?

- ☐ to adjust the drill bit
- ☐ to avoid drilling into the table
- ☐ to tighten the drill bit
- ☐ to raise or lower the table top

10 What is the rule when choosing the correct speed to drill different materials?

- ☐ the harder the material the slower the speed
- ☐ the harder the material the faster the speed
- ☐ the softer the material the slower the speed
- ☐ it doesn't matter

Stationary sander info

complete your training

wear safety glasses

DO NOT wear gloves

Operate only with the instructor's permission and after you have received instruction.

Remove jewelry, eliminate loose clothing, and confine long hair.

Make sure all guards are in place and operating properly.

Always use proper eye protection.

All materials should be inspected for defects such as warps, knots and foreign objects.

Never turn the machine ON before clearing the table of debris.

Never turn the machine ON if the stock is touching the abrasive surface.

Inform teacher of damaged or worn belts so it can be replaced

Properly secure sanding belt before operating.

Dust collection system must be connected and turned on before operating.

Hold the stock firmly on the sander table to prevent loss of control.

Keep the correct size table insert in place at all times.

Always feed stock against the rotation of the sanding drum.

Do not sand very small pieces of stock or stock that is wet.

Never perform setup or layout work on the table.

Keep work area free of debris.

Turn machine off and disconnect from power source when not in use, beforeinstalling or removing accessories, before adjusting or changing set-ups, or when making repairs.

Stationary Sander Safety Quiz

Name:

Check the box next to the most correct answer

1 What must you wear when operating a stationary sander?

- ☐ gloves
- ☐ safety glasses
- ☐ hard hat
- ☐ steel toe boots

2 What is important to remember when operating the stationary sander?

- ☐ the machine is light and does not need to be well secured
- ☐ you don't need a clean work area
- ☐ properly secure the sanding belt
- ☐ you do not need to turn on the dust collection system

3 Why do we inspect the stock for using the stationary sander?

- ☐ looking for loose knots
- ☐ looking for scratches on the wood
- ☐ looking for pencil marks
- ☐ all of the above

4 Why should you keep a firm grip on your piece of stock when using the stationary sander?

- ☐ to allow for circular sanding patterns
- ☐ to prevent loss of control
- ☐ to allow you to remove the table insert
- ☐ in case the sanding belt is torn

5 What should you have before using the stationary sander? Check all that apply.

- ☐ passed the safety test with 100%
- ☐ followed all safety procedures
- ☐ received teacher demonstration
- ☐ received teacher permission

6 When should the stationary sander be disconnected from the power?

- ☐ while changing the sanding belt
- ☐ while cleaning the table area
- ☐ while not in use
- ☐ all of the above

7 What direction should we always feed the stock?

- ☐ with the sanding drum rotation direction
- ☐ opposite rotation direction of the sanding belt
- ☐ from left to right on the sanding belt
- ☐ from right to left on the sanding belt

8 What should you do if the sanding belt is torn?

- ☐ remove it from the machine by yourself
- ☐ continue to sand
- ☐ stop the machine, unplug it from the wall, and report to the teacher
- ☐ stop the machine and leave it, someone else will notice

9 What is the correct shut down procedure for the stationary sander?

- ☐ turn off machine, disconnect power, and remove debris from the table
- ☐ turn machine off, leave it plugged in, and do not remove debris
- ☐ turn off machine, unplug, and leave sanded stock on table
- ☐ unplug, turn machine off, and remove the sanding disc

10 What should you do when operating the stationary sander?

- ☐ sand small or wet stock
- ☐ turn the machine on with the stock touching the sanding belt
- ☐ perform setup or layout work on the table
- ☐ none of the above

Palm sander information

complete your training

wear safety glasses

wear a mask

Operate only with instructor's permission and after you have received instruction.

Remove any jewelry, eliminate loose clothing, and confine long hair. Make sure all guards are in place and operating correctly. Always use proper eye protection and a dust mask as dust particles can irritate the eye s and lungs.

All materials should be inspected for defects such as warps, knots and foreign objects (nails, screws, etc). If sanded it is possible that such objects may become projectiles risking damage to the sander or to the user.

Do not use sandpaper that is larger than needed. Extra paper that extends beyond the sanding pad can cause serious lacerations.

Never operate this tool with perforated paper unless the dust collection bag is in place. The perforations allow dust to be transferred to the dust collection bag.

Never use the sander for wet sanding. Using this tool for this purpose could cause electric shock.

Sanding of lead based paint is not recommended due to the difficulty of controlling the contaminated dust. This is covered under the hazardous material handling documents of WHMIS.

Empty the dust collection bag regularly. It is especially important when sanding resin coated surfaces such as polyurethane, varnish, shellac, etc. as the residue from such compounds can spontaneously combust if left in the collection bag.

A dust mask or respirator should be worn by all persons entering the work area.

All surfaces in the work area should be vacuumed and thoroughly cleaned daily for the duration of the project.

Keep your machine as clean as possible by wiping with a clean cloth and blowing through it with air every 5 hours of use.

Do not operate the sander for extended periods of time as the vibrations can cause nerve damage to fingers, hands and arms.

Palm Sander Safety Quiz Name:

Check the box next to the most correct answer

1 When should permission be obtained from your instructor to operate the palm sander?
- ☐ in all situations
- ☐ never
- ☐ when sanding lead paint
- ☐ when the stock to be sanded is small

2 What should you wear when operating a palm sander?
- ☐ no jewelry
- ☐ no loose clothing
- ☐ confined long hair
- ☐ all of the above

3 When must proper eye protection be worn to operate the palm sander?
- ☐ when sanding hardwood
- ☐ when sanding softwood
- ☐ always
- ☐ never

4 Why do you make holes in the sandpaper before using it?
- ☐ to allow for more vigorous sanding
- ☐ to allow for better dust collection
- ☐ to ensure that the paper does not fall off
- ☐ to save paper

5 What is not recommended to be sanded with the palm sander because it may create contaminated dust?
- ☐ pine
- ☐ maple
- ☐ lead
- ☐ birch

6 Why must the dust bag be emptied regularly when sanding resin coated surfaces such as paint and varnish?
- ☐ it uses more electricity
- ☐ sand paper loses its grittiness
- ☐ the residues from such compounds may self ignite and cause fire
- ☐ none of the above

7 Why must the user ensure that the surface being sanded is free of nails, screws and other metal pieces?
- ☐ lead contained in nails or screws is a contaminant
- ☐ metal shards could break off and become a projectile
- ☐ so that the operator doesn't need to wear safety glasses
- ☐ metal pieces will make your stock look bad

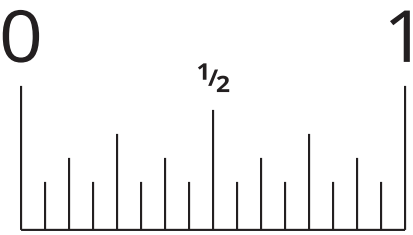
8 Why should the sander only be operated for short periods of time?
- ☐ it draws too much power
- ☐ it is too noisy
- ☐ vibration caused by the operating action of this tool may cause permanent injury to fingers, hands and arms
- ☐ you will use too much sandpaper

9 Why is it important that the user wear Personal Protective Equipment (PPE) when using the palm sander?
- ☐ dust particles from sanding can irritate your eyes and lungs
- ☐ the sander is not noisy
- ☐ the sander does not produce any dust
- ☐ all of the above

10 What must you do before connecting the sander to the power source? Choose all that apply.
- ☐ ensure that the power button is in the OFF position
- ☐ ensure that the sand paper is secured properly to the sanding pad with attached clamps
- ☐ ensure that the dust collection system is connected
- ☐ ensure that the power cord is not frayed or damaged

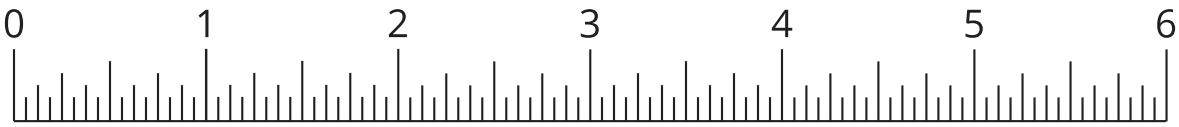
Measurement in Inches
Whole and half inches I

Write the correct measurement in the blanks



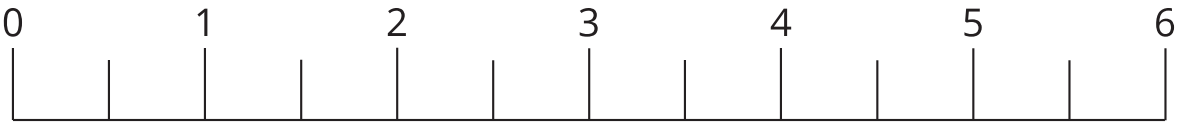
Name:

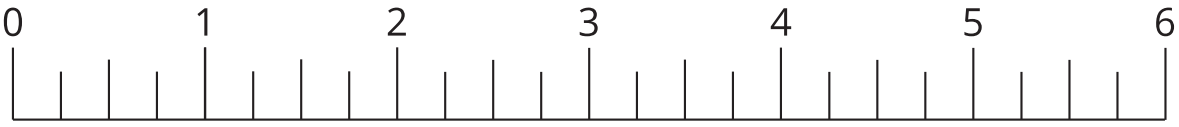
Score: /10

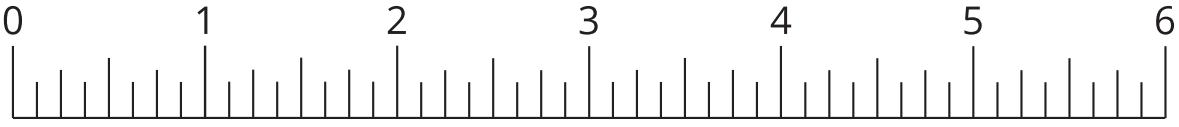


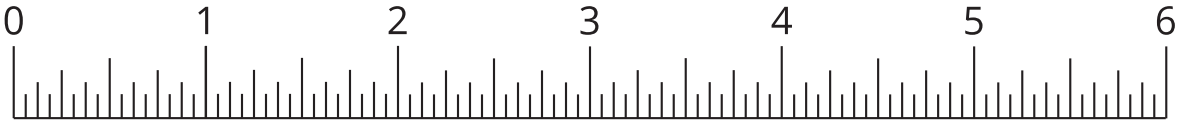
5 1/2"

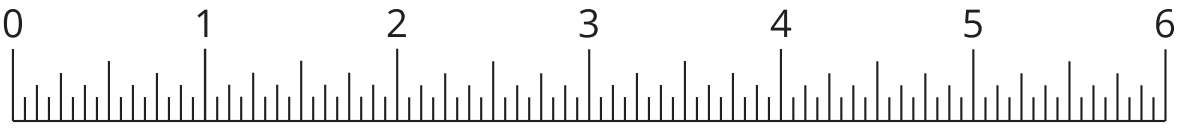
2 1/2"





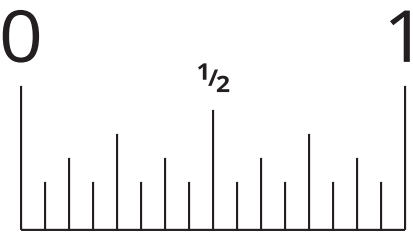






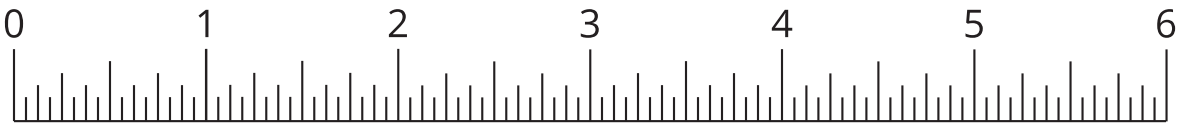
Measurement in Inches
Whole and half inches II

Write the correct measurement in the blanks



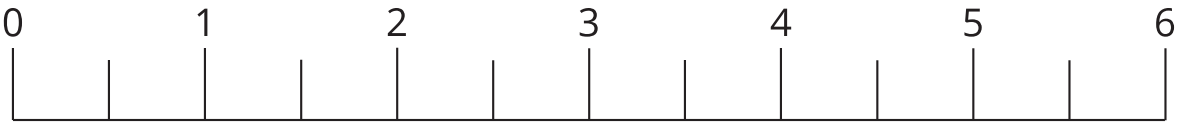
Name:

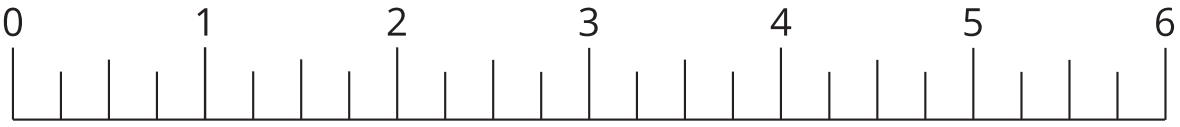
Score: /10

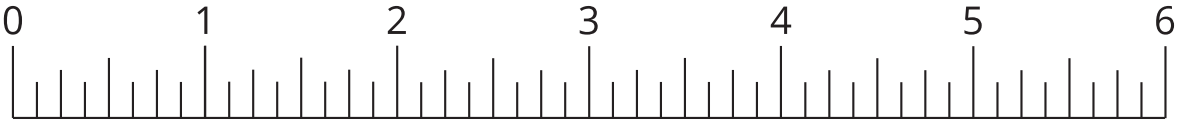


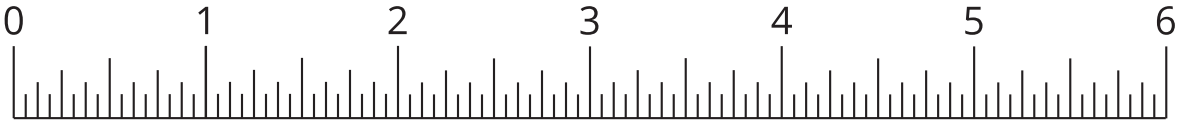
4 1/2"

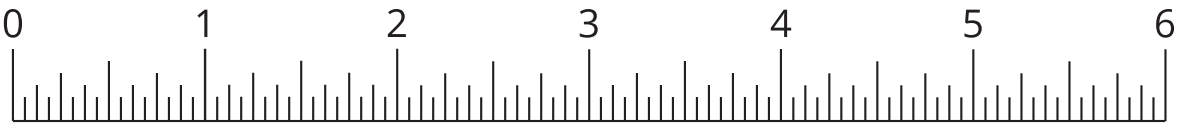
1 1/2"



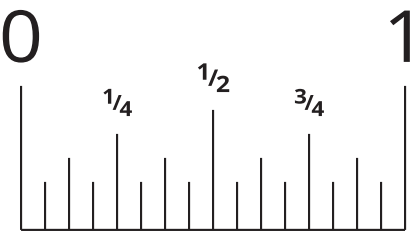






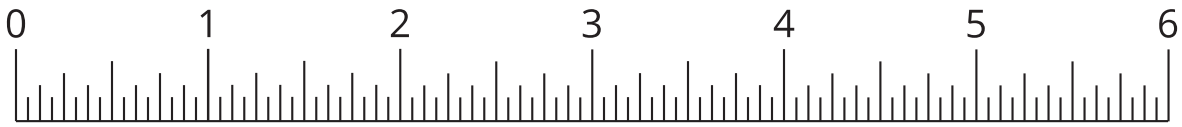


Measurement in Inches
Half and quarter inches I
Write the correct measurement in the blanks



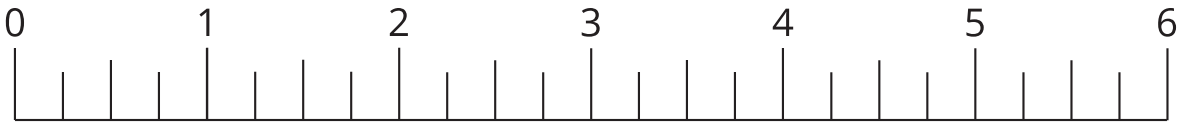
Name:

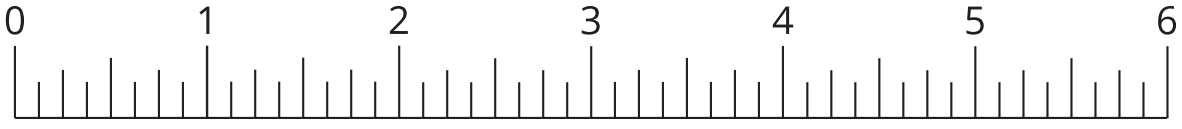
Score: /10

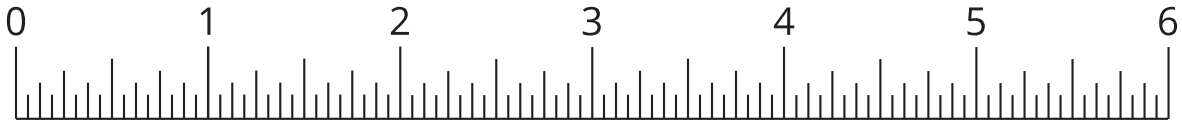


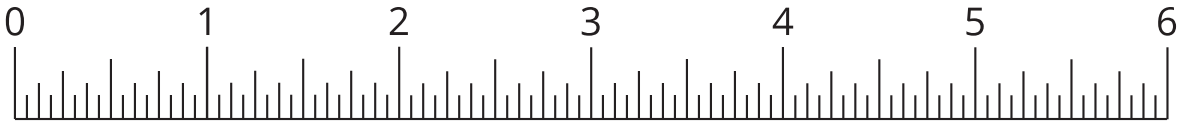
1 1/4"

3 3/4"

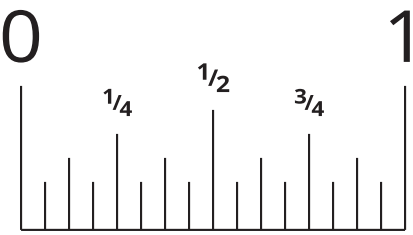






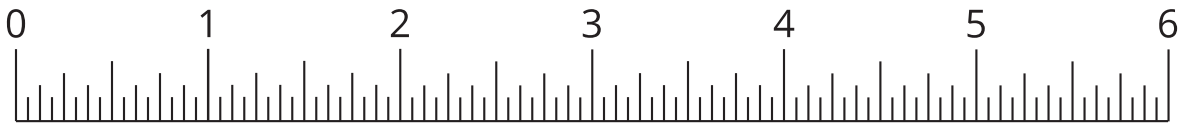


Measurement in Inches
Half and quarter inches II
Write the correct measurement in the blanks



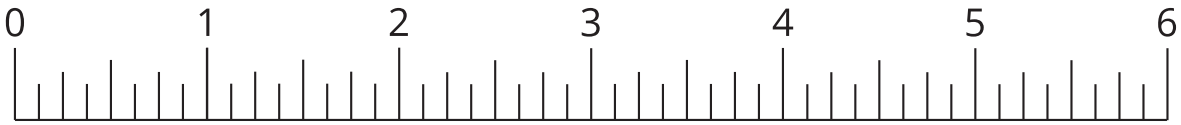
Name:

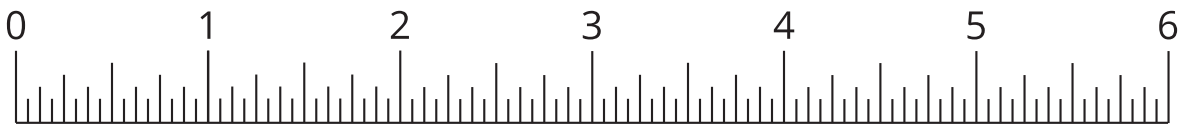
Score: /10

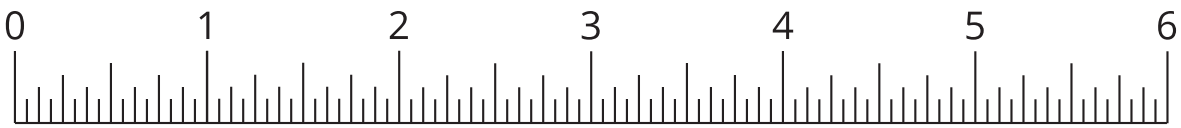


3 1/4"

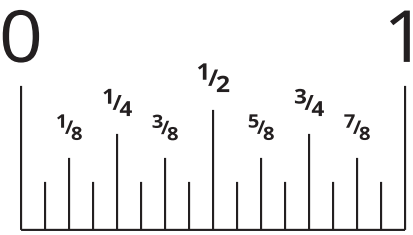
5 3/4"





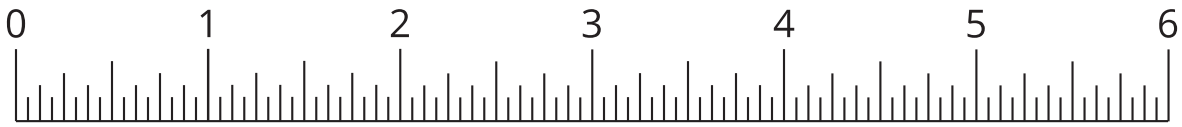


Measurement in Inches
Quarters and eighths I
Write the correct measurement in the blanks



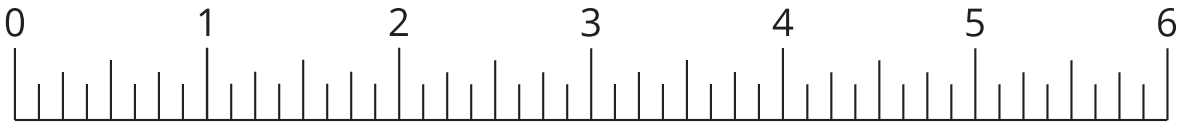
Name:

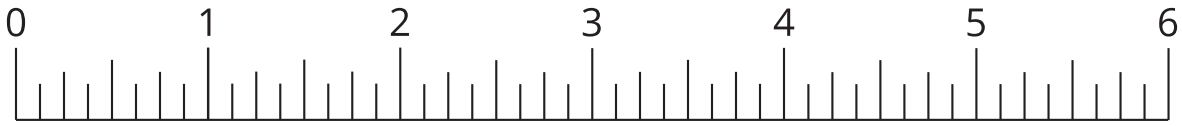
Score: /10

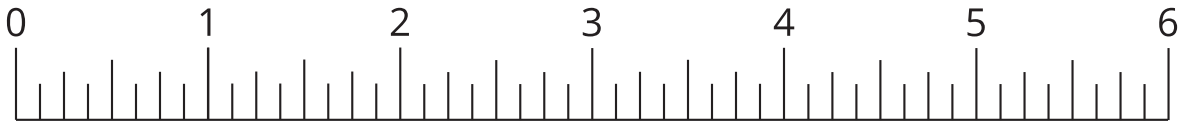


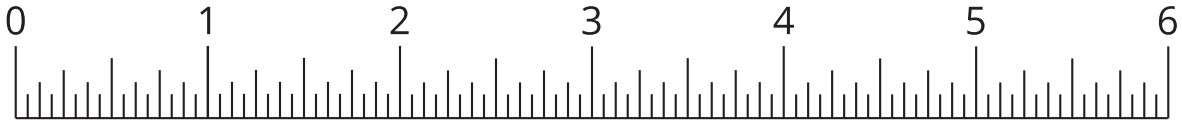
4 7/8"

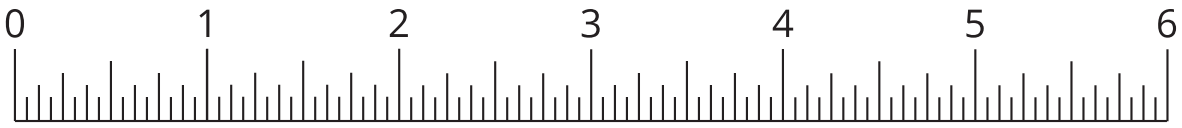
1 3/8"





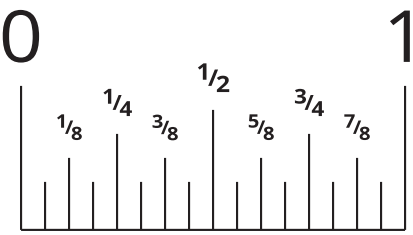






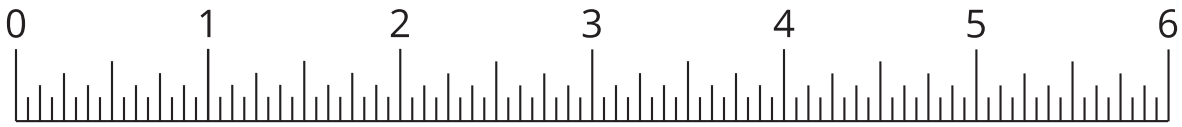
Measurement in Inches
Quarters and eighths II

Write the correct measurement in the blanks



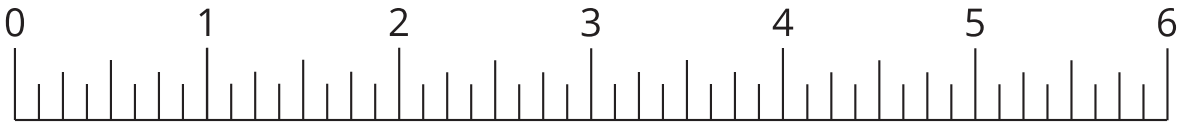
Name:

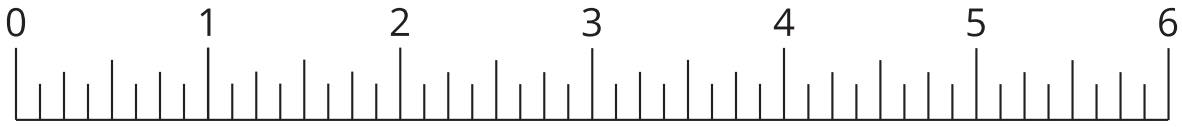
Score: /10

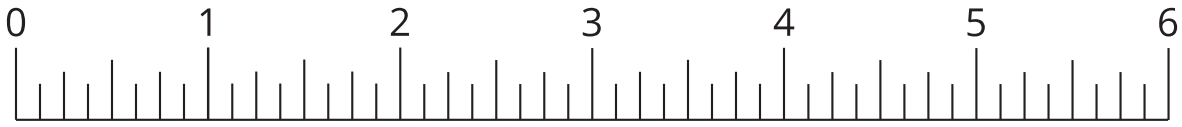


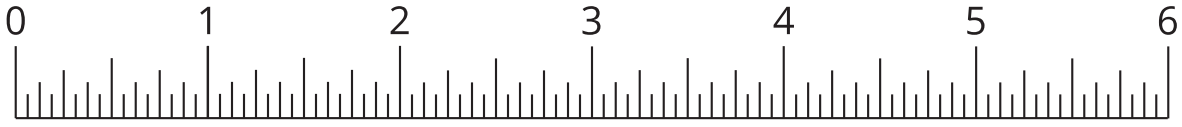
5 1/8"

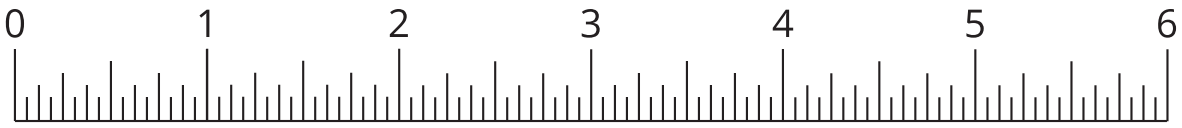
1 7/8"





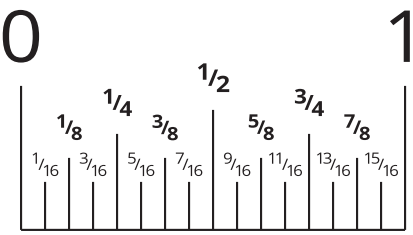






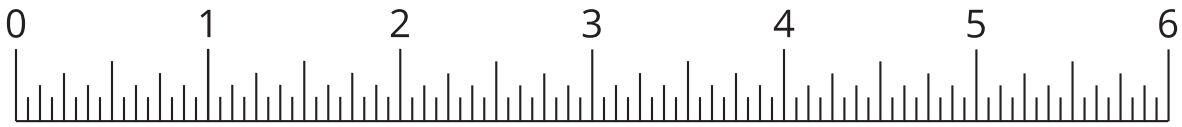
Measurement in Inches
Eighths and sixteenths I

Write the correct measurement in the blanks



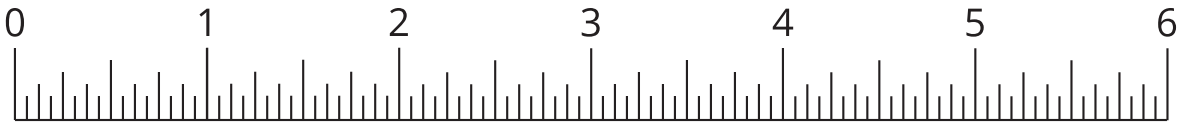
Name:

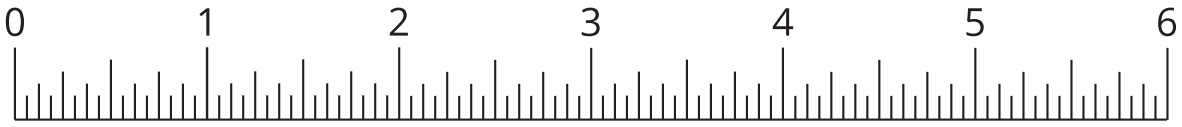
Score: /10

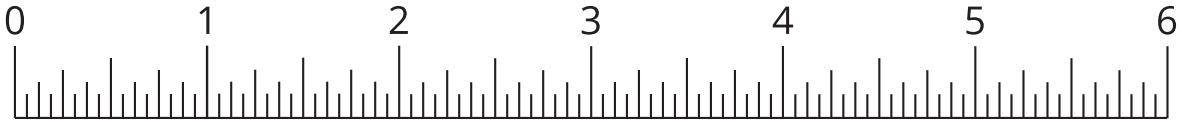


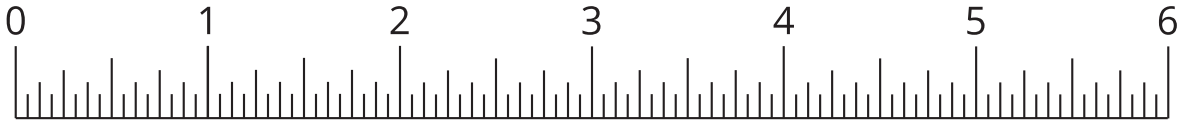
5 1/16"

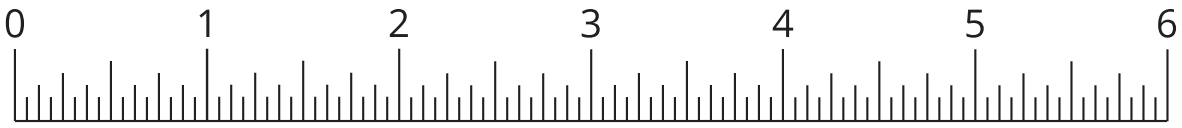
2 7/16"





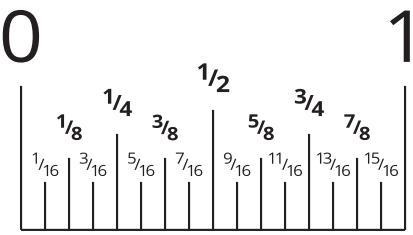






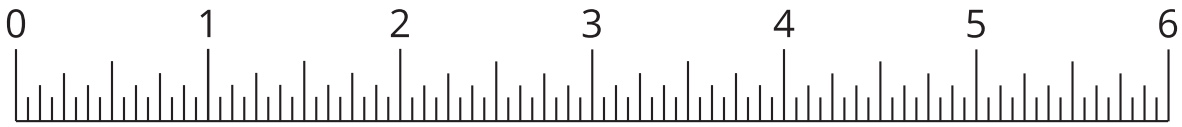
Measurement in Inches
Eighths and sixteenths II

Write the correct measurement in the blanks



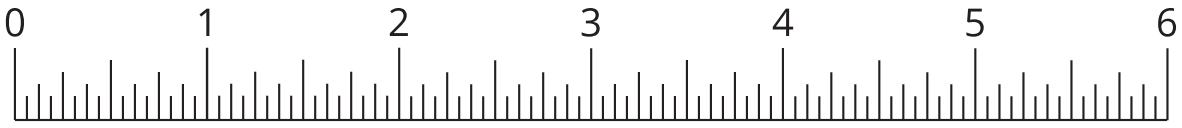
Name:

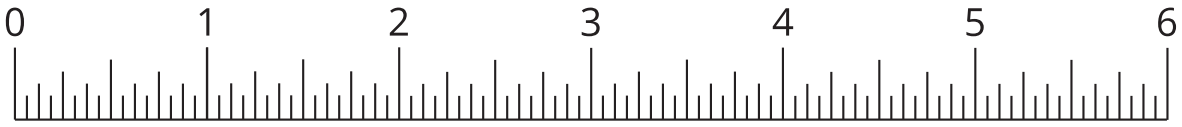
Score: /10

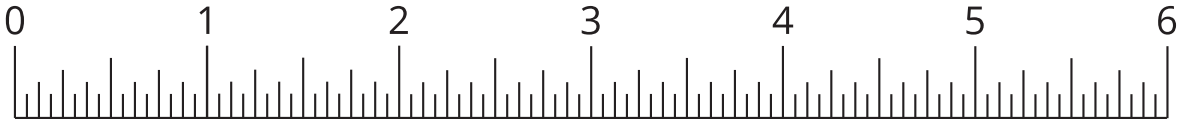


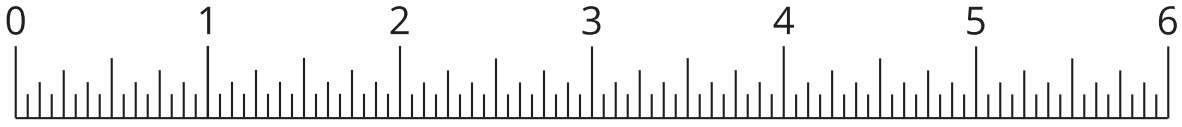
3 15/16"

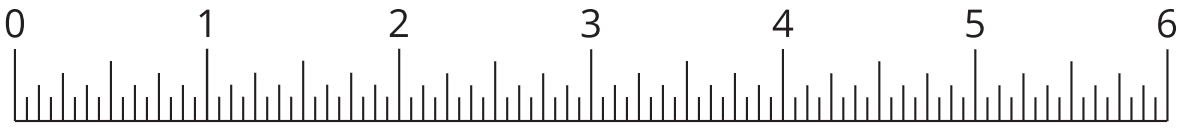
1 11/16"





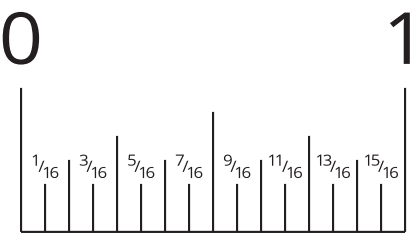






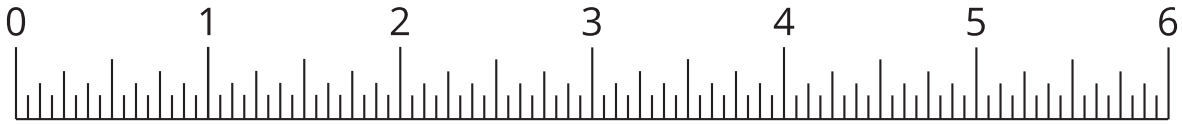
Measurement in Inches
Sixteenths only I

Write the correct measurement in the blanks



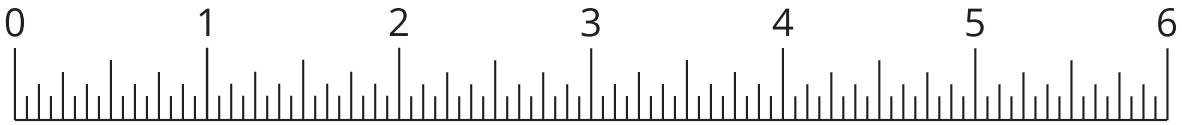
Name:

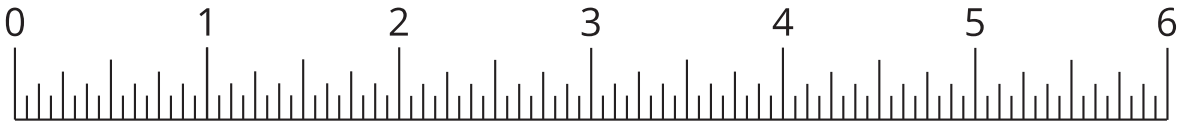
Score: /10

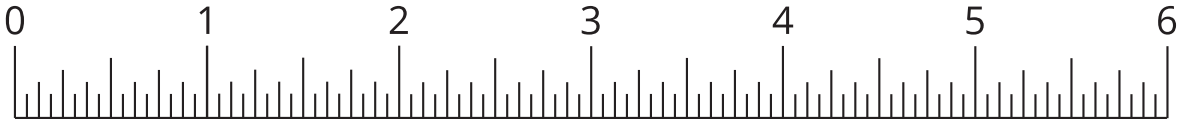


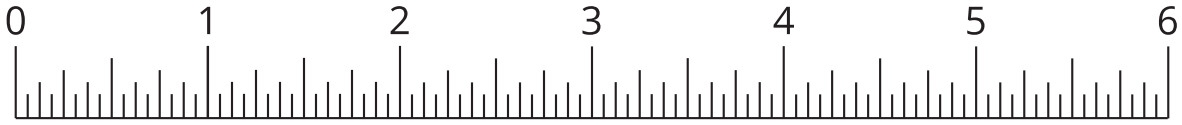
1 1/16"

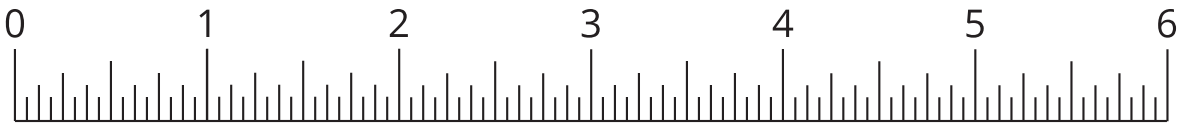
4 15/16"





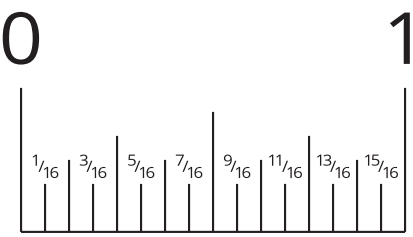






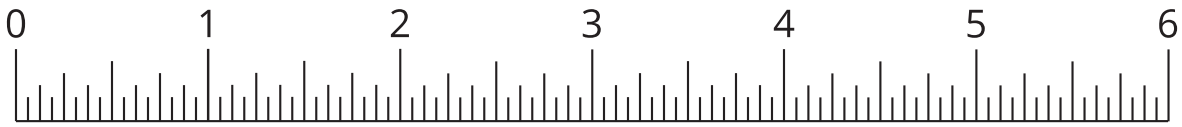
Measurement in Inches
Sixteenths only II

Write the correct measurement in the blanks



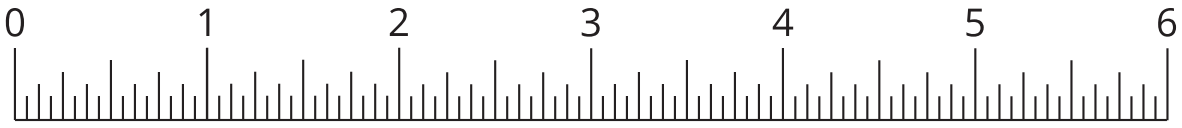
Name:

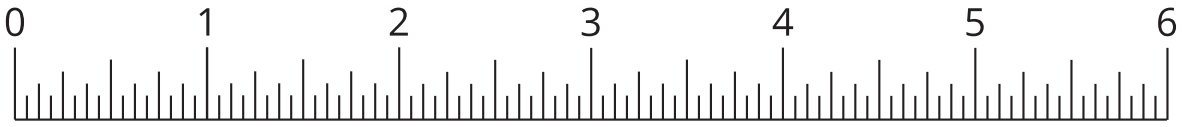
Score: /10

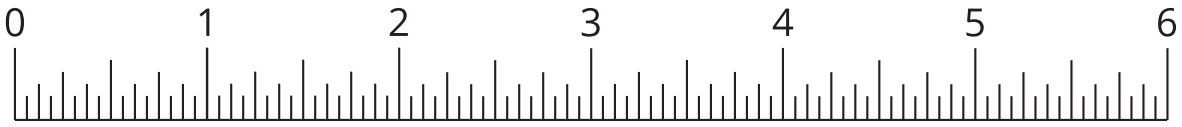


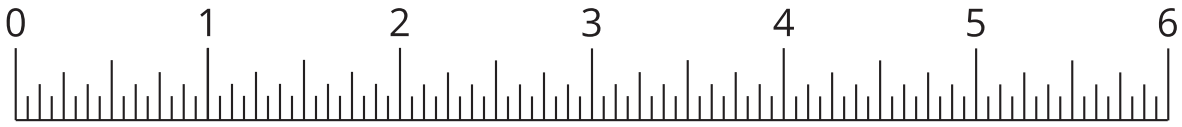
2 3/16"

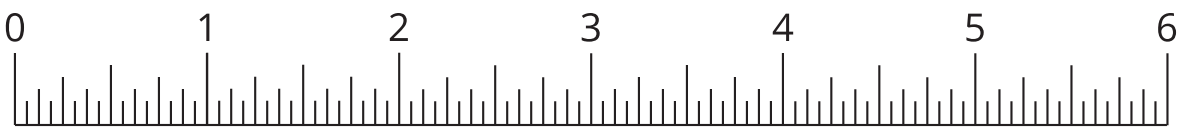
5 1/16"





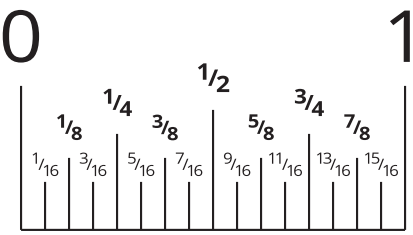






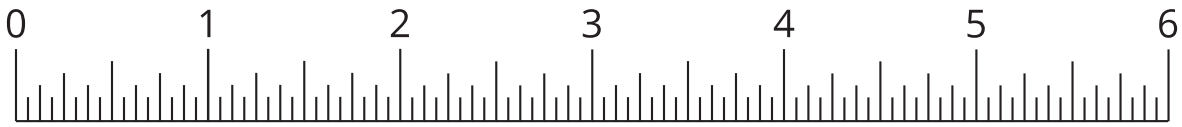
Measurement in Inches
Mixed dimensions I

Write the correct measurement in the blanks



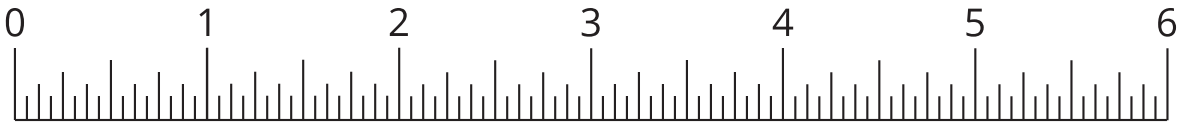
Name:

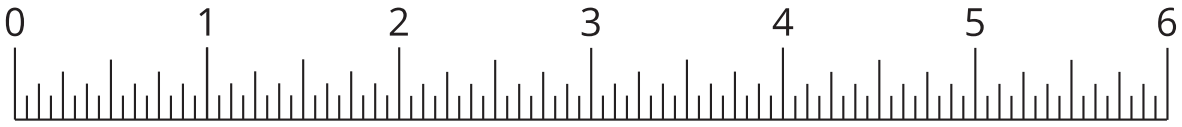
Score: /10

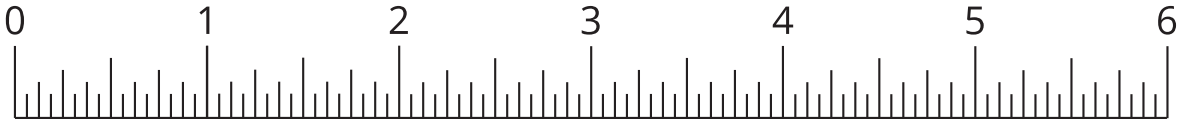


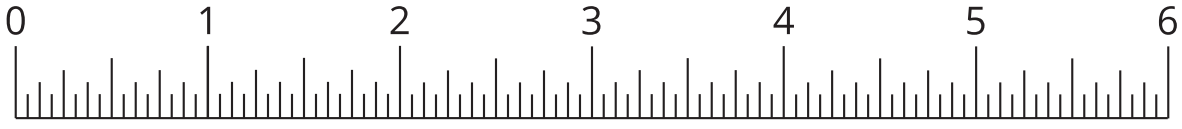
4 1/2"

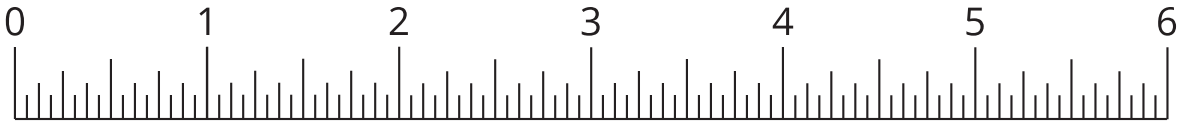
2 1/16"





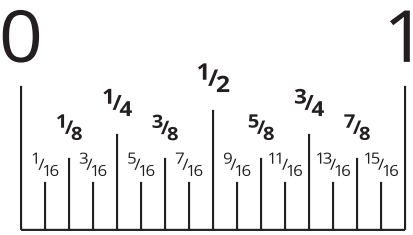






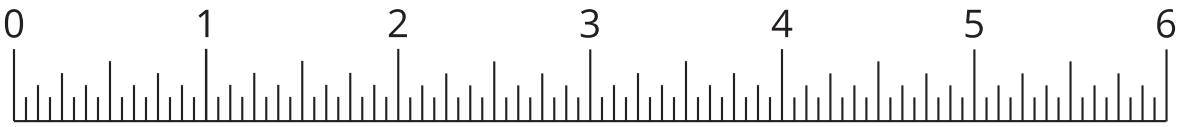
Measurement in Inches
Mixed dimensions II

Write the correct measurement in the blanks



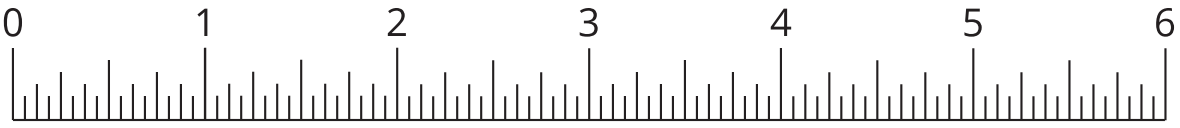
Name:

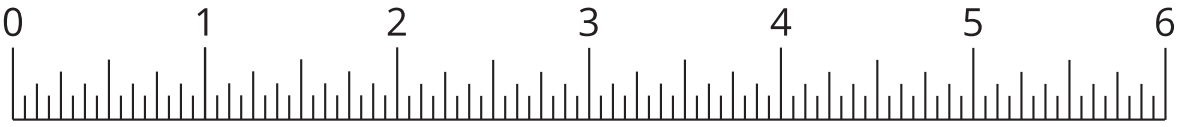
Score: /10

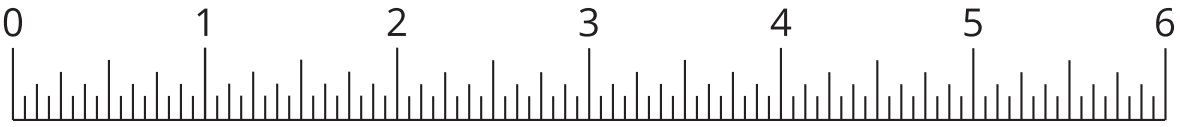


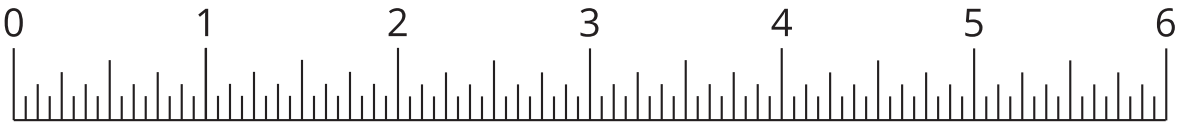
5"

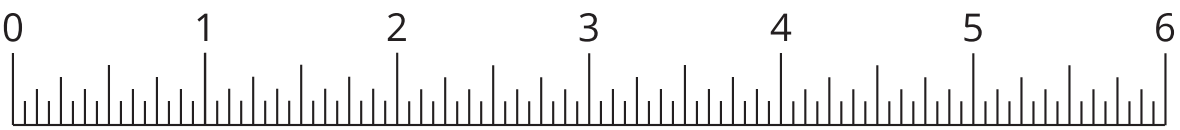
1 1/16"











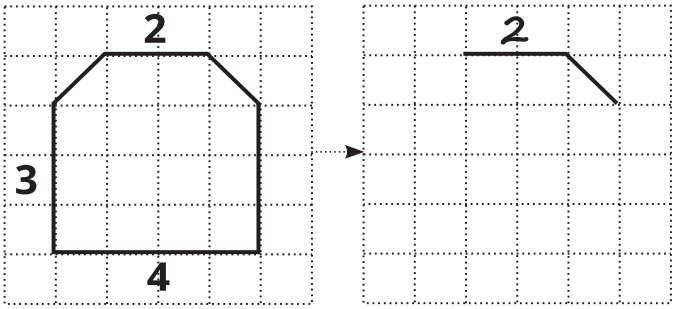
Basic Workshop Drawing I

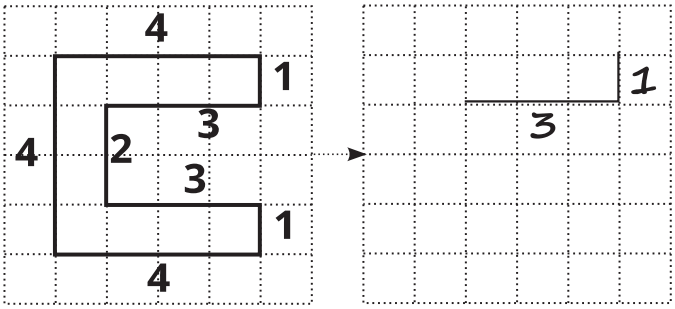
Name:

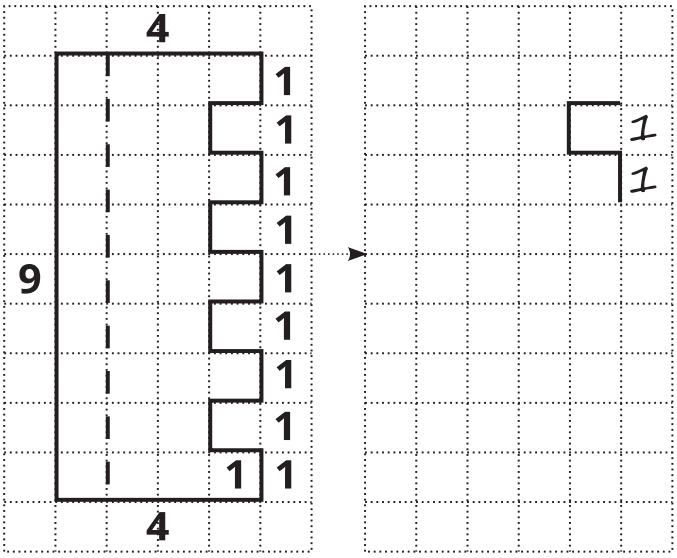
Redraw the following. **Use a ruler for straight lines.** Add the measurement numbers. Make sure you count the squares accurately.

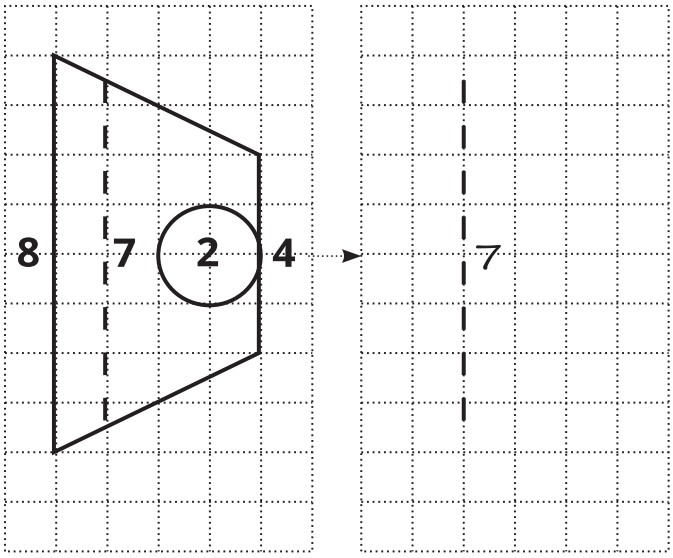
Score: **/10**

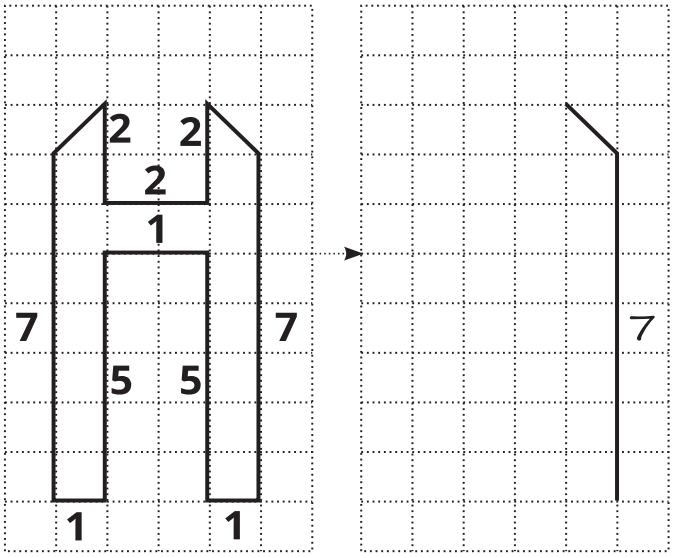
___/2 clean, straight lines
___/3 all recorded measurements
___/5 accurate shape and length

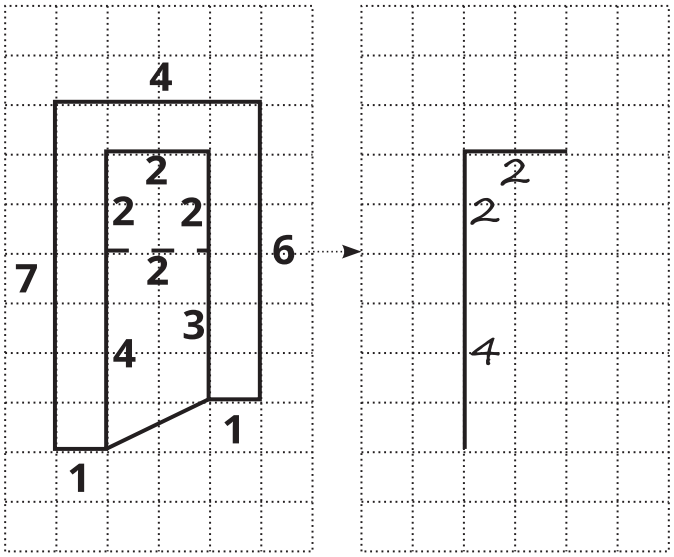












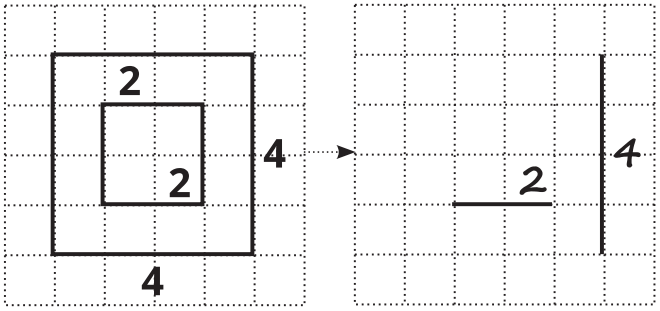
Basic Workshop Drawing II

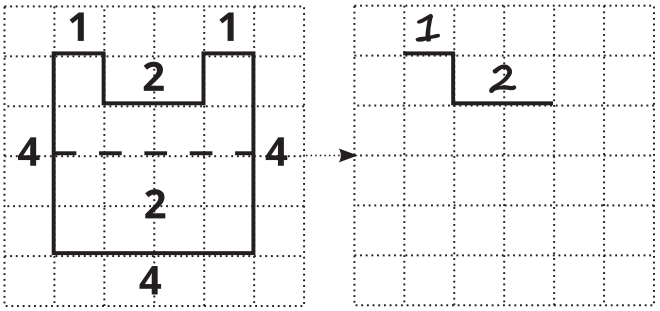
Redraw the following. **Use a ruler for straight lines.** Add the measurement numbers. Make sure you count the squares accurately.

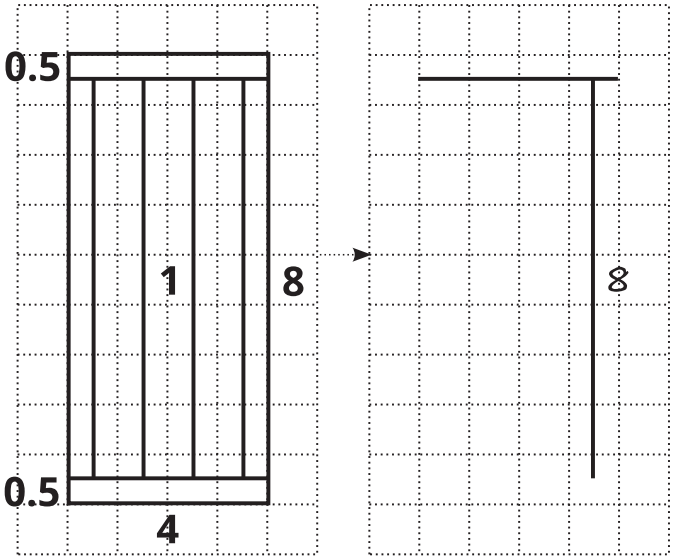
Name:

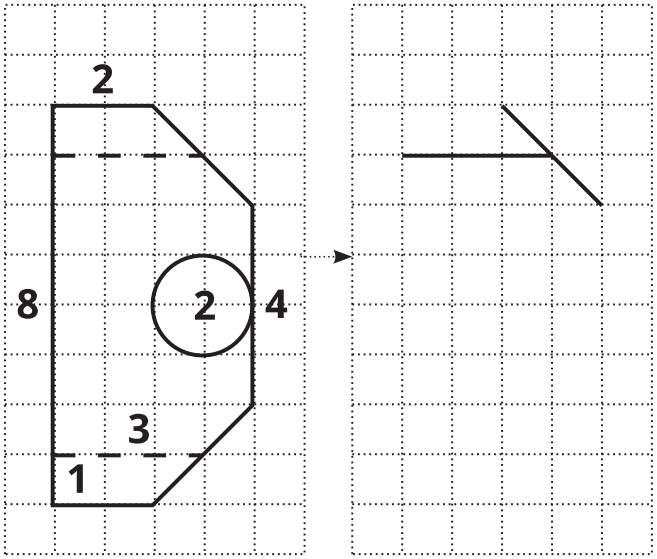
Score: **/10**

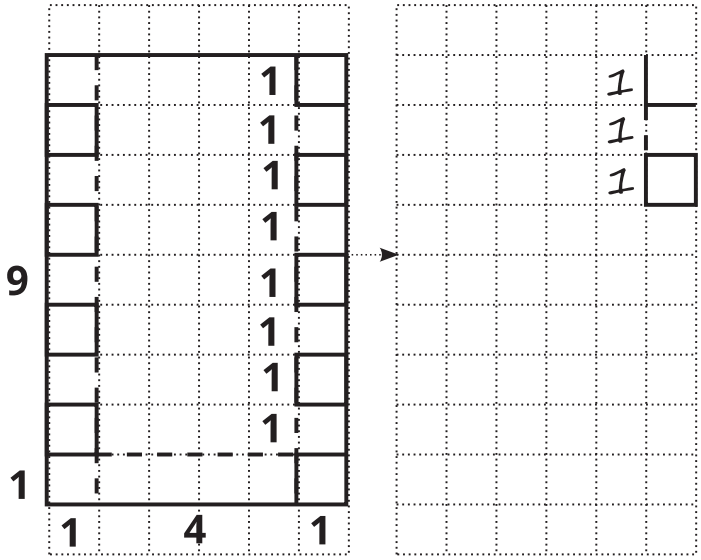
___/2 clean, straight lines
___/3 all recorded measurements
___/5 accurate shape and length

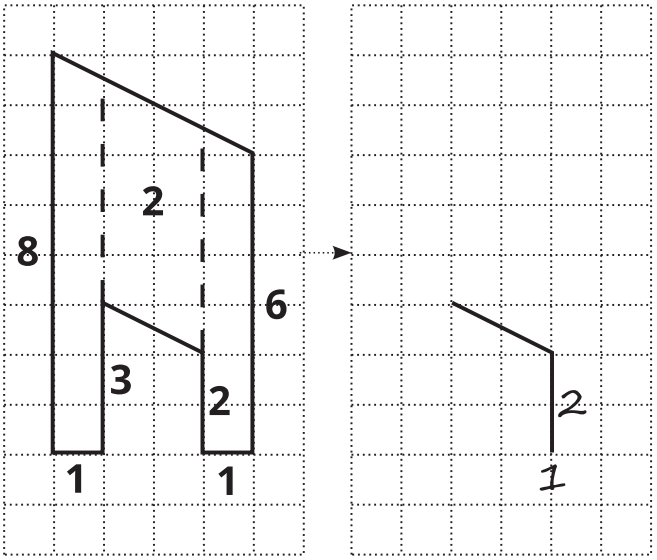












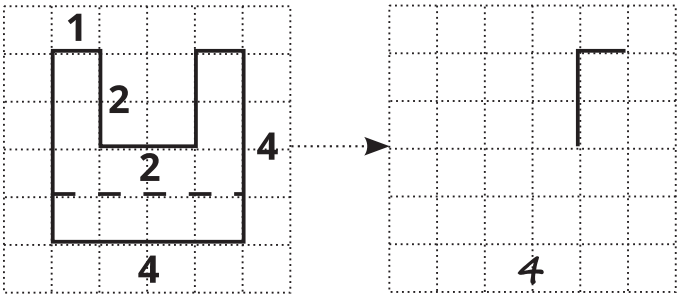
Basic Workshop Drawing III

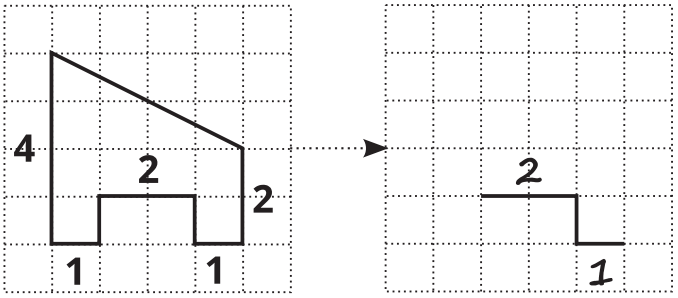
Redraw the following. **Use a ruler for straight lines.** Add the measurement numbers. Make sure you count the squares accurately.

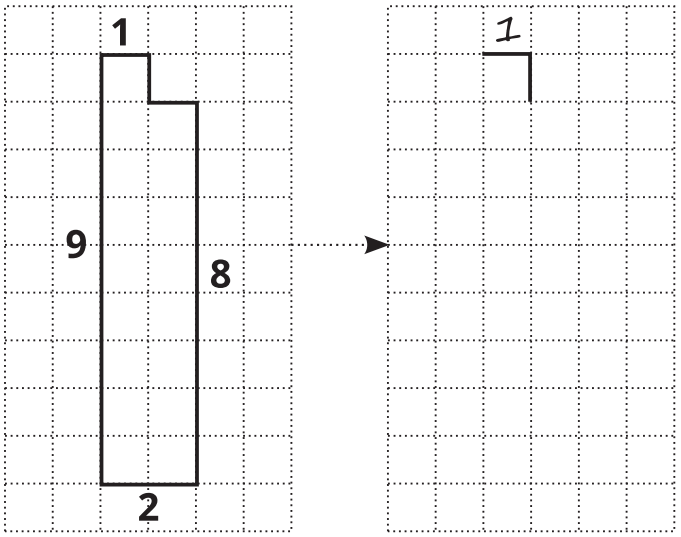
Name:

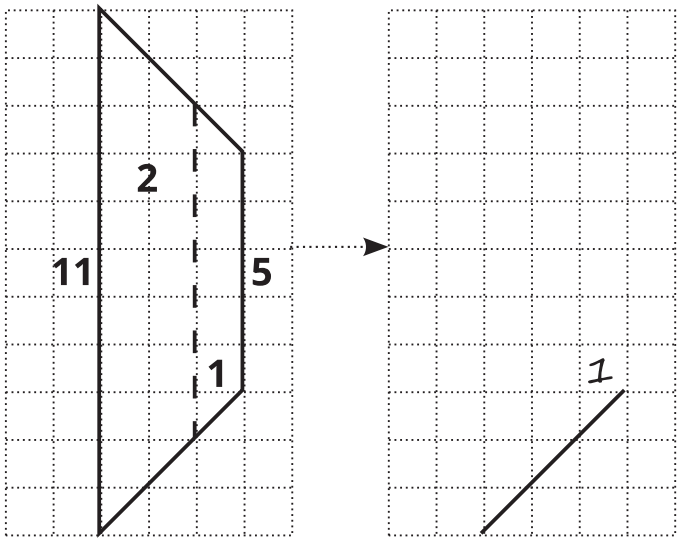
Score: **/10**

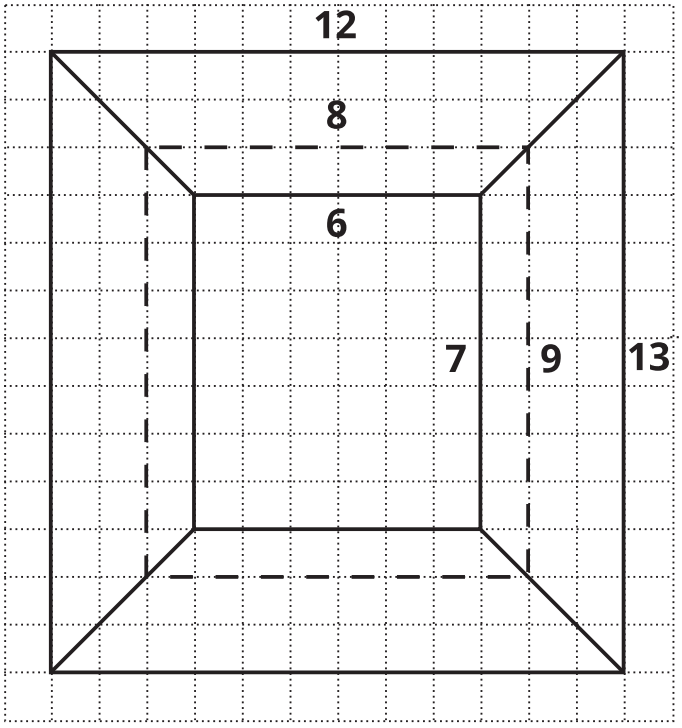
___/2 clean, straight lines
___/3 all recorded measurements
___/5 accurate shape and length

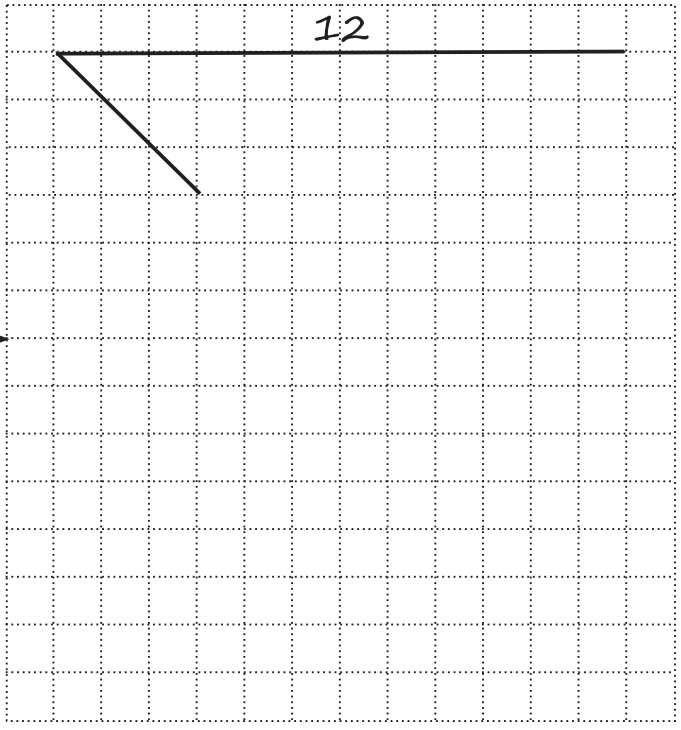












Tool Box Layout I

You will be given five pieces of wood for the toolbox project:

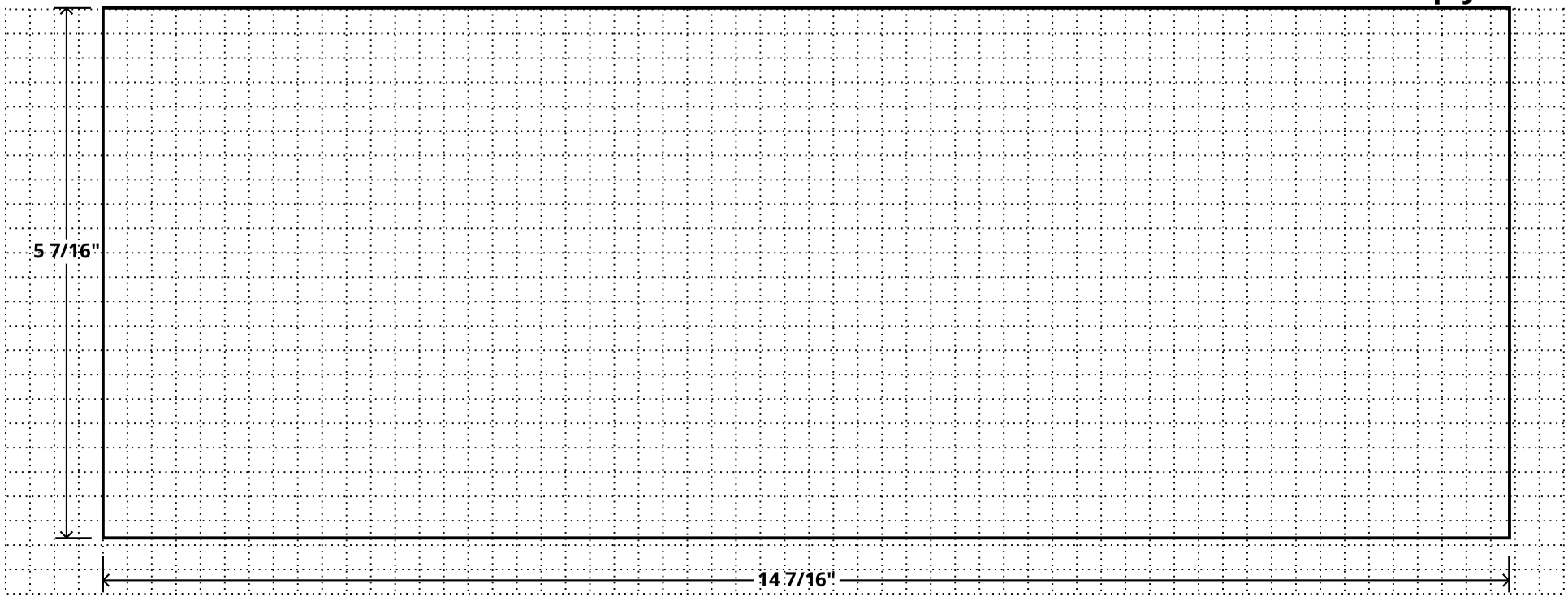
For the two sides:
2 pieces of 16" long 2x4s, resawn to roughly 3/4" thick.
These should be jointed, planed to 1/2", and ripped to 3" wide before you begin laying out your sides

For the two ends:
1 piece of 16" long 2x6, resawn to roughly 3/4" thick.
This should be jointed, planed to 1/2", and ripped to 5" wide before you begin laying out the two ends

For the bottom:
1 piece of 1/4" thick, 16" x 6" plywood.

For the handle:
1 piece of 1/2 diameter by 16" long dowel.

Toolbox bottom - 1/4" plywood

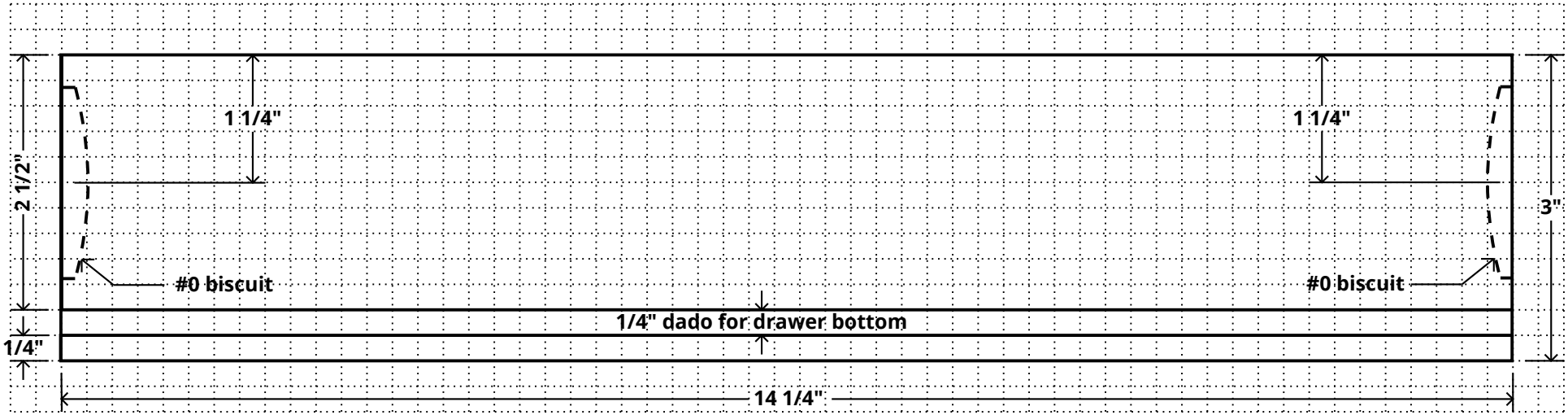


Tool Box Drawing - Box Sides

Redraw the following. Use a ruler for straight lines. Add the measurement numbers and guidelines. Make sure you count the squares accurately.

Name:

___/2 clean, straight lines
___/4 accurate shape and length
___/4 all measurements and guidelines **Score: /10**



Toolbox sides - lay out on 3 x 16 x 1/2" wood

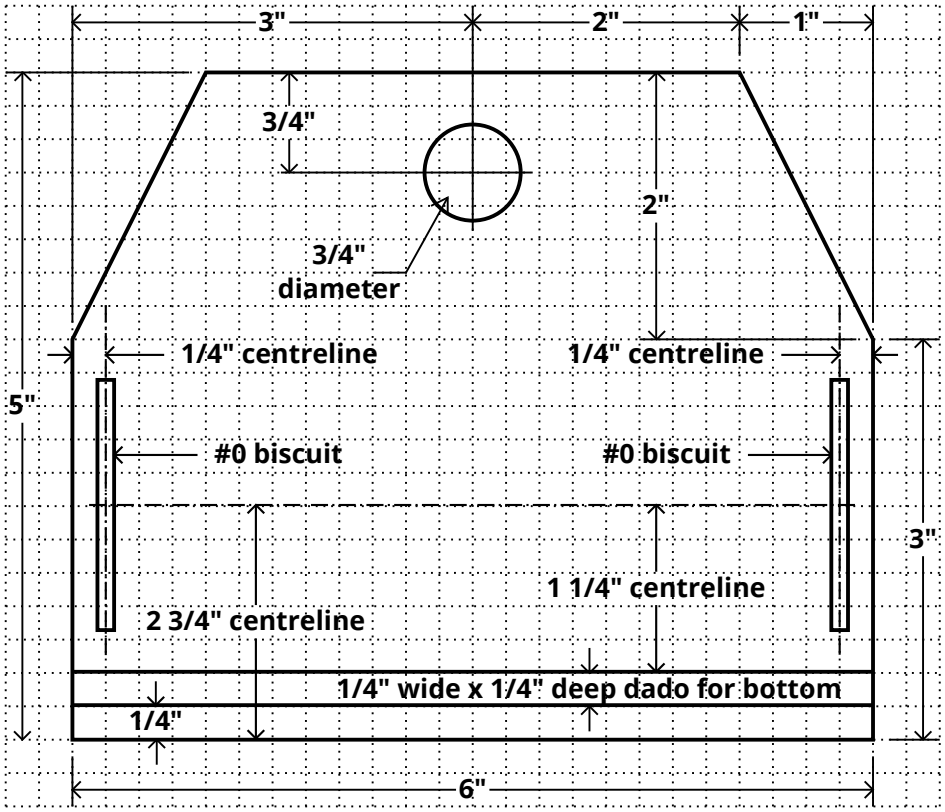
Tool Box Drawing: Box Ends

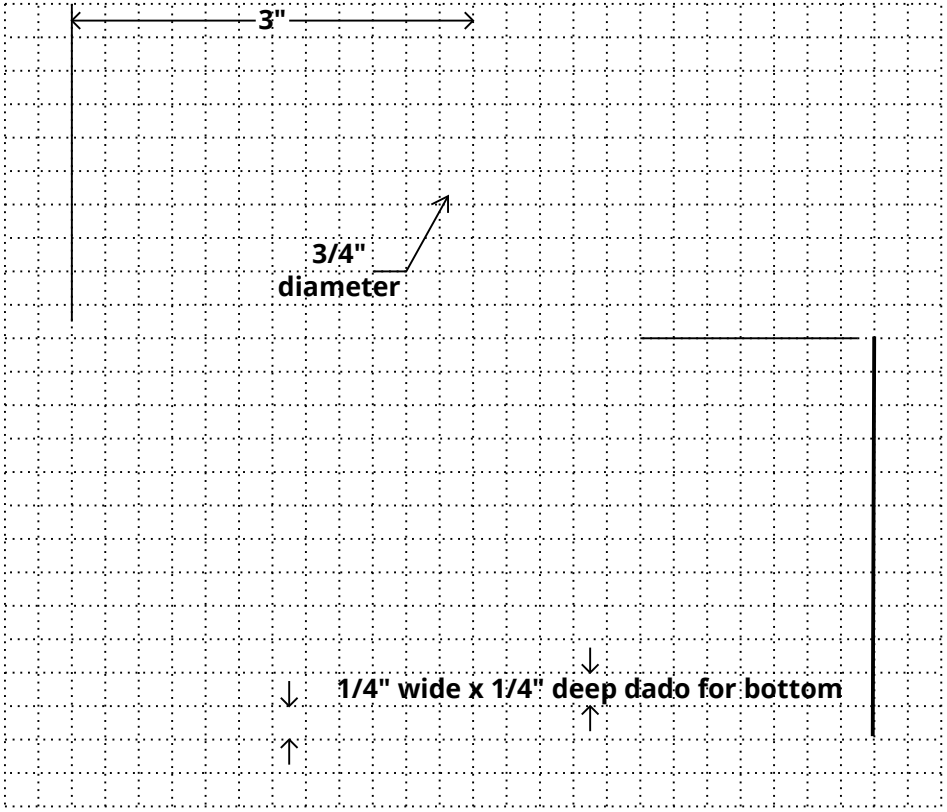
Redraw the following. Use a ruler for straight lines. Add the measurement numbers and guidelines. Make sure you count the squares accurately.

Name:

___/2 clean, straight lines
___/4 accurate shape and length
___/4 all measurements and guidelines **Score: /10**

Toolbox ends - layout on 5 x 16 x 1/2" wood





The Business of Production
The Toolbox Project

Name

Please calculate the costs of the items in the blanks

Score /20

You have to understand money in order to make money.

It takes hand skills and knowledge to become a good craft or tradesperson. But if you want to be one of the people in charge, you have to understand how to track your costs.

In the picture frame project we are going to be looking at material costs. This is the money it takes for the supplies that are used up while making something. It does not include the cost of tools or the labour it takes to assemble something.

Tool box materials

resawn spruce 2x4s
resawn spruce 2x8s
1/4" underlayment plywood
1/2" spruce dowel
#0 biscuits
rubber gloves
sandpaper
varnish

Or, do it like the pros. Go online, fill out the spreadsheet and show your teacher. It is faster.

You will need a spreadsheet app.

Material	Vendor	Amount used		Amount/package		Fraction used		$/package		$/material
Spruce 2x4 (96")	Rona	16"	/	96"	=	16/96	X	$3.97	=	$0.66
Spruce 2x6 (96")	Rona	8" equivalent	/	96"	=	8/96	X	$6.27	=	
Sandpaper (50 sheets)	Canadian Tire	1	/	50	=		X	$45.99	=	
1/4" plywood (4608 sq in.)	Rona	96 sq in.	/		=		X	$17.19	=	
3/4" dowel (72")	Canadian Tire	18"	/		=		X	$5.49	=	
#0 Biscuits (150)	Busy Bee	2	/		=		X	$9.18	=	
Water-based Varn. (3.78L)	Canadian Tire	0.05L	/		=		X	$62.09	=	
Rubber gloves (100)	Atl. Wholesalers	4	/		=		X	$6.82	=	
								Total Cost:		

Production Technology

What do I do next? Name

Not sure what to do next? Use this checklist to see what you should do!

1. Grab some knowledge

- ☐ Complete all your worksheets about measurement, drawing, layout, and safety.
- ☐ Then ask if you can choose your lumber.

2. Mill your lumber to width and thickness.

- ☐ Use the jointer to make one face and both sides flat.
- ☐ Use the planer to make all the pieces 1/2" thick.
- ☐ Use the table saw to rip the wood for the sides to 3" wide
- ☐ Use the table saw to rip the wood for the ends to 5" wide

3. Lay out your work.

- ☐ Lay out the cuts for the sides onto the 3" wide wood. Leave space at each end.
- ☐ Lay out both ends onto the 5" wide wood. Leave space at each end.
- ☐ Lay out the measurements for the bottom on your sheet of plywood.
- ☐ Remember to mark areas of waste.

4. Shape your pieces

- ☐ Use the tablesaw to mill the dadoes on your sides and ends
- ☐ Use the mitre saw to cut out the pieces. Remember to cut on the waste side of the lines!
- ☐ Use the drill press to drill a 3/4" hole in each end. Use the vice and a piece of scrap.
- ☐ Use the mitre saw to cut the ends, sides, and bottom to length.
- ☐ Use the bandsaw to cut the angles on the two ends.
- ☐ Use the bandsaw or tablesaw to rip the plywood bottom to width.
- ☐ Use a biscuit joiner to cut the biscuit slots for #0 biscuits

6. Do a test assembly

- ☐ Put in the biscuits and put all the pieces together without glue to make sure everything fits.

7. Assemble the toolbox

- ☐ Put down paper and get everything together using wood glue.
- ☐ Clamp it up tightly with clamps.
- ☐ Use a square to check that the corners are at 90 degrees.

8. Sand to smoothness

- ☐ Use the stationary sander to quickly smooth your joints.
- ☐ F ill if needed. Let the wood filler dry.
- ☐ Scrape away blobs of glue and use wood filler to fill any gaps in your joinery.
- ☐ Use a palm sander to sand from 40 -> 60 -> 100 -> 150 grit.

9. Finish

- ☐ Use paint or water-based polyurethane to finish your toolbox. Wait at least 30 mins between coats.
- ☐ Sand with 220 grit sandpaper after the second and each following coat.
- ☐ Apply 3-7 coats for the best quality.