

CURRICULUM RESOURCE

Tools of the Masonry Trade

OALCF ALIGNMENT

Competency	Task Group	Level
Competency A -Find and Use Information	A1. Read continuous text	2
Competency B - Communicate Ideas and Information	B1. Interact with others	1
Competency B - Communicate Ideas and Information	B2. Write continuous text	2
Competency B - Communicate Ideas and Information	B3. Complete and create documents	2
Competency D - Use Digital Technology	N/A	1

Goal Paths (check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Employment | <input type="checkbox"/> Postsecondary |
| <input checked="" type="checkbox"/> Apprenticeship | <input type="checkbox"/> Independence |
| <input type="checkbox"/> Secondary School Credit | |

Embedded Skills for Success (check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Adaptability | <input type="checkbox"/> Numeracy |
| <input type="checkbox"/> Collaboration | <input type="checkbox"/> Problem Solving |
| <input checked="" type="checkbox"/> Communication | <input checked="" type="checkbox"/> Reading |
| <input type="checkbox"/> Creativity and innovation | <input checked="" type="checkbox"/> Writing |
| <input type="checkbox"/> Digital | |

NOTES: This resource is one in a series of four focused on the masonry trade. It introduces the skilled trade of Brick and Stone Mason, outlines the pathways to this career, and reviews the various tools and equipment masons may use in their work.

ACKNOWLEDGEMENTS

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The Masonry Trade

If you look around the city where you live, you will see the skills of hundreds of brick and stone masons. You may see new buildings constructed by masons, including schools, hospitals, and homes. Masonry materials are durable and long-lasting, so across Canada the historic landmarks that masons constructed are still standing hundreds of years later. Working as a mason means your work will last.



“With calloused and steady hands, brick and stone masons have made an enduring mark on the Canadian landscape. Dwellings, businesses, industrial facilities, Parliament buildings, museums and places of worship; these buildings surround and sustain us. Some are works of art in their own right, while others fill a humbler but no less vital role.”

The "Textbook of Canadian Masonry" (second edition) by the Canadian Masonry Contractor's Association.

Learning to be a Mason

If you want to study to become a mason, you can choose two different paths.

1. You can enroll in an Ontario college program that teaches brick and stone masonry. You may find two-year diploma or one-year certificate programs, depending on the college. All college programs cost money, so you may need to save or borrow money for your tuition.

For more information about college programs, visit

<https://www.ontariocolleges.ca/en> and search for “masonry.”

2. You can find a certified brick and stone mason or a bricklayers union willing to hire you as an apprentice. Apprentices spend about 80% of their time learning on-the-job (while getting paid) and the other 20% of their time in a classroom. Apprenticeship training for brick and stone masons lasts about three years, which includes 4,880 hours on-the-job work experience and 720 hours of in-school training.

Now that you know about the two paths, answer the question on the following page.

Question: Which of those two paths do you think you would choose? Explain why below.

Tell a classmate, teacher, or tutor about which path you chose and why.

ACTIVITY: LEARN MORE ABOUT THE MASONRY TRADE

Read about the masonry trade on the Skilled Trades Ontario website:

<https://www.skilledtradesontario.ca/trade-information/brick-and-stone-mason/>

Then, fill in the blanks in the description below based on what you read.

A Brick and Stone Mason builds and repairs _____, floors, _____, pavings, partitions, fireplaces, _____, smokestacks and other structures. A Brick and Stone Mason often works on industrial, commercial, institutional, and residential buildings. Specifically, a Brick and Stone Mason:

- erects, installs, maintains, _____ and alters walls, floors, arches, pavings, partitions, fireplaces, chimneys, smokestacks, and other structures
- works with materials such as _____, natural stone, manufactured _____, tiles, precast masonry panels, glass blocks, _____, light-weight insulated panels, other masonry units, insulation, and membranes



Reflect: Is this the kind of work you would like to do?

Tools of the Masonry Trade

Let's look at the tools, equipment and machinery that a brick and stone mason may use or come across on the job site. While learning about these tools, you will also find out about some of the basic aspects of masonry, such as laying mortar and tooling joints.

Personal Protective Equipment (PPE)

"Before any worker sets foot on a Canadian construction site, he or she must wear SCA-approved personal protective equipment, commonly called PPE."

The "Textbook of Canadian Masonry" (second edition) by the Canadian Masonry Contractor's Association.



A very important tool for masons is Personal Protective Equipment (PPE). There are many types of PPE that must be worn at different times. The most common are:

- A CSA-approved hard hat. A CSA mark on safety equipment means it has been tested and meets high safety standards.
- Safety boots or shoes which must have the green triangle symbol on them. The green triangle means the boot or shoe has sole puncture protection and a protective toe.
- CSA-approved safety glasses.
- Hearing protection, which must be worn if a mason is working on a loud job site or with noisy equipment.
- Masks and respirators, which must be worn when working in dusty conditions or with airborne chemicals.
- A plastic apron and rubber gloves, which are worn by masons when using a wet saw.
- Bricklayers gloves, which are knit and may have a rubberized palm and fingers. They are worn by masons to protect their hands from the effect of lime in the mortar.
- Fall protection equipment including a safety harness and lanyard, which must be worn whenever a mason is working at heights.

Let's review!

1. If a mason is working on a loud job site or with noisy equipment, what PPE should they wear?

2. What does a CSA mark on safety equipment mean?

3. If a mason is working in dusty conditions or with airborne chemicals, what PPE should they wear?

4. What are masons protecting their hands from when wearing bricklayers gloves?

5. What does the green triangle on a work boot or shoe mean?

6. If a mason is using a wet saw, what two pieces of PPE should they wear?

7. What are the two kinds of fall protection equipment mentioned?



Reflect: What experience do you have using personal protective equipment (PPE) either on the job or in your everyday life? Do you feel it protected you from illness or injury?

Hand Tools

There are many hand tools you could use as a mason. You will build your mason's toolkit so it fits the needs of the work you do. Some jobs require only a few select hand tools, so it is a good idea to check with the foreman to find out which tools you need for that day's job.

Inside the Mason's Toolkit



The most important tool in the masonry trade is the mason's **trowel**. The two most common types are the **London Narrow** and **London Wide** pattern trowels, which work well for brickwork, and the wider and slightly larger **Philadelphia** patterned trowel which is used for concrete blocks and larger stones.

A mason uses a trowel by loading mortar onto its blade, and then spreading (or stringing) the mortar on top of the bricks, concrete blocks, or stones. The mason would then run the point (or toe) of the trowel down the length of the mortar to create a small furrow.

The next most important item in your tool kit is the **jointer**, which is used on the line of mortar that bonds layers of bricks, concrete blocks, or stones together. The most common type of jointer is **convex**, but you may also use **concave**, **V**, or **grapevine** jointers. Each of these creates a different pattern in the mortar between the bricks, concrete blocks, or stones.



Once the mortar has partially set, a mason runs the jointer along the mortar on the face of the wall. This compacts the mortar and seals it up against the brick, concrete block, or stone. The joint is important because it can help make the wall weather-resistant. Depending on which jointer the mason chooses, it may also create decorative shadows along the wall's surface.



There are a number of different hammers used in masonry work, so you will probably have more than one **hammer** in your toolkit. Some are used directly on the surface of clay, concrete or stone while others are used for hitting the top of a chisel.

The most common is the **brick hammer**, also known as a **mason's hammer**. It has a flat head on one side and a cutting edge called a "chisel peen" on the other side. It is most often used for cutting brick and block. The **stonemason's hammer**, or **stone axe**, has a wedge for breaking and is used for trimming and splitting stone. The **mash or lump hammer** is a type of sledgehammer used mostly for striking chisels.

Chisels are used for cutting or breaking bricks and stones. The **brick set** and **bolster** are the chisels most often used by masons to cut bricks or shape soft stone such as limestone. You may also use a **pitching chisel**, **splitting chisel**, **tooth chisel**, **point chisel**, or **joint chisel** depending on the materials you are working with and job you need to do.



Masons often use a chisel and hammer to cut bricks or stones so they match the pattern of a wall or fit into small spaces around doors or windows. The space to be filled must be carefully measured, and the bricks or stones cut cleanly and finished smoothly so they fit properly. **Note:** An appropriate hammer should be used to strike a chisel, and hand and eye protection should always be worn.



"Most chisels are available in various widths, handle grip shapes and lengths to meet professional preference and job requirements. Many are available with hardened steel or carbide tips. Carbide chisels are generally preferred for cutting stone, as they have more strength and keep their sharpness longer; however, they are more costly."

The "Textbook of Canadian Masonry" (second edition) by the Canadian Masonry Contractor's Association.

Let's Review!

1. What is the name of the hand tool used for cutting or breaking bricks and stones?

2. What are the two most common types of trowels?

3. What is the most common type of jointer? _____

4. What is one other type of jointer masons use? _____

5. Fill in the blanks: An appropriate _____ should be used to strike a chisel, and hand and eye _____ should always be worn.

6. What is the most common type of hammer masons use? _____



You may also have different types of mason's **brushes** in your tool kit. They are used to clean the surface of walls. You will use a **soft bristled brush** to clean fresh mortar off a wall before it sets. A **stiff bristle brush** made with non-metallic bristles is used to clean set or hardened mortar from walls, and **acid brushes** are used for washing walls with cleaning solutions.

Measuring tools are very important for a mason. For example, a **steel square** is used to make sure that the angles of corners, or of window and door openings are correct. The **gauge tape** or **bricklayers tape** is a type of measuring tape masons use to figure out how big of a mortar joint they need to make a wall the height it is supposed to be. There are different measuring tapes for bricks of different sizes.



As a wall is being built, masons use a **hand level** to see if the horizontal (side-to-side) line of the wall is straight. A **plumb bob** can be used to check the wall's vertical (up and down) angle. It is a string with a weight attached, so hanging it from the top of the wall will help a mason see if it is straight up and down or not.



The **mason's line** looks like a spool of thick string. It is made of braided nylon and is a very important tool on the job. It is stretched across a mason's work area as a guide for placing bricks at the right height. The mason's line is usually held in place by **line blocks** which are made of wood and attached to the outside corners of the wall. **Brick clips** are similar but are made of metal.



Reflect: Have you seen these hand tools before? Are they used the way you thought they would be?

Outside the Mason's Toolkit

While too large for the average tool kit, there are other tools you will use on the job.

A **mortar board** is used to hold a small amount of mortar close to where the mason is working. Mortar boards are made from different materials and usually look like flat boards or shallow pans.



If you are hand mixing mortar for smaller jobs, you will use a **mortar hoe** or **mason's hoe** for mixing.

A **wheelbarrow** is often the container masons use to mix the mortar, and since it's on wheels it's easy to deliver it to the mortar board. A **shovel** is used to put dry materials in the wheelbarrow or other mixing container and to shovel mortar from that container onto a mortar board.



When hand mixing mortar, "Wear appropriate personal protective equipment, including safety glasses and a respirator. Check that all equipment is in good working condition before use. For example, the wheelbarrow tires must be kept inflated and all the bolts should be tight and secure. Avoid splashing as this can cause eye injuries."

The "Textbook of Canadian Masonry" (second edition) by the Canadian Masonry Contractor's Association.

Let's Review!

1. What is the name of the tool a mason can use to check the vertical (up and down) angle of a wall?

2. What is the name of the brush you will use to clean fresh mortar off a wall before it sets?

3. What is the name of the tool that is stretched across a mason's work area as a guide for placing bricks at the correct height?

4. Why would a mason use a mortar hoe or mason's hoe?

5. What is a mortar board used for? _____
6. What kind of tool is used to make sure that the angles of corners, or of window and door openings are correct?

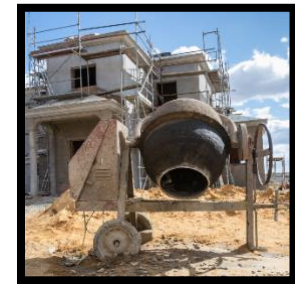
Electric or Gas-Powered Tools



For larger jobs, masons use electric or gas-powered tools. For example, a **masonry saw** can be a great alternative to hand cutting. There are many kinds of masonry saws, which are powered by gas or electricity. The standard **masonry saw** (also called a **table saw**) has a large circular saw blade and sits on a heavy frame supported by legs.

A **portable masonry saw** is similar, but it is smaller and has no legs. Because it is more compact, it's easier to move around the job site. There are several hand-held circular saws used for different jobs, including the **quick cut saw**, **portable ring saw**, and **cut-and-break saw**. The smallest of the hand-held circular saws is a **side grinder** or **angle grinder** which is used for cutting out old masonry joints. There are many other saws you may encounter on the work site. They all require you to use safety precautions and be very aware of your surroundings when using them.

There are four main types of **mortar mixers** that could be powered by gas or electricity. **Paddle mixers** and **hydraulic mixers** are the most commonly used. They mix mortar inside a large drum by stirring it with large moving paddles. Drum models do the opposite – they have a moving drum with two fixed paddles inside, and the mortar mixes as the drum spins. Roller mixers use heavy rollers to mix and knead mortar a lot like someone would knead dough.



Grout is a wet cement mixture that masons put inside concrete blocks to make them stronger. For very small jobs, this can be done by hand using pails and shovels. For larger jobs, masons put grout into the funnel of an electric or gas-powered **grout pump**, and it is pushed out of a hose at the other end. For very large jobs, you may see **pump trucks**, which are heavy trucks with pumps on the back. They have a tall boom holding the hose.



Reflect: Are you comfortable using electric or gas-powered tools?

Keeping Your Tools in Good Shape

Part of being a professional mason is looking after the tools you use on the job. You may have your own tools, or you may use your employers' tools. Either way, it is important to be sure you keep those tools in good shape.



“A tidy tool kit and clean, properly cared for equipment are the marks of a skilled and responsible trades person.”

The "Textbook of Canadian Masonry" (second edition) by
the Canadian Masonry Contractor's Association.

Here are some tips for maintaining your masonry tools:

1. If you are using your own tools, make sure they are marked with your name.
2. Leave tools you won't be using at home, or in another safe location. This will keep your work space clear of clutter.
3. Store the tools you need for the job in a bag or bucket or under your mortar board so you can reach them easily when you need them.
4. Make sure that tools with blades and sharp edges are stored with the points down so you do not accidentally hurt yourself.
5. When you are done with a tool, clean it up, and put it away. Clean and dry your tools as soon as possible to prevent damage and rust.
6. After the day's work, look around to make sure that you have not left any tools or personal items behind.

Pick two of these tips that you think are the most important and write them below.

Tell a classmate, teacher, or tutor which tips you chose and why you chose them.

There are many others you may use on the job site. Some of them are for specialized jobs, and others are used in many different trades (like a utility knife).

What other kinds of tools do you think you might find on a masonry job site?

Tell a classmate, teacher, or tutor about the tools you think you might find on a job site.

Conclusion

In this resource, you learned about many kinds of **tools and equipment** used in the masonry trade.

Check off what tools and equipment you learned about below.

- ☐ Personal Protective Equipment (PPE).
- ☐ Tools inside a mason's toolkit including trowels, jointers, hammers, chisels, mason's brushes, measuring tools, and the mason's line.
- ☐ Tools outside a mason's toolkit including the mortar board, mortar hoe or mason's hoe, wheelbarrow, and shovel.
- ☐ Electric or gas-powered tools including the table saw, portable masonry saw, mortar mixers, and grout pumps.
- ☐ Tips for keeping masonry tools in good shape.

Tip: If you didn't fill in one of the checkboxes, go back to that section and read it again. Ask a classmate, teacher, or tutor to share what they know about these masonry tools.

Next Steps

For more information about becoming a brick and stone mason in Ontario, you can complete the other resources in this series:

- Professionalism in Masonry
- Masonry Math 1: Measurements and Calculations
- Masonry Math 2: The Next Step in Numbers

You can also visit this helpful website:

- The Canadian Masonry Contractors Association:
<https://canadianmasonrycontractors.com/>