

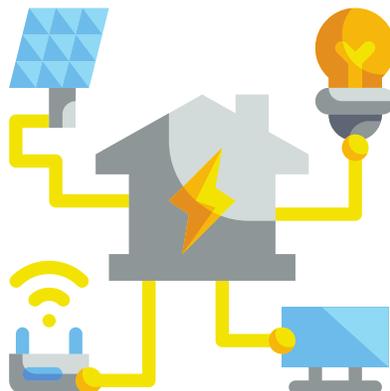
CLOVERBUDDIES

**A 4-H EXPLORATION ACTIVITY SERIES FOR
CLOVERBUD MEMBERS**



AUGUST 2022

PROJECT EXPLORATION: MECHANICAL SCIENCES



Bicycle Basics

Bicycling is an exciting 4-H project in Mechanical Sciences that you can learn more about after being a Cloverbud! Whether you have never ridden a bike, have a trike or just got your training wheels off, bicycle safety is one of the most important things to know about bicycling. How much do you already know about it? Read the bicycling basic safety tip below and unscramble the word it's hinting at. I bet you can get them all!

1. **Tip:** Wear this to protect your head

LHEMTE _____

2. **Tip:** Avoid crashing your bike or you will get this.

IJNYRU _____

3. **Tip:** This should be moved to the correct height.

ASTE _____

4. **Tip:** These should be checked for air.

RTSIE _____

5. **Tip:** You should look this way before entering the street.

BTOH _____

6. **Tip:** Wear this type of clothing so you are easily seen.

RTBHIG _____

7. **Tip:** Do this to show drivers what you plan to do.

SNGAIL _____

8. **Tip:** Check to make sure these are working correctly.

KRBASE _____

9. **Tip:** Bikers should ride on this side of the road.

HRTGI _____

10. **Tip:** Use this arm to make biking signals.

EFLT _____

WOOD WORKING

Woodworking is a super fun 4-H project within the Mechanical Sciences. There is something so satisfying about making something with your own two hands. Have you ever used woodworking tools before - like maybe a hammer or screwdriver? Look at the definitions below, and see if you know what woodworking item it belongs to. Then write that woodworking item in the spot for that definition on the next page!

Across:

4. A tool used to marking and referencing a 90 degree angle
5. Shaping machine with a rotating drive for turning pieces
8. Used for pounding in nails, as well as removing tips or nails.
9. A Saw that helps you make accurate and precise cuts on wood.
10. Used to temporarily hold work securely in place.
12. Used to make one face of a board, and one adjacent edge, perfectly flat and square to each other.
13. A specialized table used by woodworkers for a flat large work surface.
14. Tool used for cutting shapes and curves in wood with it's narrow blade.



Down:

1. A tool for making cutouts, duplicates from a pattern, sharp edges, and more.
2. A tool used to grab hold of things and hold them steady in it's rough jaws.
3. A saw best used to cut curves, even in thick lumber, to rip lumber and to crosscut short pieces.
6. A motorized tool designed to bore holes in wood, metal or plastic.
7. A tool that can cut mortises, shave rough surfaces, chop out corners and scrape off glue.
11. A motorized tool to trim boards to a consistent thickness.
15. The main material used in woodworking.

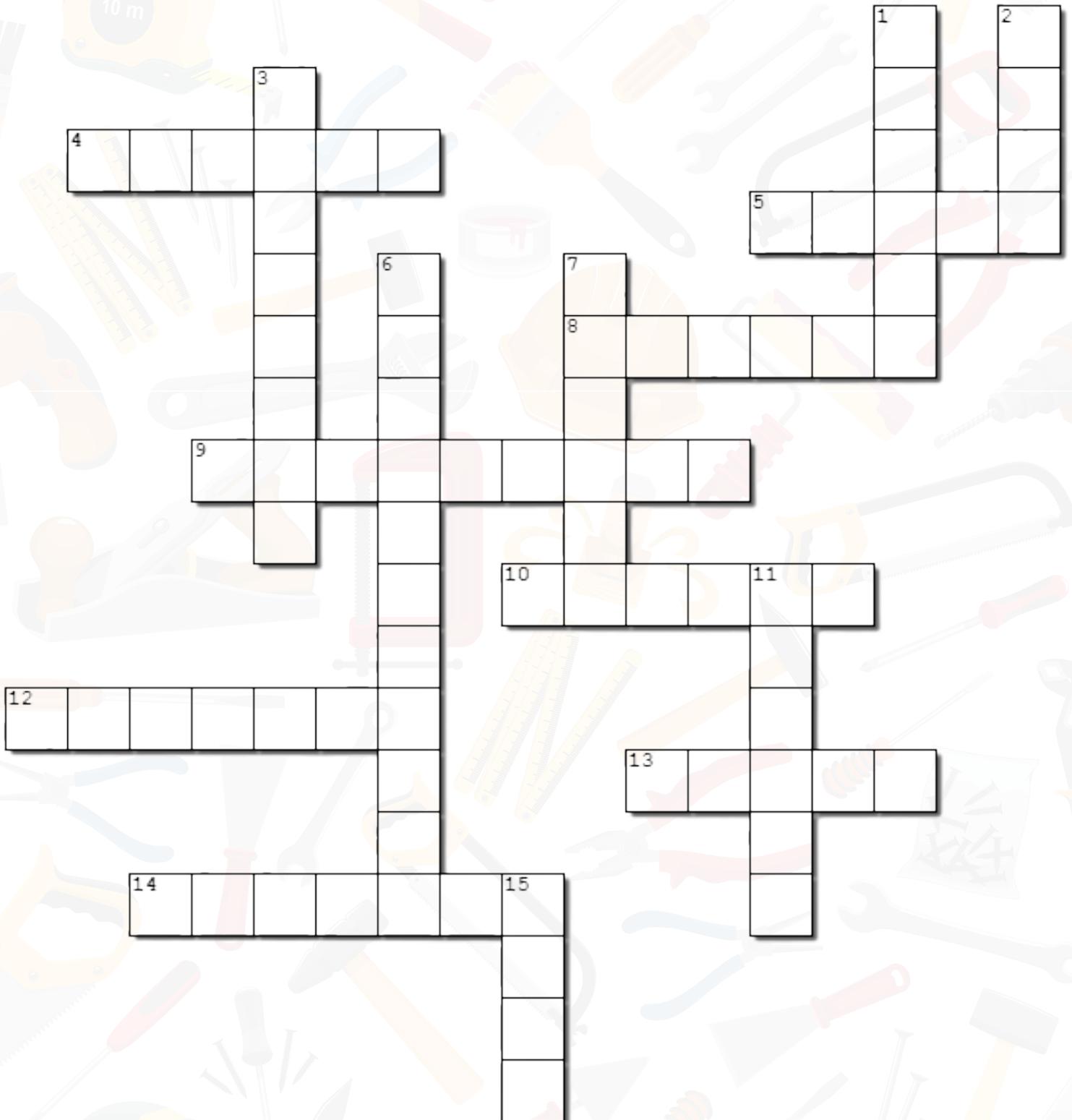


Word Bank:

Square	Clamps	Router	Chisel	Table Saw
Lathe	Jointer	Vise	Planer	Jig Saw
Hammer	Bench	Band Saw	Wood	Drill Press

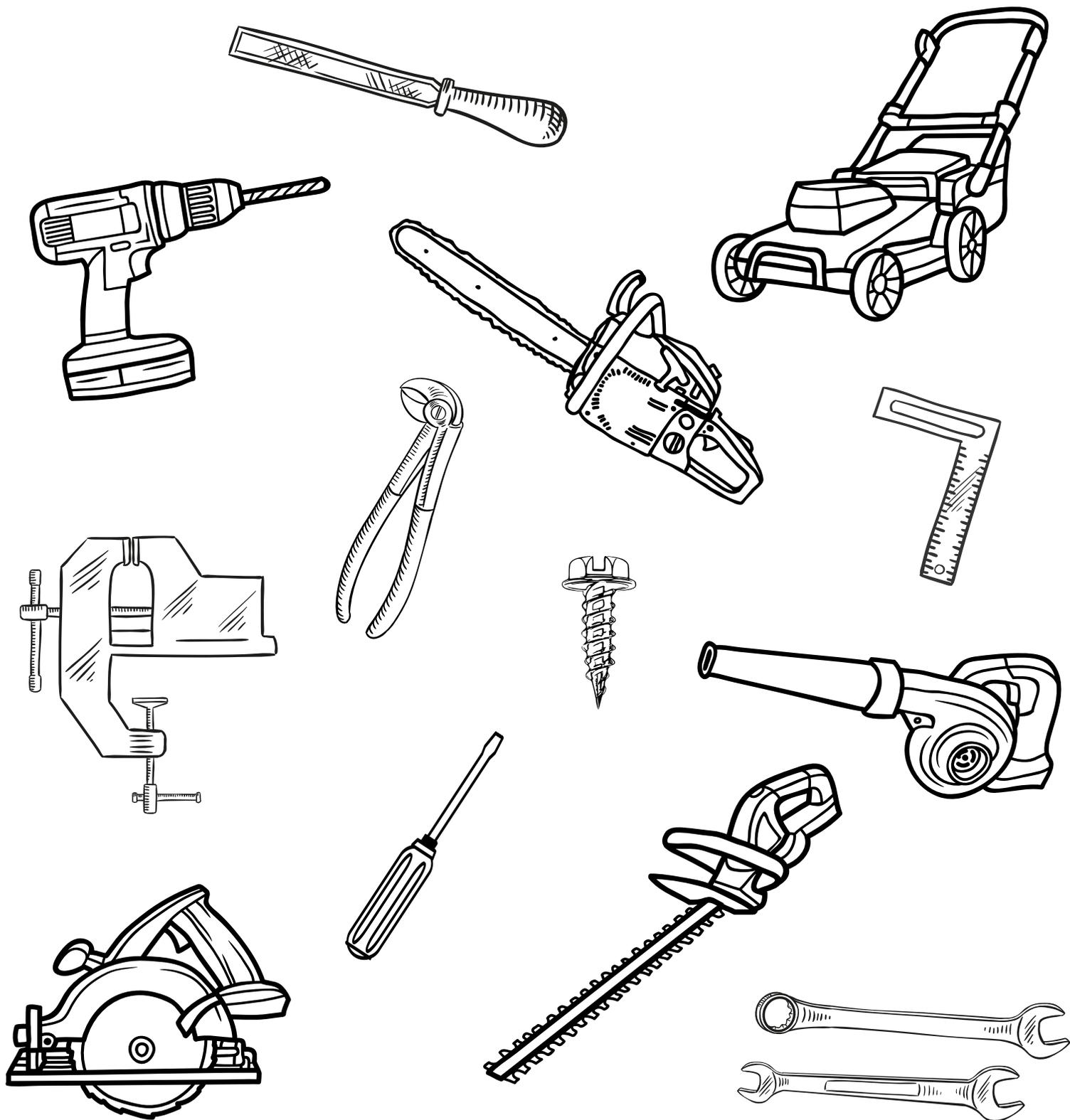
WOOD WORKING

In the spaces below, put the woodworking items that fit their definitions on the previous page!



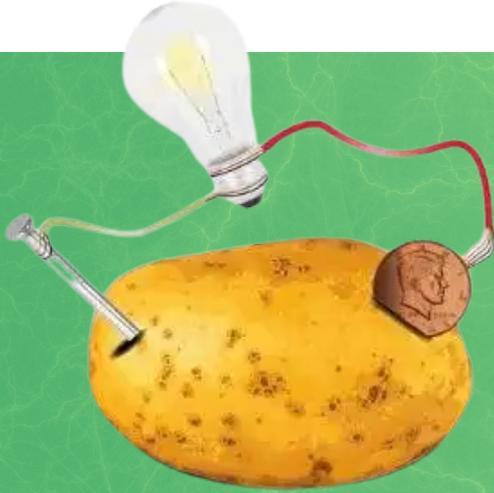
ALL YOU NEED FOR MECHANICAL SCIENCES

Mechanical Sciences can be a lot of fun. If you enjoy getting your hands dirty or figuring out how things work, this is the area for you! Look at the tools, machines, and parts below that are used in mechanical sciences. Color them in as you think of what they are called and what they could be used for!



POTATO ENERGY

Electricity is another popular 4-H project in the Mechanical Sciences. Electricity is an important part of all our lives - it's what gives us light, helps cook our food and keeps stores and factories working. In the experiment below, you'll learn how to use a potato for power!



MATERIALS:

- A few raw potatoes
- Copper Wire - insulated
- Nails - zinc preferably
- Copper - a penny will do
- A very small lightbulb
- A voltage reader
- An adult to help you!

INSTRUCTIONS:

1. Cut a slit in your potato and push the copper penny in as far as you can, leaving just a small edge protruding.
2. Push the nail into another part of the potato. Push it far into the potato, but don't let it touch the penny (leave about an inch between them).
3. If you're using a multimeter to read the current, you can start by finding out how much energy your potato generates by connecting its clips to the potato's metal protrusions.
4. Put the red clip on the penny and the black clip on the nail (make sure the red wire is in the + slot, the black in the - slot of the meter).
5. Look at how much power the potato generates. If you know the voltage requirement of your light bulb or LED, you should now be able to work out how many potatoes will be needed to power it. Cut some more potatoes, add the coins, nails, and wire, and see if you're correct!

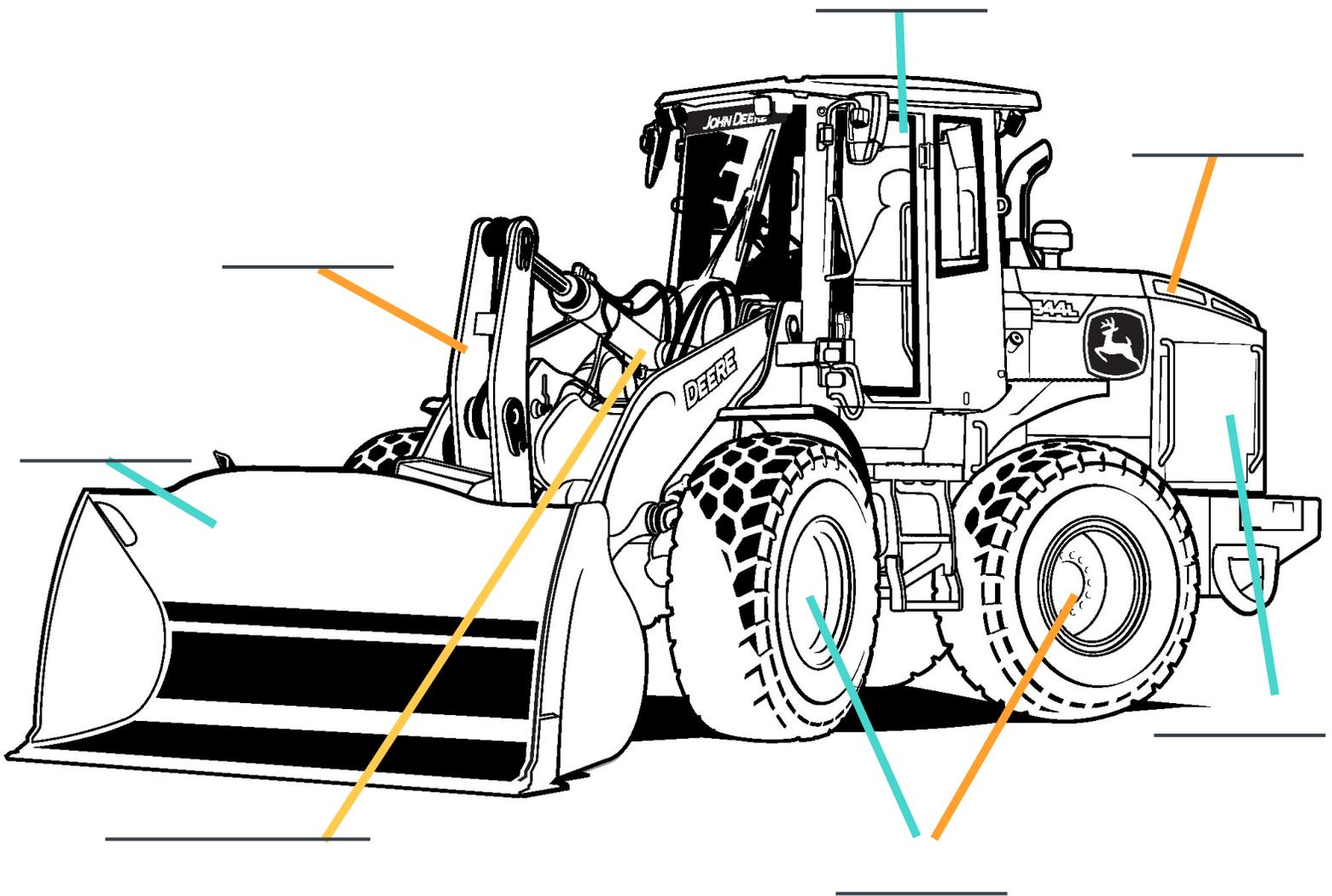
WHY DOES THIS WORK?

The metals buried in the potato serve as electrodes, and within the potato, electrons will flow back and forth, generating a small current of electricity.

When wired up to a light bulb or an LED light, this small electric current is enough to light it up for a short period of time. You will need to make a circuit so that the current can flow.

AGRICULTURE MACHINERY

Tractors and other Agricultural Machinery are a big part of the Mechanical Sciences Project. Once you're older and can join Tractors 1, you will get to learn and identify parts of agricultural machinery, understand the basics of maintenance, learn about different fuels and engine cooling systems, research different safety features, and learn safety rules. Color in the picture below of a loader and see if you already have some knowledge in labeling the parts from the word bank below!



WORD BANK:

Arm

Bucket

Hood

Hydraulic Cylinder

Cab

Wheelbase

Engine

JULY ANSWER KEYS

Answers to all Cloverbuddies activities will appear on the back cover of the following month's issue. For answers to this issue, watch for next month's installment of Cloverbuddies!

LANGUAGE OF LOVE

S	I	C	H	L	I	E	B	E	D	I	C	H	I	A
A	L	E	N	G	O	H	O	I	N	E	I	H	K	N
R	O	F	X	Y	Q	F	S	D	A	B	I	M	H	A
A	V	T	E	C	H	I	H	H	I	L	A	A	O	B
N	E	K	H	E	T	J	O	U	L	I	E	F	U	E
G	Y	A	I	N	V	P	R	L	I	S	S	W	V	H
H	O	D	O	O	S	E	T	D	A	R	A	M	A	I
E	U	G	T	E	A	M	O	V	E	R	R	A	N	B
Y	X	F	E	F	E	B	E	M	I	A	T	E	J	A
O	W	O	A	I	N	I	C	W	M	A	Y	N	O	K
Y	A	T	E	B	Y	A	L	T	U	B	L	Y	U	X
I	K	H	H	O	B	D	I	K	H	O	M	A	I	T



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