Soil Shakers!

Junior Achievement & UofL Center for Healthy Air Water and Soil

Get ready to do **soil science** at home!

- In this **Soil Shakers** activity you will compare two soil samples.
- You will use the **Scientific Method** to learn about your soil.
- With your new knowledge, find out if your soil is *healthy*. **Let's GO!**

What you'll need

- [x] 

Print out this **activity book** or grab some paper. A **pencil** for notes and **marker** to label.

- [ ] 

Find **2 clear glass jars** with lids. Pickle jars are perfect for this. Just clean with soap & water and remove the label.

- [ ] 

A **spade**, **gardening trowel**, or **screwdriver** to loosen and remove a soil sample.

- [ ] 

Partner with an adult, sibling or friend to help each other learn about soil!

What is *SOIL*?

Soil is all the surface of the earth that isn't water and ice. It is a mixture of **rocks**, **decaying plants** & **animals**, **water**, & **air**. It provides the **plants** we eat with the **nutrients** we need to grow and be *healthy*!

What makes **soil** *healthy*?

humus *pronounced hyoo-muss*

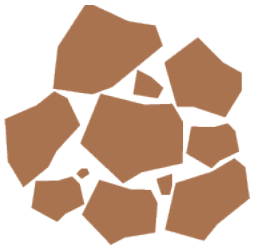
Humus is the part of soil that is **decaying plants** and **animals** that provide *nutrients* to our **food**.

loam *rhymes with Rome*

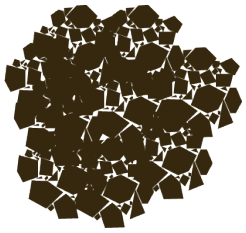
Loam is the right mix of **sand**, **silt**, **clay** and **humus** that is *healthy* for plants.

Soil rocks come in **3 kinds**

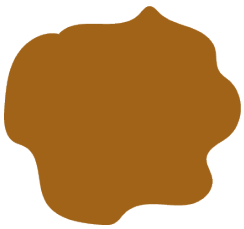
1. **sand**
   air
   water



2. **silt**
   air
   water



3. **clay**
   air
   water



Answer this!

Why is healthy soil good for you?

Can **soil** be *unhealthy*?

Yes. **Pollution** & **contamination** from human activity can leave chemicals and litter like plastic in the soil. This makes soil unhealthy which affects our **food** and **water**.

The Scientific Method

*This is your **science logbook** - keep notes and make it your own!*

name _____ date _____

1 Ask a QUESTION

Now that you have learned about soil, what **questions** do you have? Write them here.

Example: *Which soil sample is healthier? Do plants grow in this soil?*

Question:

2 Do background RESEARCH

Select **2 different sites** to take soil. Before you dig, **observe** each site and take notes. **Compare & contrast**.

make a LIST

1	2

write SENTENCES

1 _____

2 _____

DRAW what you see

1

2

Out of room? Grab some more paper or the last page to write & draw more!

3 Make a HYPOTHESIS

A **hypothesis** is an educated guess. After observing your **2 sites**, try to answer your question?

Example: **Site 1** *looks healthier because more plants grow there.*

Guess:

Collect Samples

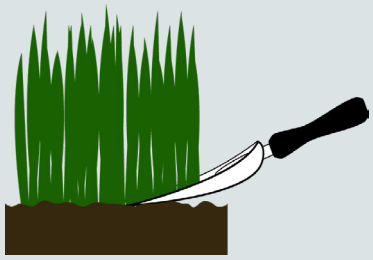
SAFETY FIRST

Be sure to wear SHOES that cover your toes, WORK GLOVES to protect your hands & GOGGLES or GLASSES to protect your eyes. LOOK around you & COMMUNICATE to your partner before you act.

4 Do an EXPERIMENT

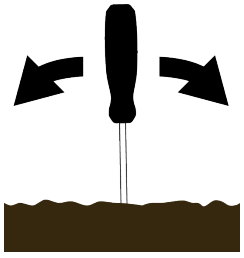
Follow these **steps** to collect your **soil samples**. Be sure to have your **pencil** and **notes** ready to keep a record.

- [ ] Carefully **remove any plants** growing on the surface of the soil sampling site.



Set it to the side and **replace** it once you have removed the sample.

- [ ] **Loosen the soil** and then scoop enough material to fill **1/3** of your jar.



x2

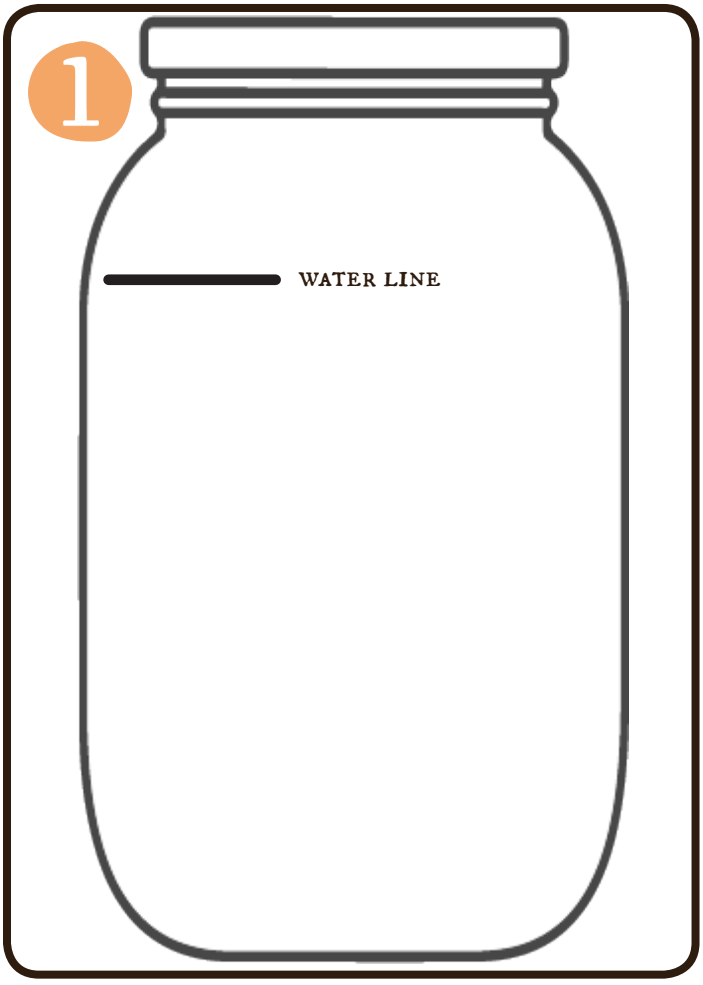
- [ ] Use your **marker** to label & record the **time**, **date** & **location** for *each* of the samples on the **lid** *and* the **jar** as you go.

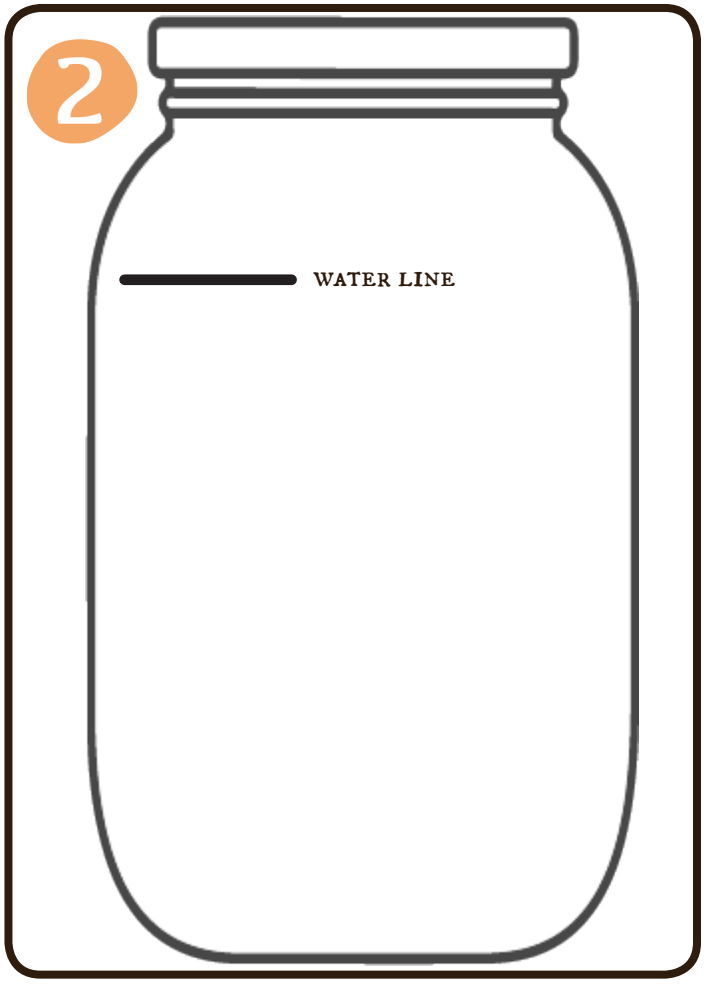
TIME:	TIME:
DATE:	DATE:
LOCATION:	LOCATION:
NOTES:	NOTES:

What did you see in the soil when you removed the sample?

Shake 'Em Up!

- [ ] **Draw a line with a marker** on the outside of your jars. Try to make them even. Then *fill your jars* with **water** to the line.
- [ ] **Close the lid *tight*!** Then *vigorously* **shake** each jar making sure the soil inside breaks up leaving no clumps.
- [ ] **Let sit for at least 1 HOUR** to let the soil settle.
  - **Clay** is the lightest and will be on **top**.
  - **Sand** is the heaviest and will settle to the **bottom**.
- [ ] **Draw what you see** in your jars, **color & label** the layers.





Do you see anything *floating*? **Draw** the pieces and try to guess what each is. Notice the differences.

Analyze & Conclude

5 Make a CONCLUSION

A **conclusion** is a judgment you make using **reason**. It's what you **learned** after doing the **experiment**, **observing** the **results**, and **comparing** them to your previous **knowledge**.

Repeat your HYPOTHESIS

Guess:

Rewrite your **hypothesis** from STEP 3 and compare it to your experiment results. Were you right, or not quite? Maybe you were partly right. *That's OK*! That's how scientists **learn**. Did you answer your original **questions**?
Write what you **learned** here.

Conclusion:

What **questions** do you have now that you're done?

Come back to your jars in **24 hours** and see what's changed. Or, try taking *more samples* to learn more!

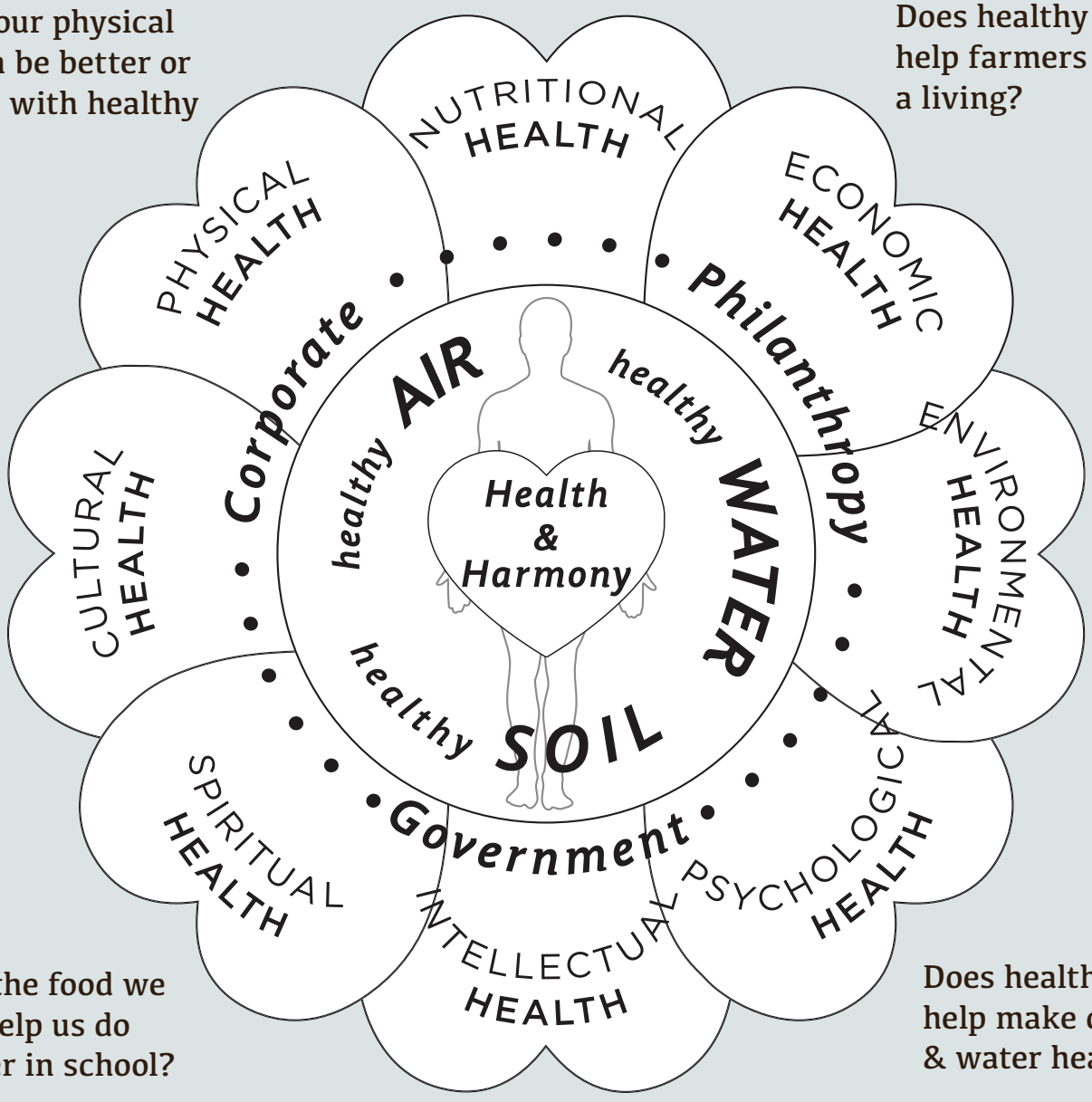
Coloring Activity!

Apply what you have **learned**

This is a **Circle of Health & Harmony**. It shows all the ways we can be *healthy*. Circle the word **SOIL** and color in all the hearts you think relate to *healthy soil*!

Can your physical health be better or worse with healthy soil?

Does healthy soil help farmers make a living?



Can the food we eat help us do better in school?

Does healthy soil help make our air & water healthy?

SHARE YOUR FINDINGS! CLICK HERE TO SUBMIT YOUR RESULTS

You're almost a JA Biztown Deputy Health Researcher! Submit today to receive your own Circle of Health & Harmony pin.

MY NOTES