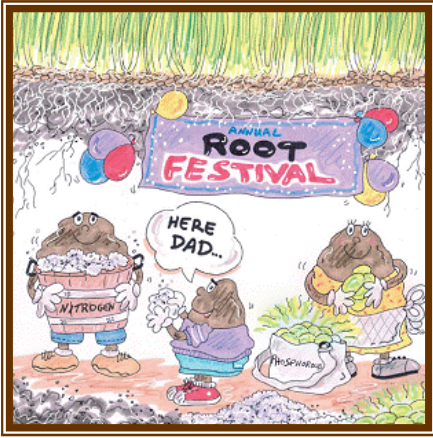


# Texturing Soil Lesson



A lesson based on the book, The Soil Neighborhood by Dan Yunk & Steve Swaffar.

America's food supply is safe, affordable and abundant but misunderstood by the public. Kansas Farm Bureau seeks to improve consumer knowledge of the importance of farming and ranching through the *Kailey's Ag Adventure Series*, of which this book is a part.

## Background Information:

After learning about the soil neighborhood with Kailey, we know that thanks to Clay, Rocky, Sandy, and their friends, crops are able to grow in the soil. We then can use the crops in items we use everyday.

An important part of soil is its **texture**. Texture refers to how something feels. Just as types of clothing feel different, like a silk shirt and a wool jacket, different types of soils feel different, too.

- *Optional: Bring or wear a silk shirt and wool jacket to feel the differences in clothing textures.*

The recipe for soil texture includes three different ingredients, **sand, silt, and clay**. As you learned with Kailey, Sandy, Rocky and Clay all played important parts in the soil neighborhood in the story. Sand, silt, and clay all play important parts in forming good soils, too!

Just as you aren't exactly like your best friend or your big brother or even your mom, all soils aren't alike either. Different combinations of the three ingredients - sand, silt, and clay - form different kinds of soils with different textures.

Sand, silt, and clay are really small. In fact, silt and clay particles cannot be seen without magnification. Only sand particles are large enough to be seen with the naked eye.

- *Optional: To visually illustrate the differences in particle sizes, use a basketball, softball, and ping pong ball. Explain that if a grain of sand was a basketball, then silt would be a softball, and clay would be a ping pong ball.*

**Level:** Pre K - Grade 2

**Subjects/Standards:**

Science: 2nd Grade

Biological Evolution:  
Unity and Diversity

**2-LS4.1**

Make observations (firsthand or from media) to collect data which can be used to make comparisons.

*Standards may be adjusted to fit other grade levels.*

**Student Learning Outcomes:**

The students will compare and contrast the physical properties of soil by observing the color and feeling the textural differences between sand, silt, and clay samples.

**Estimated Teaching Time:**

45 minutes

**New Vocabulary:**

Texture

Sand

Silt

Clay

Many times we forget about the importance of soil, even though it is under our feet in our backyard, on the playground, or in our farmer friends' fields. Let's use our observation skills to study soils. How do you observe something?

- *Student responses should include the five senses.*

Observation requires using one or more of our five senses - touching, tasting, hearing, seeing and smelling. To observe soil, we will be using both our touch and sight senses today!

### Activity:

Divide students into small groups depending on the number of students in the class. Students not at one of the three stations should work on the crossword puzzle at their desks.

Groups should go to each of the three stations and observe the soil. Slightly moisten the soil to a consistency of a 'pasty' mud. Students should place approximately a teaspoon of the 'mud' in their palm. The students should then rub the soil between their index fingers and thumbs.

Does the sample feel gritty like sand from a beach? Does the sample feel floury and smooth like mixing water and flour together from your kitchen? Or does it feel sticky like when you use potters clay in art class?

- *Students record observations on the observation sheet. Use observation sheet 1.1 for younger grades and observation 1.2 for older, more advanced students. Review with students how to use a Venn diagram if necessary. Upon the teacher's discretion, give a word bank relating to the specific soil samples to complete the observation sheets.*
- *Give adequate time for each group to observe all three samples, record their observations, and complete the crossword puzzle.*

Thanks to Kailey, Clay, Sandy, Rocky and their friends, we now understand more about this valuable earth material and can describe its properties!

#### Materials Needed:

*The Soil Neighborhood* by Steve Swaffar and Dan Yunk

A minimum of three different types of soil samples

Three containers of water (coffee cans or ice cream buckets work well)

Paper towels

Newspapers

Copies of observation sheet

Copies of crossword puzzle activity

#### Optional Materials:

Silk shirt

Wool jacket

Basketball

Softball

Ping pong ball

#### Equipment:

Tables or desks pushed together to form three large work areas.

#### Prepare Ahead:

Obtain samples of at least three different soils, preferably one with a prominent amount of sand, one with silt, and one with clay to illustrate the differences in each. If possible, use samples that have varying shades of color to help students conclude that all soil is not the same color. Contact your local Natural Resources Conservation Service (NRCS) office for help in obtaining soil samples to use from your area.

Lay newspaper on the tables and the floor to keep the area as clean as possible. Put one sample on each table or group of desks, along with a coffee can full of water and paper towels for each of the three stations.

# Soil Textures Observation Sheet I.I

Name \_\_\_\_\_

	How does the sample feel?	How does the sample look?
Sample 1		
Sample 2		
Sample 3		

Describe how the samples are alike.

---

---

---

---

Describe how the samples are different.

---

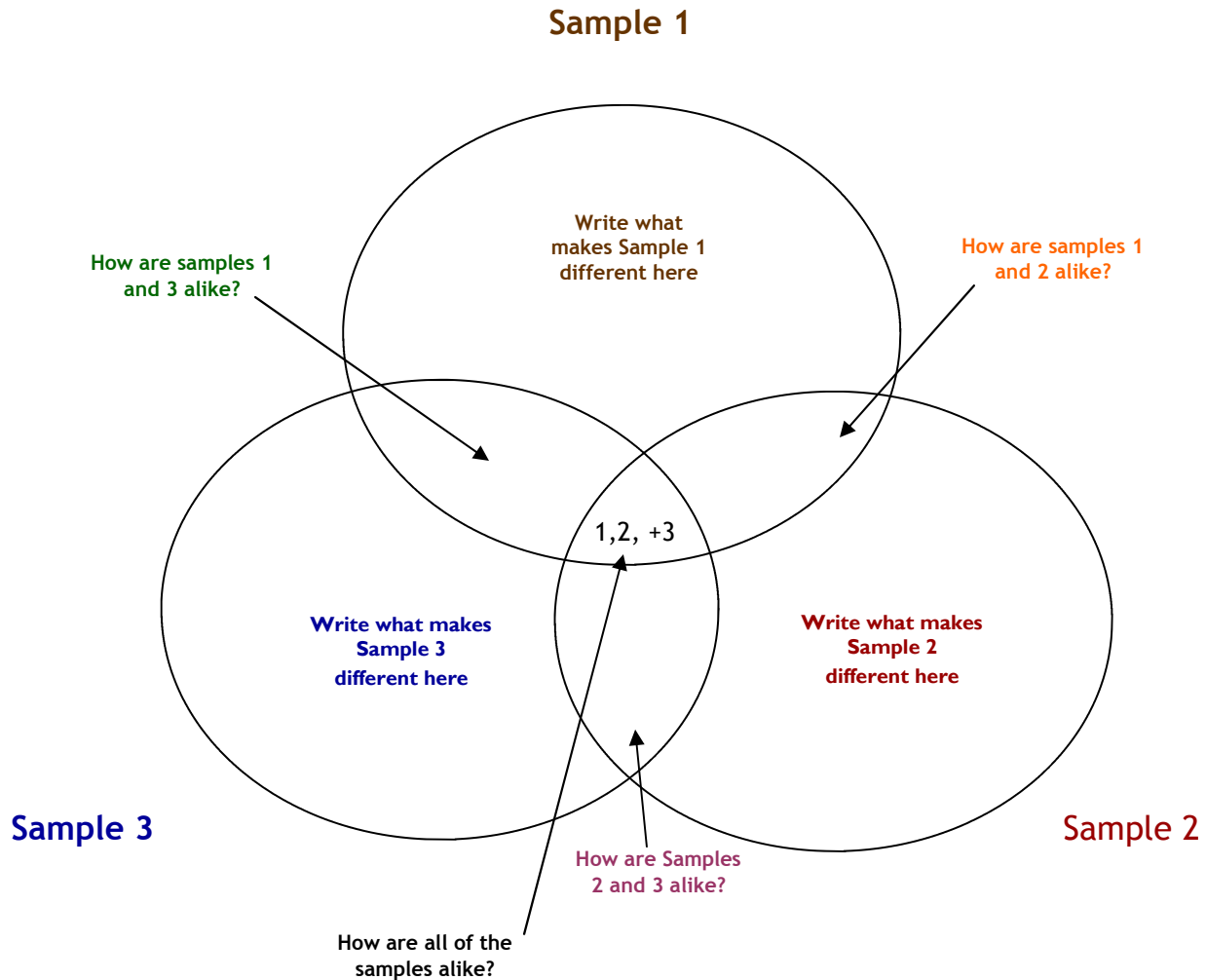
---

---

---

# How to Use a Venn Diagram

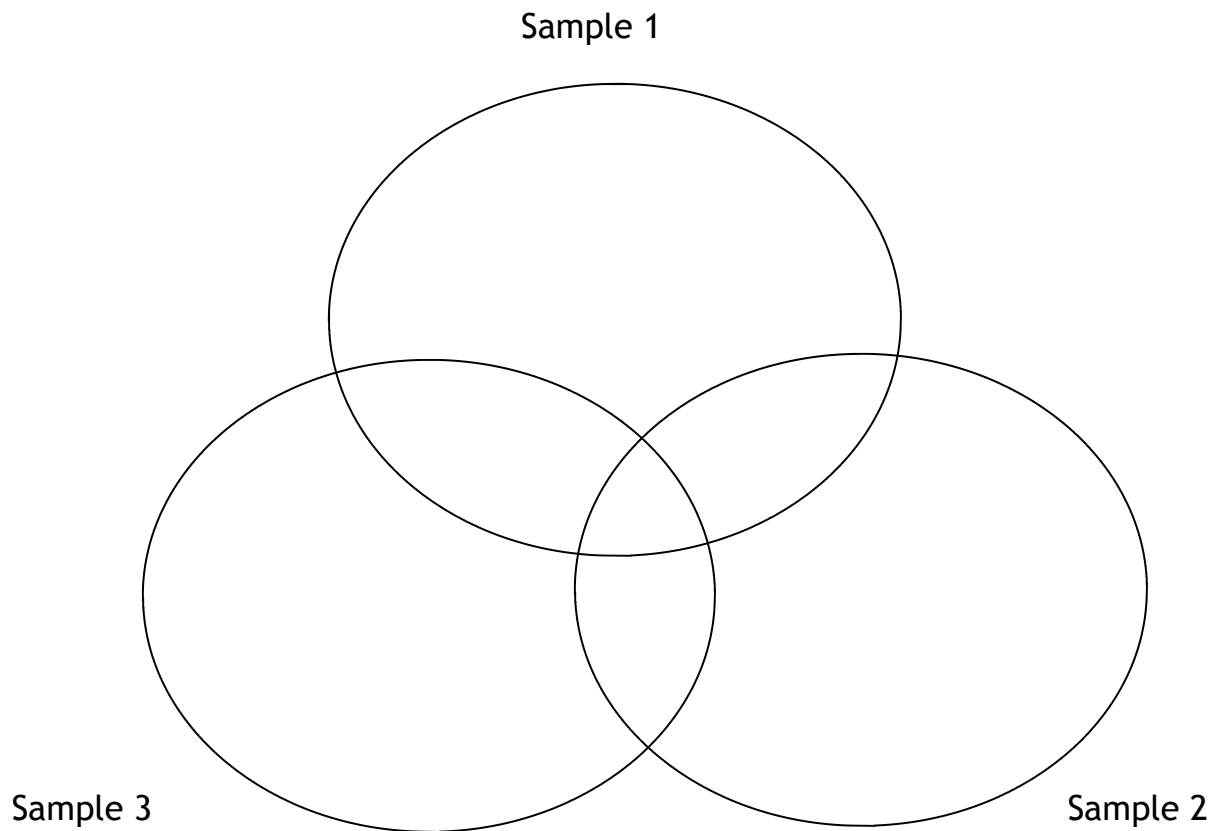
Venn diagrams are used to compare and contrast. Write how the items are different in the outside circles. Write how the items are alike in the overlapping parts of the circles.



# Soil Textures Observation Sheet 1.2

Name \_\_\_\_\_

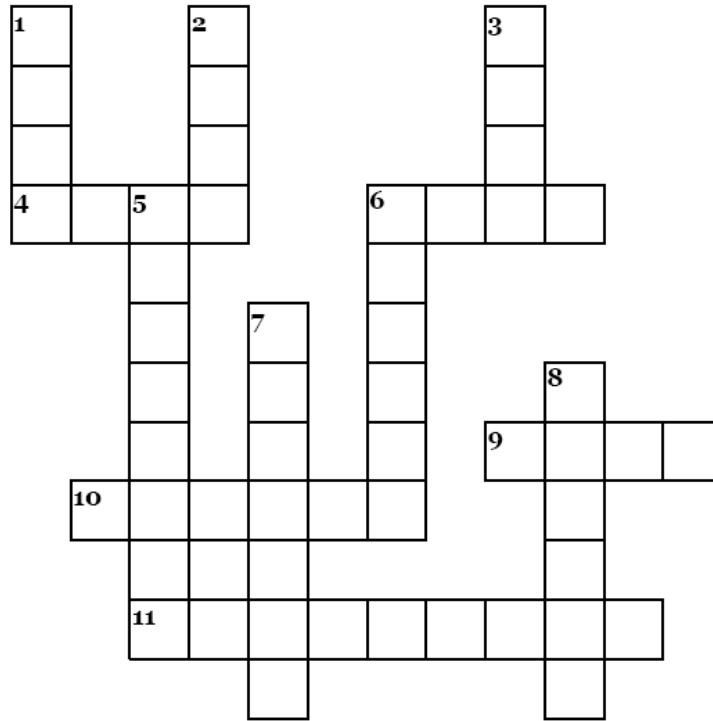
Venn diagrams are used to compare and contrast. Based on your observations, write how the three soil samples are different in the outside circles. Write how the samples are alike in the overlapping parts of the circles.



# Soil Crossword Puzzle

Name \_\_\_\_\_

Read the following clues and use the word bank to complete the crossword puzzle.



Word Bank	
Clay	
Dirt	
Earthworm	
Floury	
Gritty	
Resource	
Root	
Sand	
Silt	
Soil	
Sticky	
Texture	

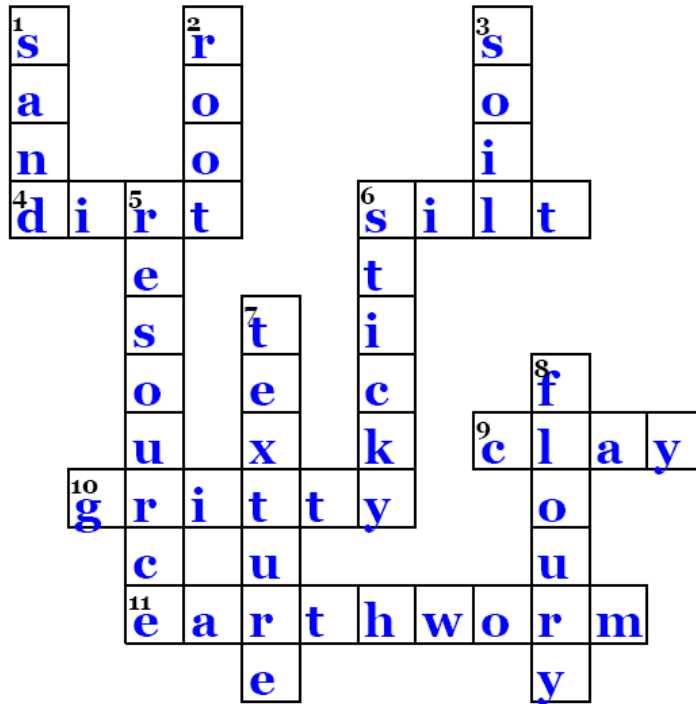
- Across**
- 4 Unwanted soil, such as on the kitchen floor
  - 6 The medium-sized particle in soil
  - 9 The smallest particle in soil
  - 10 Sand feels \_\_\_\_\_.
  - 11 Makes tunnels throughout the soil

- Down**
- 1 The largest particle in soil
  - 2 Part of the plant that grows in the soil
  - 3 A valuable natural resource
  - 5 Soil is an important natural \_\_\_\_\_.
  - 6 Clay feels \_\_\_\_\_.
  - 7 The way a soil feels
  - 8 Silt feels \_\_\_\_\_.

# Soil Crossword Puzzle

Name \_\_\_\_\_ KEY \_\_\_\_\_

Read the following clues and use the word bank to complete the crossword puzzle.



Word Bank
Clay
Dirt
Earthworm
Floury
Gritty
Resource
Root
Sand
Silt
Soil
Sticky
Texture

- Across**
- 4 Unwanted soil, such as on the kitchen floor
  - 6 The medium-sized particle in soil
  - 9 The smallest particle in soil
  - 10 Sand feels \_\_\_\_\_.
  - 11 Makes tunnels throughout the soil

- Down**
- 1 The largest particle in soil
  - 2 Part of the plant that grows in the soil
  - 3 A valuable natural resource
  - 5 Soil is an important natural \_\_\_\_\_.
  - 6 Clay feels \_\_\_\_\_.
  - 7 The way a soil feels
  - 8 Silt feels \_\_\_\_\_.