

# The Big Change

## What Happens Underground?

PART OF: WHAT LIVES IN THE SOIL? – A SEMESTER OF UNDERGROUND DISCOVERIES



### THIS BOOK BELONGS TO

Ask your teacher to write your name below in big dotted letters — then trace over it with your favourite colour!

My name:

### CHOOSE YOUR COLOUR

Look at the magnifying glass on the cover. Choose ONE colour — colour the handle! This is YOUR investigation tool.



# What Do You Notice?

Teacher reads: "Look at these two pictures. What do you see? Are they the same or different?"

## LOOK AND CIRCLE

One of these has been underground for a long time. Circle the one that changed!



Fresh Leaf



Changed Leaf

Use a thick crayon — draw a big circle around the one that changed!

## DRAW WHAT YOU THINK

What do you think happened to the leaf underground? Draw your idea in the box!

Teacher: After the child draws, write their words below: "I think..."

My teacher wrote down what I think:

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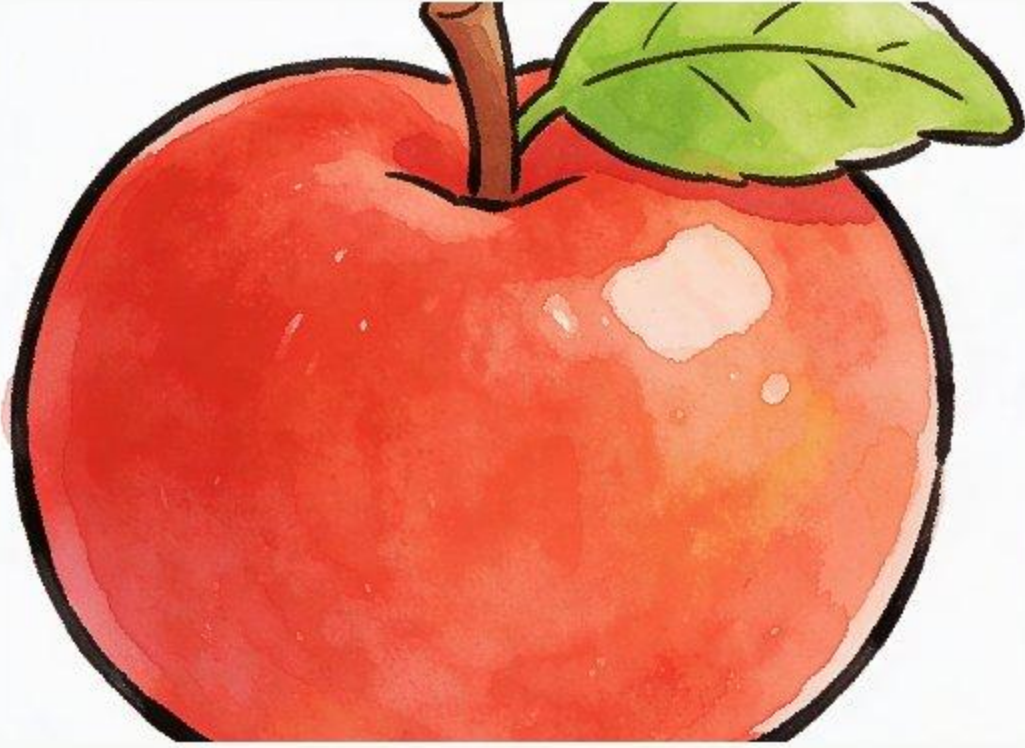
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# Before and After: The Apple

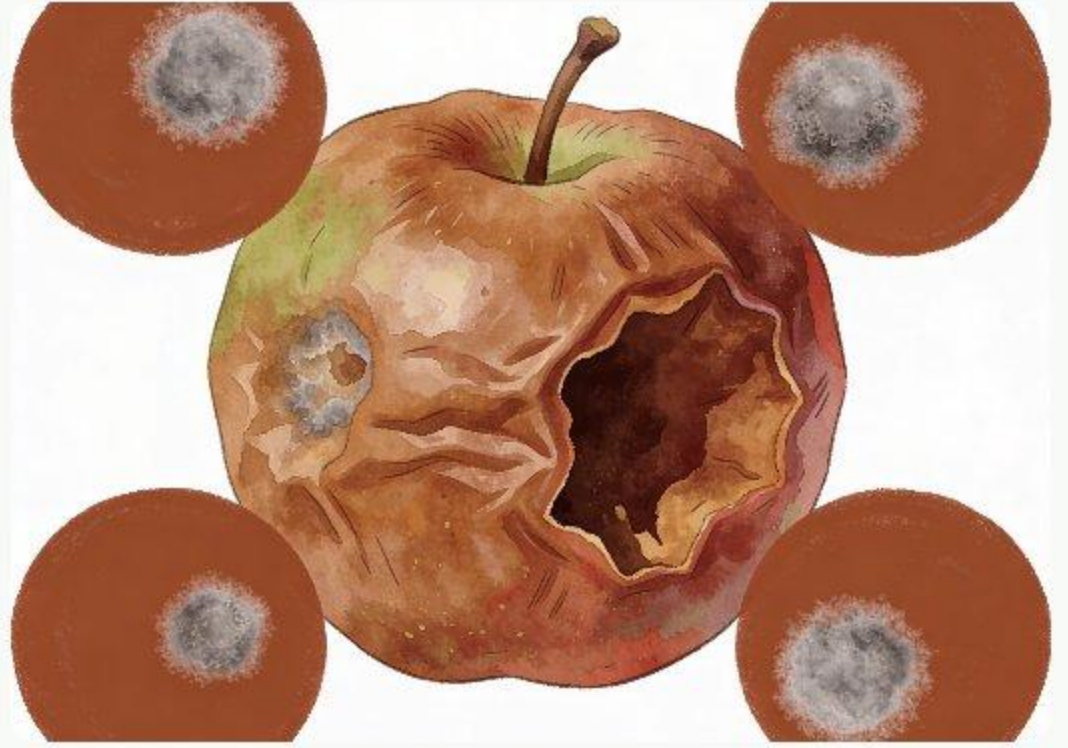
Teacher reads: "Remember the leaf that changed? Lots of things change underground. Look at these apples!"

## CIRCLE THE APPLE THAT CHANGED

One apple is fresh. One apple has been underground. Circle the apple that CHANGED!



Fresh Apple



Changed Apple

Draw a big circle around the apple that changed!

## COUNT AND COLOUR

Count the brown spots on the changed apple. Colour that many circles brown below!

Teacher: "Count with me — one, two, three, four spots! Now colour four circles."



Colour one circle for each spot — stop when you run out of spots!

## DRAW SOMETHING ELSE THAT CHANGES

Can you think of something else that changes? Draw it here!

Teacher: "A banana? A piece of bread? What changes in your house?"



# The Leaf's Big Journey

PAGE 4 — PUT IT IN ORDER!

Teacher reads: "A leaf changes slowly underground. Which one came **FIRST**? Which came **LAST**? Let's put them in order!"

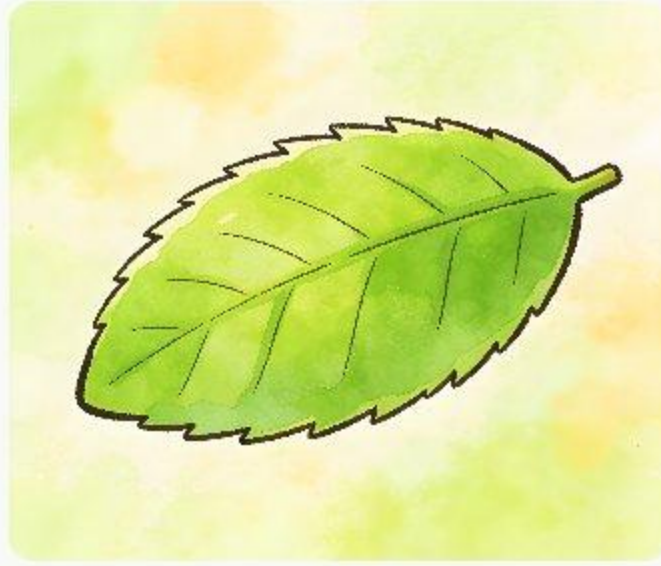
## FIND THE ORDER — THEN TRACE THE ARROWS

These three leaves are in the **WRONG** order. Which came first? Which came last? **Trace the arrows to put them in the right order!**



1 2 3

Circle the number!



1 2 3

Circle the number!



1 2 3

Circle the number!

Trace the dotted arrows below to show the order: first → next → last!

Trace!



## COLOUR THE SOIL

The leaf became **dark rich soil**! Colour this soil mound dark brown.

Teacher: "When a leaf is all the way changed, it becomes part of the soil. Colour it dark and rich!"



Colour me dark brown — this is what the leaf became!

# Who Helps? Meet the Helpers!

Teacher reads: "Something is happening inside this old log. Can you find who is helping to break it down? Let's look closely!"



## FIND AND TICK!

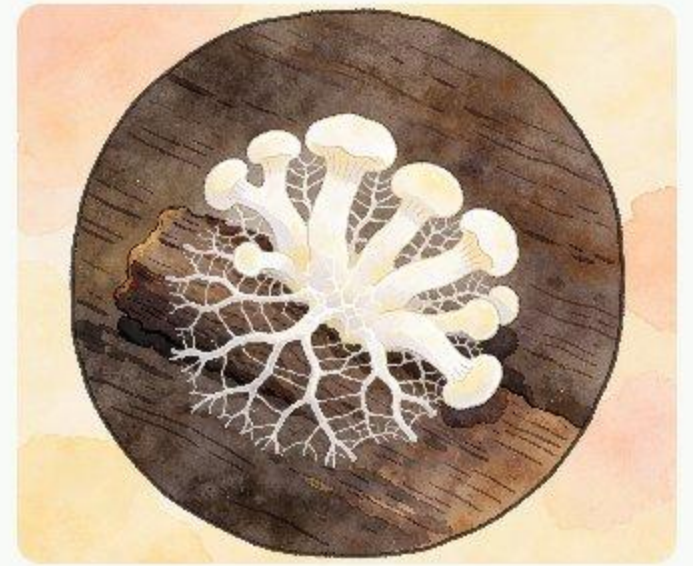
Can you find all three helpers hiding in the log? Find each one and put a tick ✓ next to its picture below!



The Worm



The Beetle



The Fungus

## DRAW YOUR FAVOURITE HELPER

Which helper do you like best? Draw it inside the circle!

Teacher: "Is it the worm, the beetle, or the fungus? Draw YOUR favourite!"

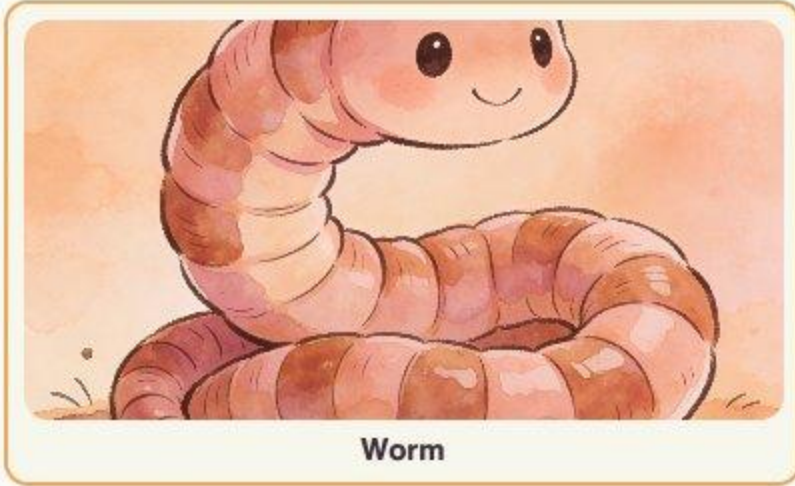


# Who Helped? Match the Helper to the Job!

Teacher reads: "Each helper has a special job underground. Can you match each helper to what it does? Draw a line!"

### DRAW A LINE TO MATCH

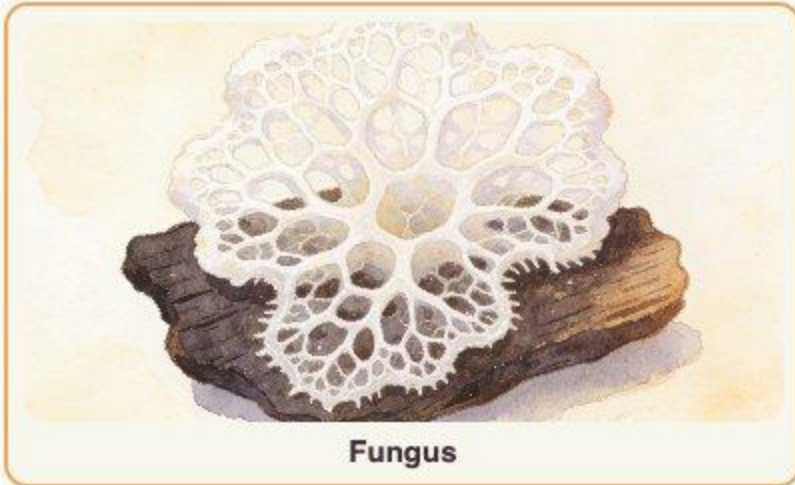
Draw a line from each helper to the job it does. Think carefully — each helper has a different job!



⇒ Draw your line across!



think!



### COLOUR THE MATCHED PAIRS

Now colour the helper AND its job the same colour. Use a different colour for each pair!

Teacher: "The worm AND the worm's job get the same colour. The beetle AND the beetle's job get a different colour!"

- Worm + its job
- Beetle + its job
- Fungus + its job

Choose one colour per pair and colour both pictures that colour!

# Draw One More Helper!

*Teacher reads: "We met the worm, the beetle, and the fungus. But what OTHER creatures do you think help underground? YOU decide!"*

**⇒ DRAW YOUR UNDERGROUND HELPER**

What other creature do you think helps underground? **Draw it in the soil!**



*My teacher wrote what my helper does:*

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**🔍 BIG OR SMALL?**

Is your helper bigger than a worm, or smaller? **Circle BIG or SMALL!**

 **BIG ↑**       **SMALL ↓**

*⇒ Draw a circle around BIG or SMALL!*

**💬 WHAT DOES YOUR HELPER DO?**

Tell your teacher what your helper does underground. **Your teacher will write your words!**

*My helper's job is...*

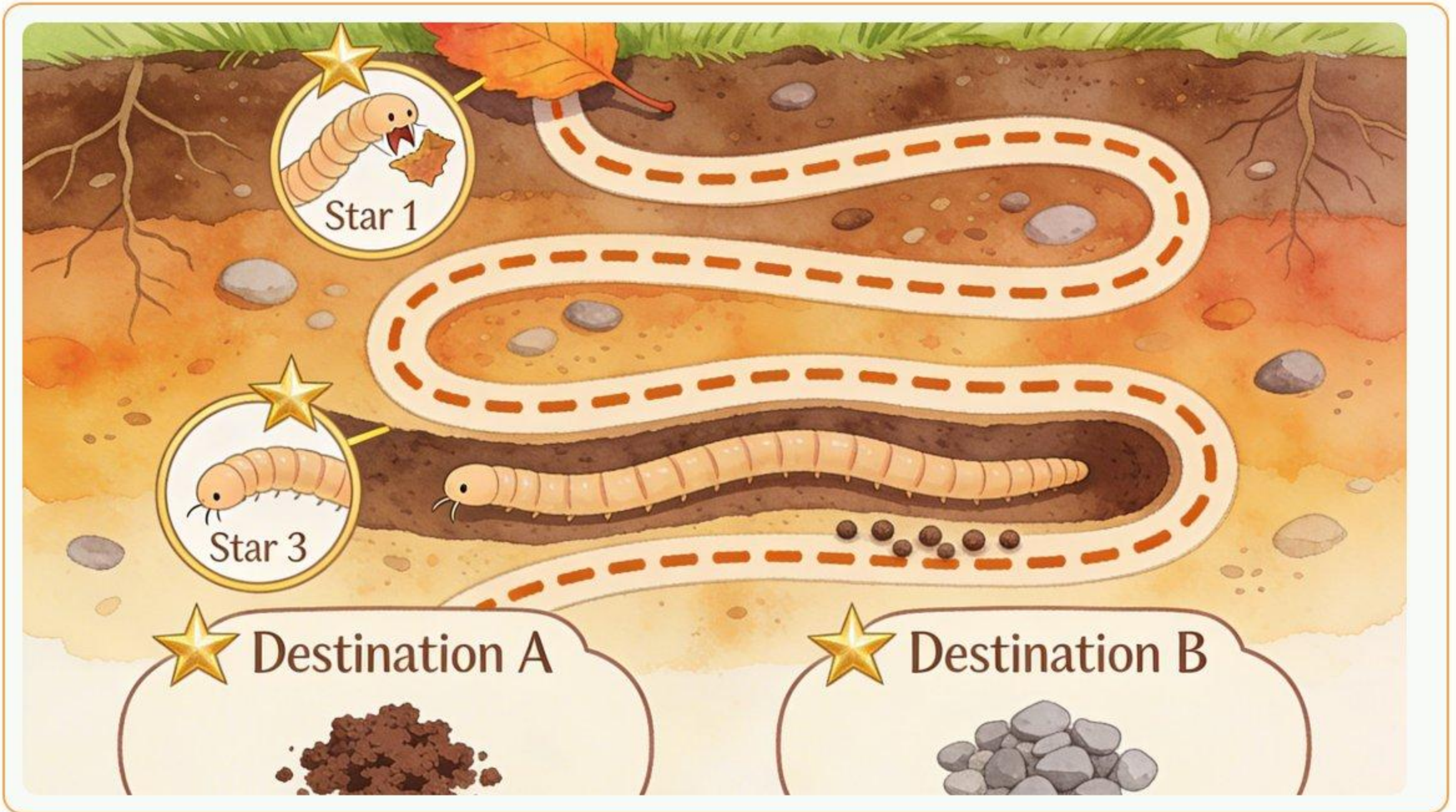
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*⇒ Teacher writes here — not the child!*

# What Does a Worm Do All Day?

PAGE 8 — FOLLOW THE PATH!

Teacher reads: "A worm starts at a leaf on the surface and travels all the way underground. Follow the worm's path — trace the trail!"

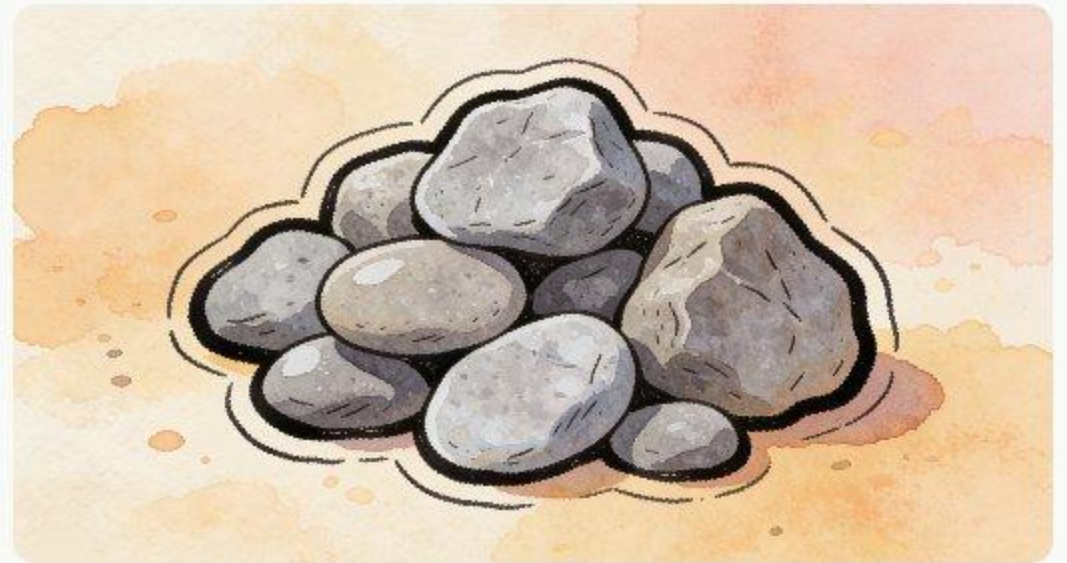


## CIRCLE WHAT THE WORM MADE

At the end of the maze there are two choices. Circle what the worm made!



(A) Castings



(B) Rocks

Circle the one the worm made — then colour the castings dark brown!

# Good Soil, Not-So-Good Soil

Teacher reads: "Look at these two gardens. One plant is happy and one plant is sad. What is different about the soil?"

## CIRCLE THE HEALTHY GARDEN

Which garden has healthy soil? Circle it!



Draw a big circle around the garden with HEALTHY soil!

## COUNT THE HELPERS IN GARDEN A

How many helpers are hiding in the good soil? Colour one circle for each helper you find!

Teacher: "Count them together — worm, beetle, ant, fungus — how many is that?"



## WHAT COULD HELP?

What do you think the pale sad soil needs? Point and tell your teacher!



On the NEXT page you will add three things to help! Get ready!

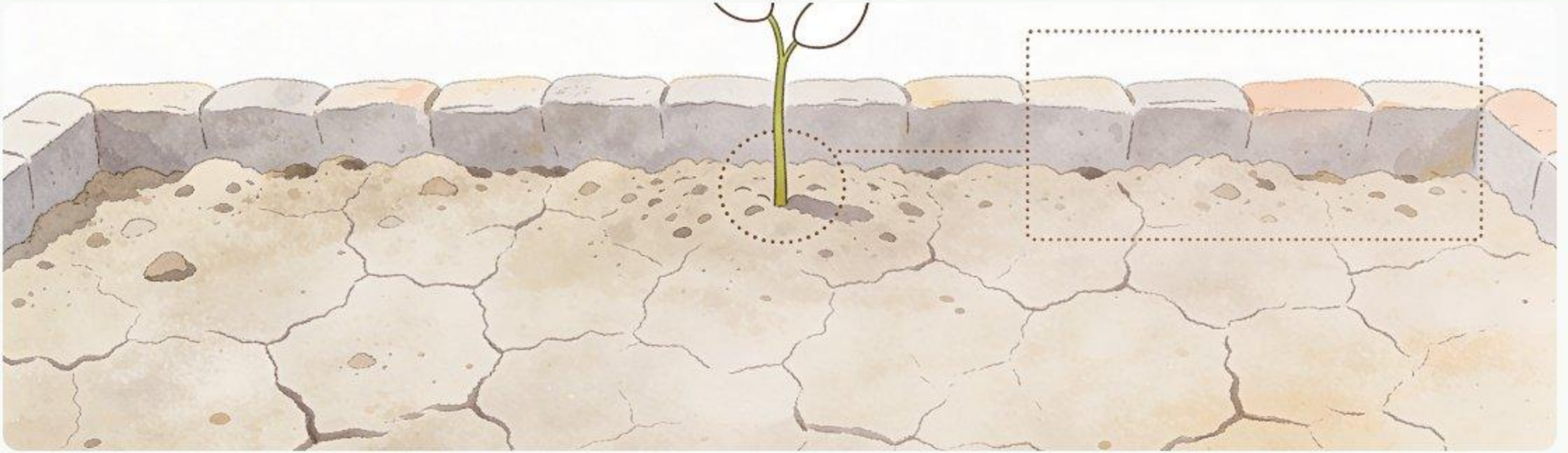
# Help the Pale Soil! Add Three Things

PAGE 10 — YOU ARE THE SCIENTIST!

Teacher reads: "Now it is YOUR turn! Choose THREE things from the box at the bottom, cut them out, and paste them into the sad pale soil to help it!"

## CUT AND PASTE YOUR THREE HELPERS

Choose THREE things from the box below. Cut them out and paste them into the soil!



Now draw the leaves and flower that grew — the soil is getting healthy!

## Cut-Out Helpers Bank — Choose THREE!

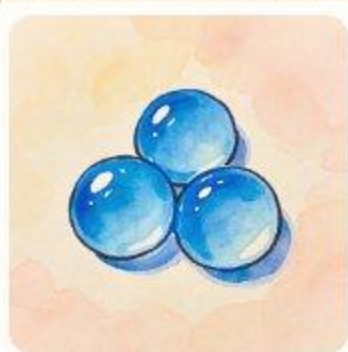
Cut along the dotted lines — then paste your three choices into the soil above!



Leaves



Worm



Water



Beetle



Fungus

## TELL ME WHY!

Why did you choose those three things? Tell your teacher — they will write your words!

I chose these because...

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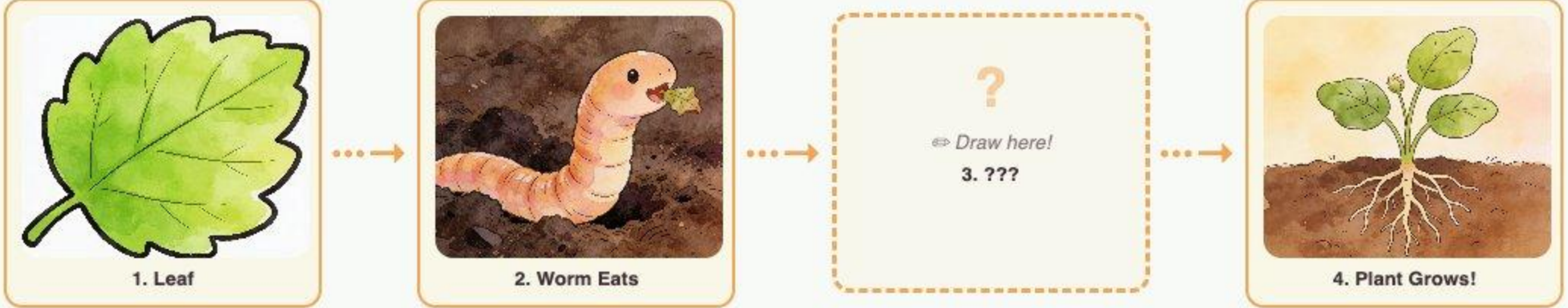
Teacher writes here!

# The Change Chain: What Comes Next?

Teacher reads: "Look at this chain! Something is MISSING! What happens after the worm eats the leaf? You know this — draw it!"

## DRAW THE MISSING STEP!

One box is empty! Draw what the worm makes — then the plant can grow!



Trace the dotted arrows — then draw what the worm made in box 3!

## COLOUR THE SOIL IN BOX 4

The soil in Box 4 is empty! Colour it dark brown — healthy and rich!

Teacher: "The worm's castings made the soil healthy so the plant could grow. Colour it nice and dark!"

Go back to Box 4 and colour the soil below the roots dark brown!



# Sort It: Does It Decompose?

Teacher reads: "Some things can decompose — they change and break down. Some things do NOT decompose. Can you sort these four things?"

## CUT, SORT AND PASTE!

Cut out the four pictures below. Paste each one into the right column!



✓ Decomposes!



✗ Does NOT!

Dotted grid area for drawing a decomposable item.

⇒ Draw one MORE thing that decomposes:

Blank box for drawing a decomposable item.

Dotted grid area for drawing a non-decomposable item.

⇒ Draw one MORE thing that does NOT decompose:

Blank box for drawing a non-decomposable item.

## Cut-Out Cards — Sort These Four!



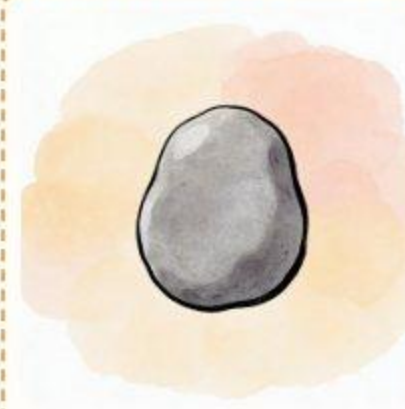
Leaf



Twig



Plastic



Rock

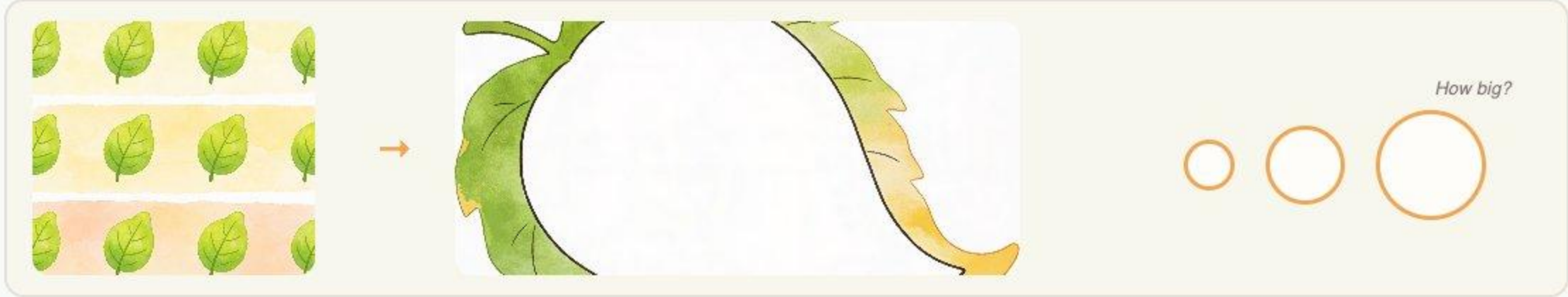


# My Soil Story: Big or Small Change?

Teacher reads: "Each row shows the same green leaf at the start. But look at how much each one has changed! A little? A lot? Circle the right size!"

## COMPARE AND CIRCLE THE SIZE OF CHANGE

Look at each row. How BIG is the change? Circle the small, medium or big circle — then colour the changed leaf!



Row 1: A grid of 12 green leaves on the left, an arrow pointing to a single large leaf with a white hole in the middle on the right, and three circles of increasing size on the far right labeled "How big?".



Row 2: A grid of 12 green leaves on the left, an arrow pointing to a single large brown leaf with a tear in the middle on the right, and three circles of increasing size on the far right labeled "How big?".



Row 3: A grid of 12 green leaves on the left, an arrow pointing to a pile of small brown leaf fragments on the right, and three circles of increasing size on the far right labeled "How big?".

Circle the small ○, medium ○, or big ● circle — then colour the changed leaf a colour that shows how much it changed!

# Underground Patterns!

Teacher reads: "Patterns are everywhere — even underground! Look at this pattern. What comes next?"

## CONTINUE THE PATTERN

What comes in the empty boxes? Draw the missing ones!

A sequence of six boxes. The first three boxes contain a leaf icon and the word "leaf". The next three boxes contain a worm icon and the word "worm". The final three boxes are dashed outlines containing a question mark, intended for drawing.

Draw what comes next in the three blank boxes!

## CREATE YOUR OWN PATTERN!

Choose TWO underground things. Make your own pattern in the boxes below!

Teacher: "Which two things from our soil world will you use? A beetle and a fungus? A leaf and a rock? YOU choose!"

A row of six dashed boxes, each containing a number from 1 to 6, intended for creating a custom pattern.

### Pattern Bank — pick TWO of these!



# What I Know Now: My Underground Report

Teacher reads: "You have been an amazing scientist! Now let's show everything you discovered. Draw and tell me!"

## 👁️ Frame 1: What I Saw Underground

Draw something that **changes underground!**

A large, rounded rectangular area filled with a grid of small dots, intended for drawing.

## ? Frame 3: My Question — What Do I Still Want to Know?

Draw your question OR tell your teacher and they will write it!

A rectangular area with a dashed border, filled with a grid of small dots, intended for writing a question.

My teacher wrote my question:

A solid horizontal line for writing the teacher's response.

## 💡 Frame 2: What I Think Happens to a Leaf Underground

Draw your **mental model** — what do YOU think happens?

A large, rounded rectangular area filled with a grid of small dots, intended for drawing a mental model.

## 🏆 I Am a Soil Scientist!



⇒ Ask your teacher to write your name in big dotted letters — then trace it!

# The Soil Web: How It All Connects!

PAGE 16 — EVERYTHING IS CONNECTED

Teacher reads: "Everything in the soil is connected! Some arrows are already there — trace them. Then draw YOUR own arrows to show what else connects!"

## TRACE THE ARROWS — THEN DRAW YOUR OWN!

Trace the dotted arrows. Then draw your own arrow from the **beetle** and the **fungus** to whatever they connect to!



Leaf 🍂



Worm 🪲



Beetle 🐞

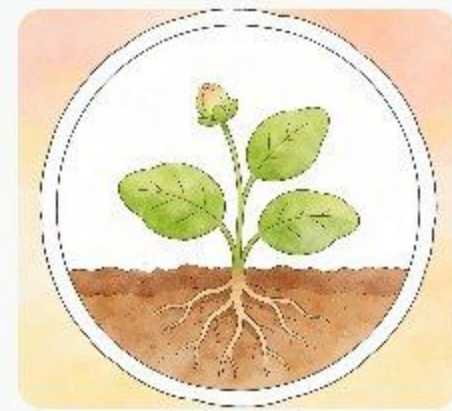
⇒ draw YOUR arrows!



Fungus 🍄



Soil 🌍



Plant 🌱

Trace the pre-drawn arrows, then draw your OWN arrows from the beetle and fungus. Then colour all 6 pictures a different colour!

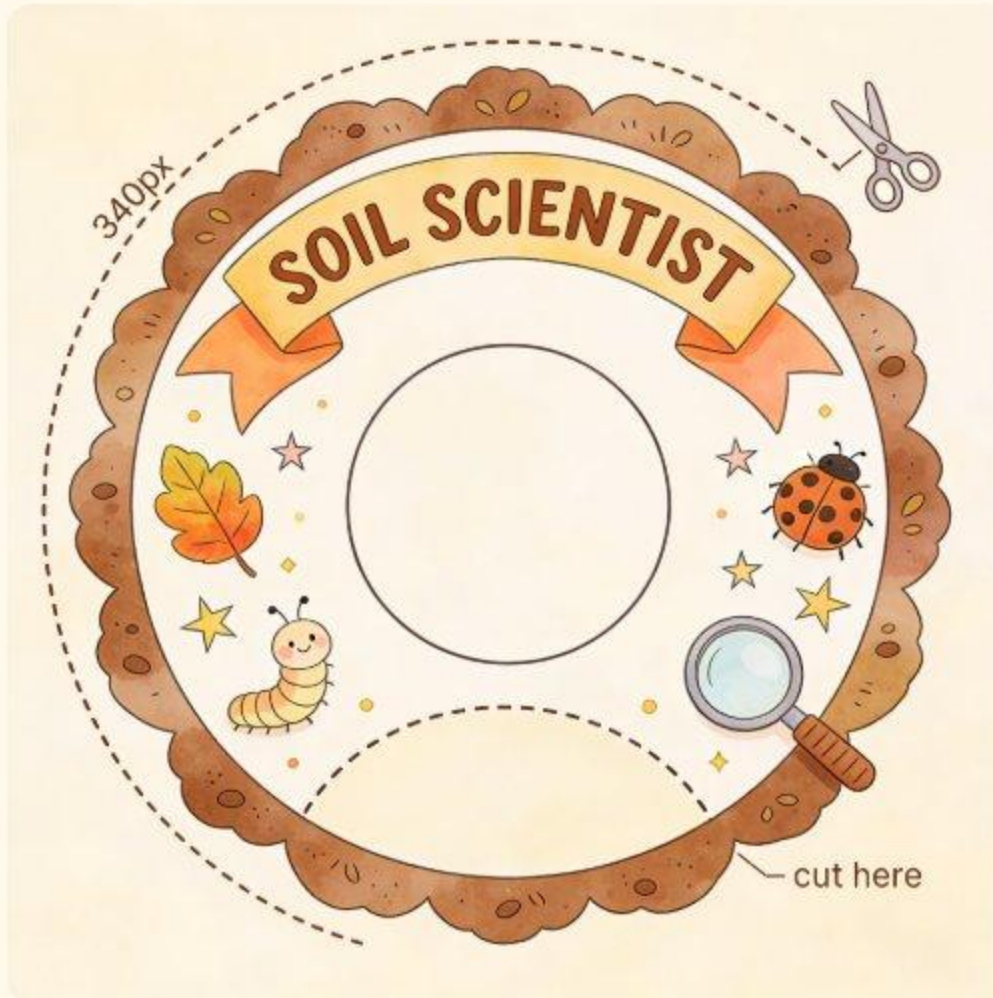
# I Am a Soil Scientist! 🏆

PAGE 17 — MY TAKE-HOME BADGE

🌿 *Teacher reads: "You have worked so hard as a soil scientist! Here is your special badge. Draw your face — it's YOUR badge to take home!"*

## ⇒ COMPLETE YOUR SCIENTIST BADGE — THEN CUT IT OUT!

Draw your face. Trace your name. Colour the badge. **Then cut it out and take it home!**



⇒ Draw your face in the centre circle!

✂️ Cut along the dotted outside line!

Ask your teacher to write your name in dotted letters on the arc — then TRACE it!

## 🏠 WHAT WILL YOU LOOK FOR AT HOME?

Now that you know about underground helpers — **draw one thing you want to look for near your home!**

🌿 *Teacher: "Maybe a worm in the garden? Fungus on a log? A leaf that is changing? What will you discover at home?"*



A large rectangular area with a dotted border, intended for drawing or writing.

My teacher wrote what I will look for:

\_\_\_\_\_

# Notes for Grown-Ups: What We Discovered Together

PAGE 18 — TEACHER &amp; FAMILY GUIDE

This workbook is part of the **What Lives in the Soil? A Semester of Underground Discoveries** kit. It complements the classroom slides by giving children hands-on ways to explore, document, and extend their understanding of decomposition, soil helpers, and how living things are connected underground.

## What My Child Discovered (Teacher fills this in)

Use this space to record key observations, quotes, and learning milestones from this child's inquiry journey. This becomes a portfolio record.

Child's name: \_\_\_\_\_ Date: \_\_\_\_\_

## Try This at Home!

These simple investigations continue the learning at home. No special materials needed!



Find a fallen leaf. Check it in one week. What changed?



Look under a rock or log. Who lives there?



Dig in garden soil. What colours and creatures do you find?

## Differentiation Tips

### For children who need more support:

- Complete matching and sorting collaboratively — child points, teacher places.
- Accept any mark or scribble as valid scientific documentation.
- Reduce sorting to 2 items instead of 4. Allow extra time at each page.
- Pre-cut the cut-out cards so the child can focus on sorting decisions.

### For children ready for more challenge:

- Ask: "WHY does the worm connect to the soil? What would happen if there were no worms?"
- Invite the child to sequence 4 stages of decomposition instead of 3.
- On the Pattern page, ask the child to make an ABC pattern (three elements).
- On the soil web, ask: "Could the plant help the soil?"

## Key Vocabulary to Use

Use these words repeatedly in meaningful contexts at home and in class.



## Workbook-to-Slides Connection

This workbook extends the *What Lives in the Soil?* slides. The slides introduced vocabulary and raised the central inquiry question. This workbook gives children hands-on tools to:

- Observe and record what they notice about change (Pages 2–4)
- Meet and connect the decomposition helpers from the slides (Pages 5–7)
- Trace the worm's journey and function (Page 8)
- Compare healthy and unhealthy soil (Pages 9–10)
- Build the change chain and sort organic/non-organic materials (Pages 11–12)
- Reflect and document their growing scientific understanding (Pages 13–17)