

WISE Activity Booklets

A STEM activity booklet for fun on-the-go learning!
Made by WISE Kid-Netic Energy

DIY Activities
Puzzles
Challenges
... and more!



University
of Manitoba

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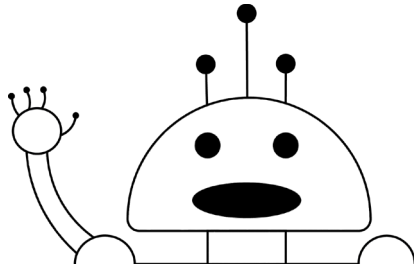
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Grade 3 VOLUME 6

Growth and changes in plants - Soils in the environment - Forces that attract and repel - Materials and structures



Hello there!

WISE Kid-Netic Energy is a not for profit STEM (Science, Technology, Engineering, and Math) outreach organization at the University of Manitoba. Our organization offers science and engineering workshops, clubs, camps and events to youth from Kindergarten to Grade 12 throughout the province of Manitoba. We reach on average 25 000 to 50 000 youth depending on funding levels. Our approach is simple – present STEM in messy, memorable and engaging ways so Manitoba youth feel motivated to learn more and more. We reach all Manitoba youth, and we particularly target underrepresented youth like girls, indigenous youth and youth facing socio-economic challenges.

All of us at WISE Kid-Netic Energy have been working hard to create these booklets to continue to bring our fun and educational STEM activities to Manitoba youth during these unprecedented times. We are disappointed that we cannot see you in person, and hope that these monthly booklets bring some STEM excitement to your life.

These booklets have been created by our student instructors who are all studying engineering, science, or in another STEM-related field at university. Peek the next page of this booklet to see who created the activities, experiments and recipes within.

All the activities in this booklet are based on the Manitoba Science curriculum. For any teachers viewing this booklet, all the SLO codes are listed at the bottom of each page.

We hope that you enjoy doing the experiments and activities as much as we loved creating them for you.

In this Grade 3 booklet, the science topics you will be exploring are: growth and changes in plants, soils in the environment, forces that attract and repel, materials and structures and more!

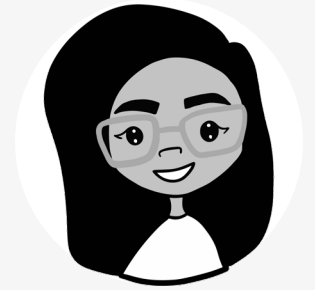
**Best of luck, and until we see you again,
the WISE Kid-Netic Energy Crew**

P.S. If you have any suggestions for activities or experiments you would like us to try, contact us through our website, or social media accounts that are listed on the last page of this booklet.

Meet our Amazing Authors!

Alora

Alora is in her sixth year of studying Neuroscience and French at the University of Winnipeg. Next year she's hoping to continue her education in order to become a high school science teacher and eventually, a guidance counsellor! In her spare time she enjoys spending time with friends, being outside, and reading.



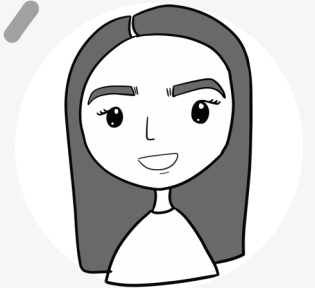
Brandi

Brandi is in her second year of the Bachelor of Science program and plans to apply to the College of Pharmacy in the future. When she's not studying chemistry she loves to listen to music, hang with her cats, and nap!



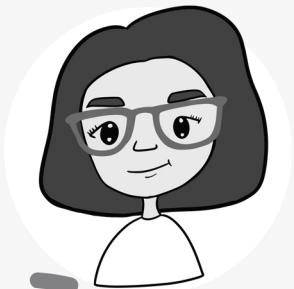
Shannon

Shannon just started her second year of Engineering at the University of Manitoba, with a plan to go into biomedical engineering. Her favourite animals are giraffes and dogs. In her spare time she enjoys drawing, exercising, being outdoors, and trying new things.



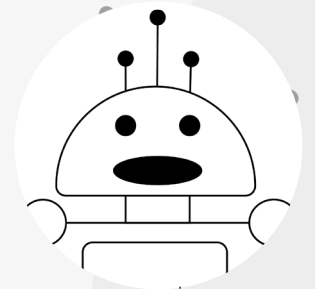
Victoria

Victoria is in her second year in the Faculty of Nursing at the University of Manitoba. She loves to cook, read and take care of plants in her free time!



Esiw the Robot

Esiw is a friendly robot that loves to help kids learn about computers & coding! Esiw loves to do math, solve problems and make people laugh!



... and our Incredible Editors!

Alex



Bea



Mahalia

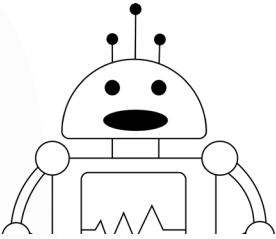


Michelle



Assemble the Plant

For this activity you will learn the parts of a plant, how to **sequence** by putting items in order, and how to **evaluate** by comparing your answers to the answer key.



Oh no! This plant got scrambled.
Can you help me by gluing the
plant back together? Glue the
definitions beside each part.



Turn the page to continue this activity!

SLO :3-1-07

Fruits grow once the flower has been fertilized.

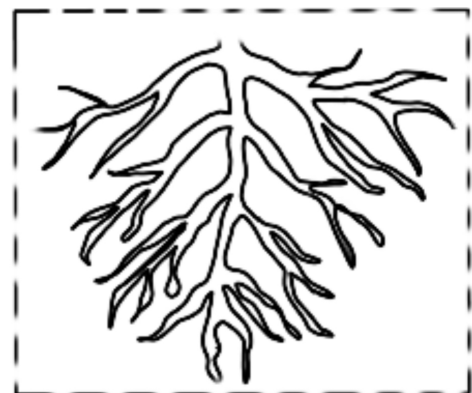
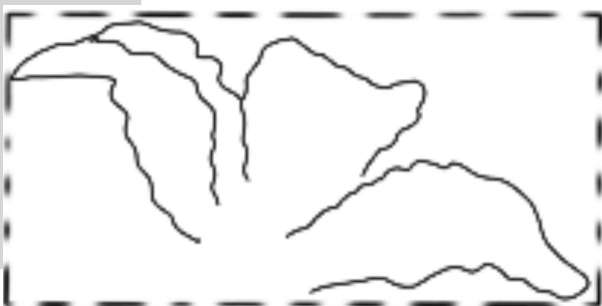
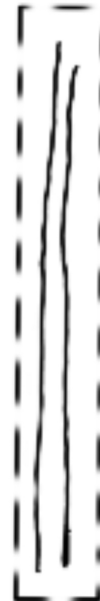
The stem transports nutrients and minerals.

Leaves catch sunlight.

The stamen is the male part of the flower.

Roots absorb water and minerals from the soil.

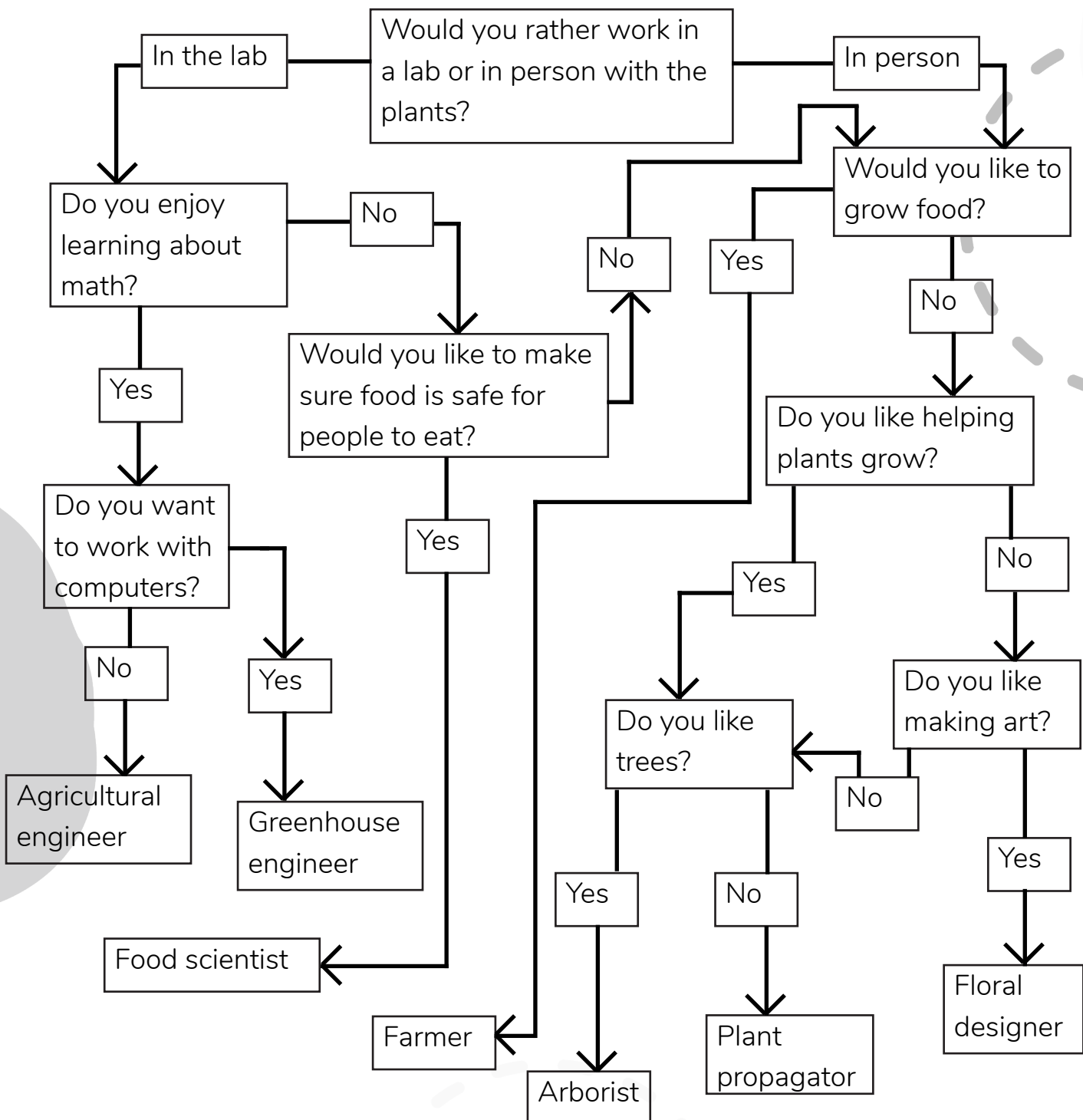
Sepals protect the flower when it's developing.



This page is intentionally left blank, because the previous page is meant to be cut up.

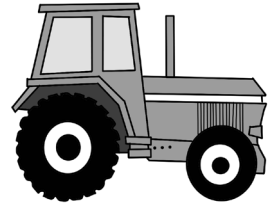
What plant career would I be good at?

Do you love plants? There are lots of jobs and hobbies out there that work with plants! You can study them, take care of them, or plant more of them. Find out what plant related activity is best for you! Start at “Would you rather work in a lab or in person with the plants?” and follow the arrows to your results!



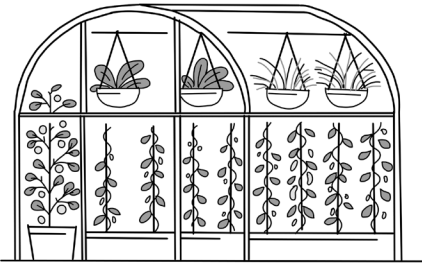
Agricultural Engineer

These engineers help design and improve machines people use on farms! What they do is combine technology with farming. Can you name any machines you can find on a farm?



Greenhouse Engineer

These engineers help design greenhouses. Greenhouses are important because we can grow plants in a greenhouse all year round, even in the winter! This is especially important for places like Manitoba where our winters are very cold, and we can't grow anything outside.



Food Scientist

Food scientists are responsible for making sure the food we eat is always safe for us to eat! They can come up with new foods and they're also in charge of telling us about the different things in our food. You can thank food scientists for the nutrition facts on the side of your cereal box!



Farmer

Depending on the person, a farmer raises and grows plants and animals for human use. They can grow large crops of food like wheat, canola, corn, or rice. A lot of our food comes from farmers and they are very important for human survival.



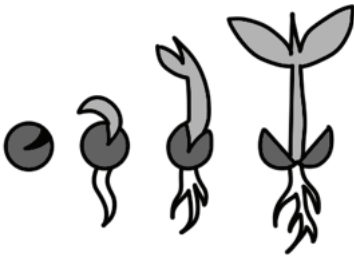
Turn the page to continue this activity!

Arborist

Arborists are in charge of taking care of trees and woody plants by pruning, planting, and stopping the spread of tree disease. These things make sure that the tree is healthy and safe!



Plant Propagator



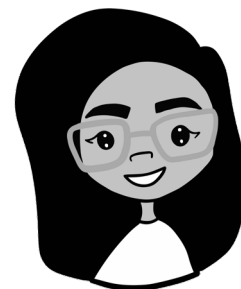
Plants can grow and reproduce in many ways! Plant propagators take care of seeds, clippings, and other plant parts until they can grow on their own in the ground. Once the plants are ready, they can be planted!

Floral Designer

Also known as a florist, a floral designer uses their creativity to design floral arrangement for people. Along with their creativity, the floral designer also needs to know about the rarity of flowers and if they're toxic to animals like pet dogs!



Don't forget! If you aren't happy with your result, there's a lot of other jobs out there where you work with plants. These are only a few of them!

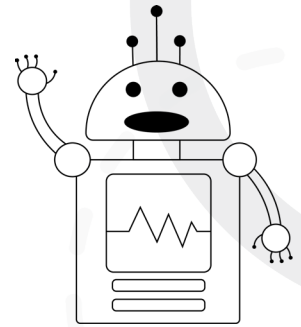


Is It Up to Code?

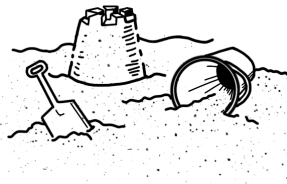
When building a house, it's important to use the right materials. We want the house to last a very long time! You have to consider strength, its durability (how long it will last), its texture (how it feels), how hard it is, and even its flexibility (how much you can bend it).

If you want to live in your house, you have to make sure it's up to code first. That means that the house must follow all the right rules in order to be safe enough to live in.

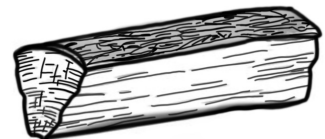
Can you code a house that is up to code? Given the choice of two different materials, circle the one you think would be the best to use. you have to get 8 points to be up to code. Each correct choice is 1 point. Check your answers at the back of the book!



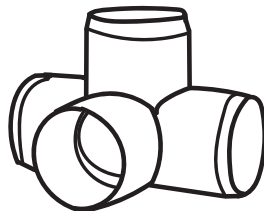
1 Chair made out of sand



or wood



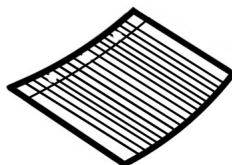
2 Pipes made out of pvc (plastic)



or metal



3 Rug made out of paper



or fabric



4

Walls made out of wood



or plastic



5

Floor made out of plastic

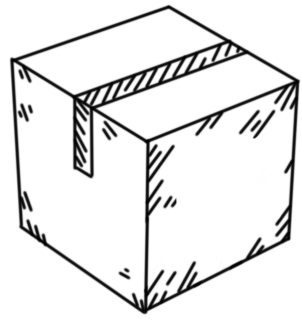


or water

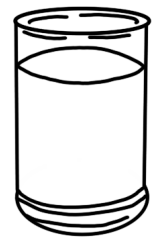


6

Door made out of cardboard



or glass

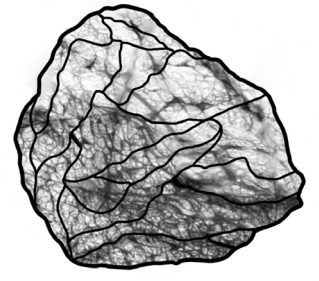


7

Fireplace made out of drywall



or rock

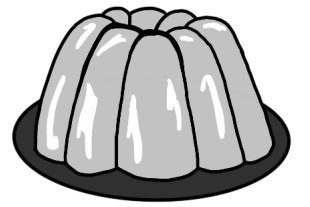


8

Table made out of wood



or jello



I got _____ points. Therefore, my house is _____.

Debug the Scenes of Static Electricity

Static electricity is when two objects touch and electrons move from one to the other! Electrons are very small, invisible atoms that carry a negative charge, so when they leave one object to go to another object, the first one becomes positively charged!

When you shuffle your feet across a carpet there is *friction*, which causes the electrons from the floor to build up on your skin. Then when you touch something that is positively charged, the electrons are attracted to it and leave your skin quickly. This can cause a small electric “shock”!

Why? Because OPPOSITE CHARGES ATTRACT!

+ and -

Static electricity can also be dangerous, like in the case of lightning during a storm. If lightning strikes a person, it can kill. We should try to avoid the shock of static electricity in our daily lives! Here are a few ways to do it:

- 1 Keep moisture in your skin and the air! The less water in your skin and in the air around you, the more static electricity buildup. Moisturize your skin and use a humidifier in your home if it is dry.
- 2 Go barefoot in the house! Rubbing shoes or socks across the carpet creates friction.
- 3 Avoid using running water during a thunderstorm! Electricity from a lightning strike may run through the plumbing, shocking you through the water.
- 4 Go inside during a thunderstorm!
- 5 Wear rubber-bottom shoes! Rubber is a bad conductor of electricity meaning it can help protect from electrical shocks.

Circle the source of the static electricity in the scenes below. Write in the blanks where the electrons came from. Circle the number(s) of the right way(s) that the people could have prevented the shocks from happening using the table on Page 12.



Source of Static Electricity = _____

What could have prevented it?
Circle one or more answers.

1, 2, 3, 4, 5



Source of Static Electricity = _____

What could have prevented it?
Circle one or more answers.

1, 2, 3, 4, 5

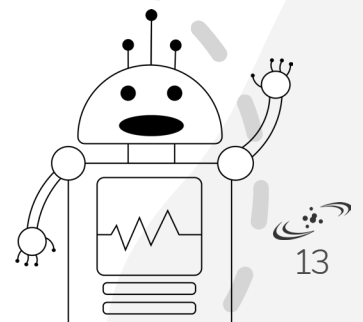


Source of Static Electricity = _____

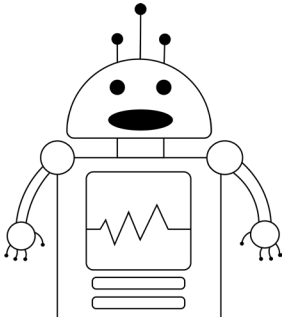
What could have prevented it?
Circle one or more answers.

1, 2, 3, 4, 5

Woah cool! you are like a real computer scientist. By finding what caused the shock to happen and finding a solution you debugged the scene! Debugging in computers is finding where the problem is in a code and fixing it.



Where are the Soil Animals?



For this activity you'll need to use **abstraction!** Abstraction is looking at only the important details, like how you are only looking for the soil animals in the scene. This is a skill that computer scientists use all the time to make something complicated simpler.

Soil is full of nutrients that support plant growth, and it is home to many animals! Find and circle all these animals in the scene on page 16.

Small and medium sized soil animals:

They break down organic matter (fungi and animal remains) in the soil, aerate (help soil get air) and mix the soil, and help plants get air and water. Some even eat the seeds of weeds in the soil!

Earthworm



Ant



Termite



Fly Larvae



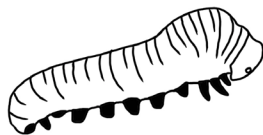
Beetle



Millipede



Caterpillar



Mite



Centipede

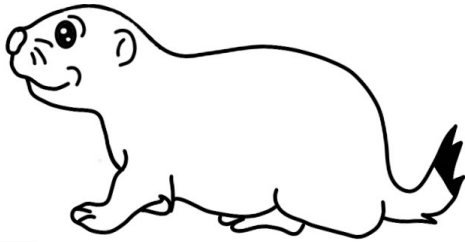


Spider



These animals burrow in the soil which helps to move water away from the surface in cases of downpours of rain. This helps lower soil erosion!

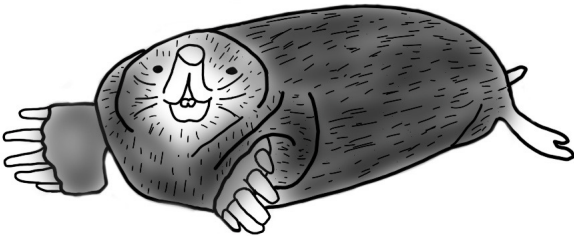
Prairie dog



Rabbit



Mole



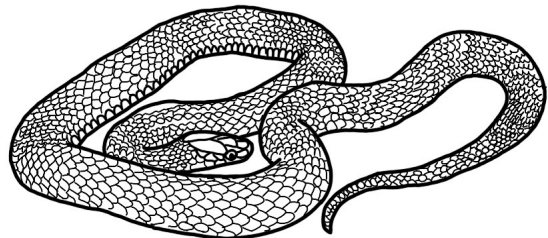
Woodchuck



Badger



Snake



Turn the page to continue this activity!

Find and circle all the small, medium and large animals that live in the soil in the picture below!



Coding Composting






What is composting?

- Composting is a fun way to both reduce and reuse waste. It decomposes (breaks down) natural materials and gives them a new life.
- You start off with eating something, like a piece of fruit. Your leftovers are then placed in a bin. You leave them for awhile, and then over time they decompose and can turn into fertilizer. Fertilizer provides nutrients for the soil and allows for more plants to grow and thrive!

Your Turn!

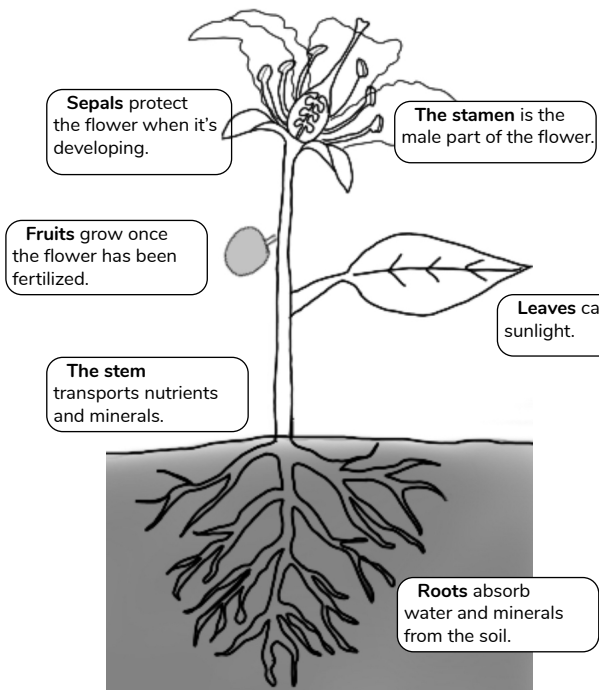
- Take a look at the maze on the next page. Your goal is to correctly order the steps of composting. Using the box below, you're going to write a code to solve the maze!
- Here's an example of how your code may look: RIGHT 3, UP 4, LEFT 1, DOWN 2.
- The first step is done for you, good luck!

RIGHT 3

				
				
				
				
START				

Answer Key

Assemble the Plant, Page 4:



Is It Up to Code? Pages 10-11:

1. Wood
2. PVC
3. Fabric
4. Wood
5. Plastic
6. Glass
7. Rock
8. Wood

Debug the Scenes of Static Electricity! Page 13:

Scene A - Source of Electricity: lightning.

What could've prevented it: 4,5.

Scene B - Source of Electricity: lightning.

What could've prevented it: 3.

Scene C - Source of Electricity: rubbing feet on carpet (friction).

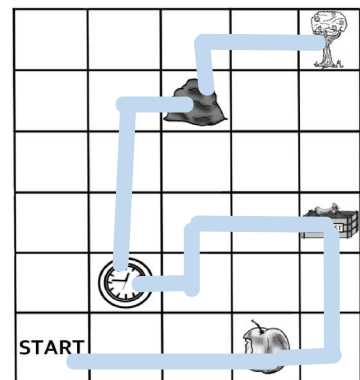
What could've prevented it: 1, (2 could apply as well).

Where are the soil animals?, Page 16:

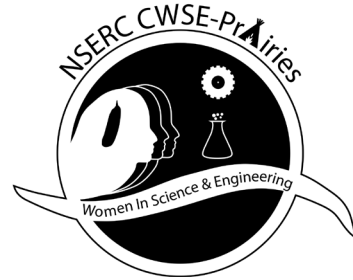


Coding Compost, Page 18:

- RIGHT 3
- RIGHT 1
- UP 2
- LEFT 2
- DOWN 1
- LEFT 1
- UP 3
- RIGHT 1
- UP 1
- RIGHT 2



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