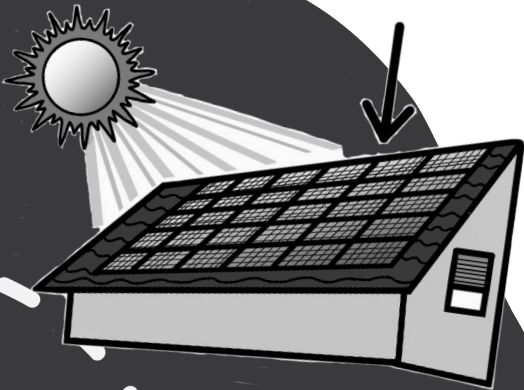


# WISE Activity Booklets

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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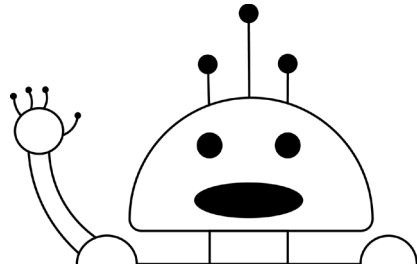
Youth · STEM · Innovation

With funding from

**Canada**

**Grade 3**  
**JULY 2020**

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 last 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.

If a link is listed at the bottom of the page, and you have access to the Internet, follow it to check out a video of the activity our instructors have created just for you.

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!

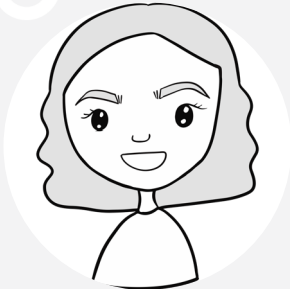
## Brandi

**Brandi** just finished her first year in the Faculty of Science 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!



## Brenna

**Brenna** is in her second year of mechanical engineering and loves science, especially physics! In her free time she likes to paint or draw, see friends, and play with her dog.



## Reem

**Reem** is in her first-year of science at the U. of M and her favourite classes are psychology and microbiology. In her free time, she loves to watch movies and bake desserts.



## Toni

**Toni** is in her final year of study as a social work student at the University of Manitoba and she hopes to one day work in community development. Toni loves learning and teaching and is excited to join the WISE team this upcoming summer.



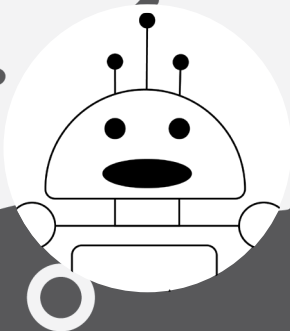
## Victoria

**Victoria** just finished her first year as a Science student at the University of Manitoba and is planning on becoming a nurse. She loves to cook, read and take care of plants in her free time!



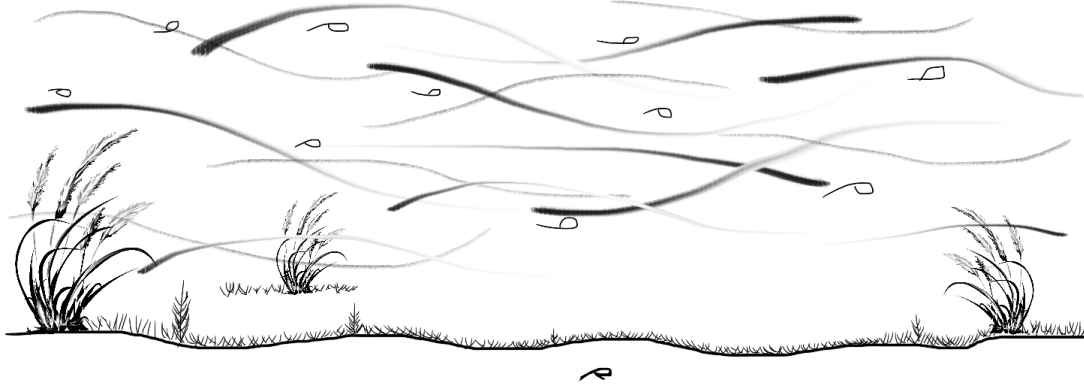
## Esiw the Robot

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!

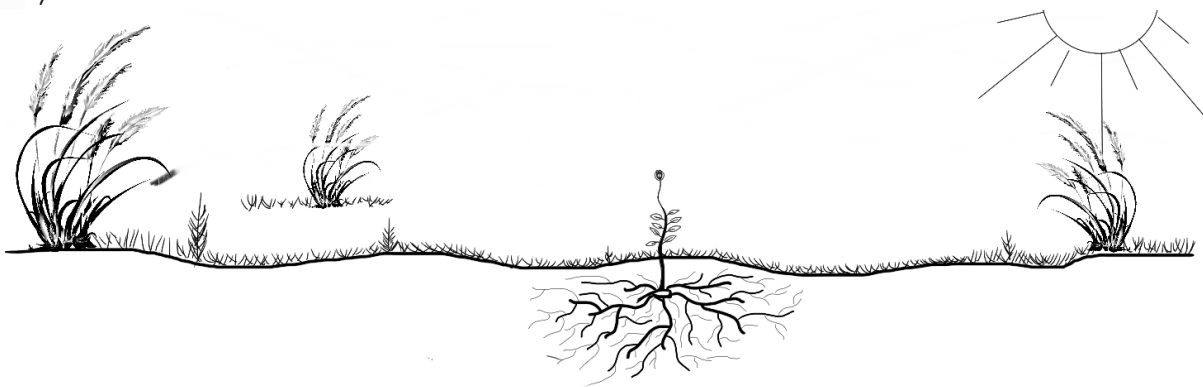


## Cal the Cornflower

Once upon a time there was a seed named Cal. They were the seed of a purple cornflower and they rode the wind through the prairies of Manitoba to find a place to grow. Cal settled on prairie soil that had lots of water and nutrients.



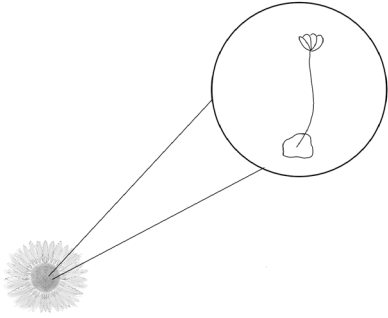
Cal grew roots to absorb nutrients and anchor themselves to the land. Then, they grew a stem that reached above the earth and into the sun. From that stem grew leaves and a flower bud. Cal loves their leaves because their leaves collect sunlight which Cal turns into food for themselves. This is done through a process called photosynthesis.



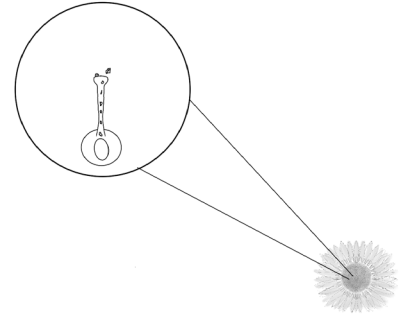
With lots of water, sunlight and nutrients, Cal's flower bud opens to reveal a beautiful purple flower that has lots of important parts. Cal's purple petals help protect them from the elements, and attract pollinators.



Cal also has stamens that have nectar on the bottom and fluffy yellow pollen on top.



Between the stamens are Cal's pistils. Pistils are long tubes that pollen travel down to pollinate Cal's ovules.

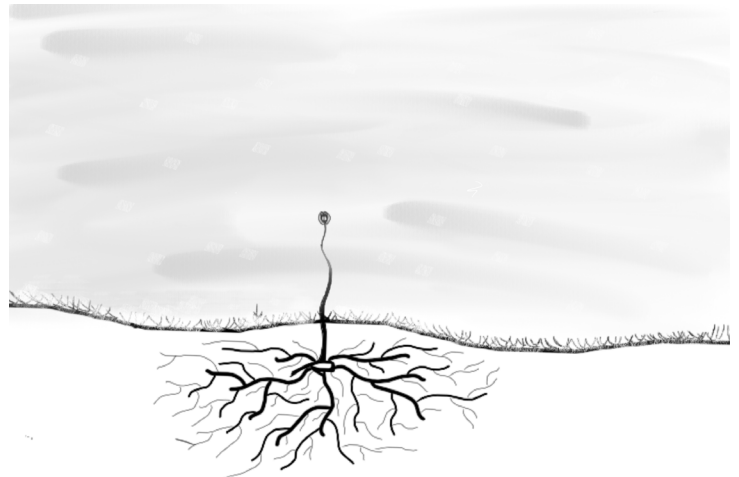


Cal has lots of bee, butterfly and hummingbird friends that help them pollinate. This is important because it means that the seeds Cal makes will be able to grow into more flowers. Cal's friends bring them pollen from other flowers and in return, Cal gives them the extra nectar they make through photosynthesis.



Eventually summer becomes autumn and Cal's seeds start to fall. Just like Cal's seeds are picked up by strong wind and carried to different areas. Next spring, Cal will have lots of new flower friends!

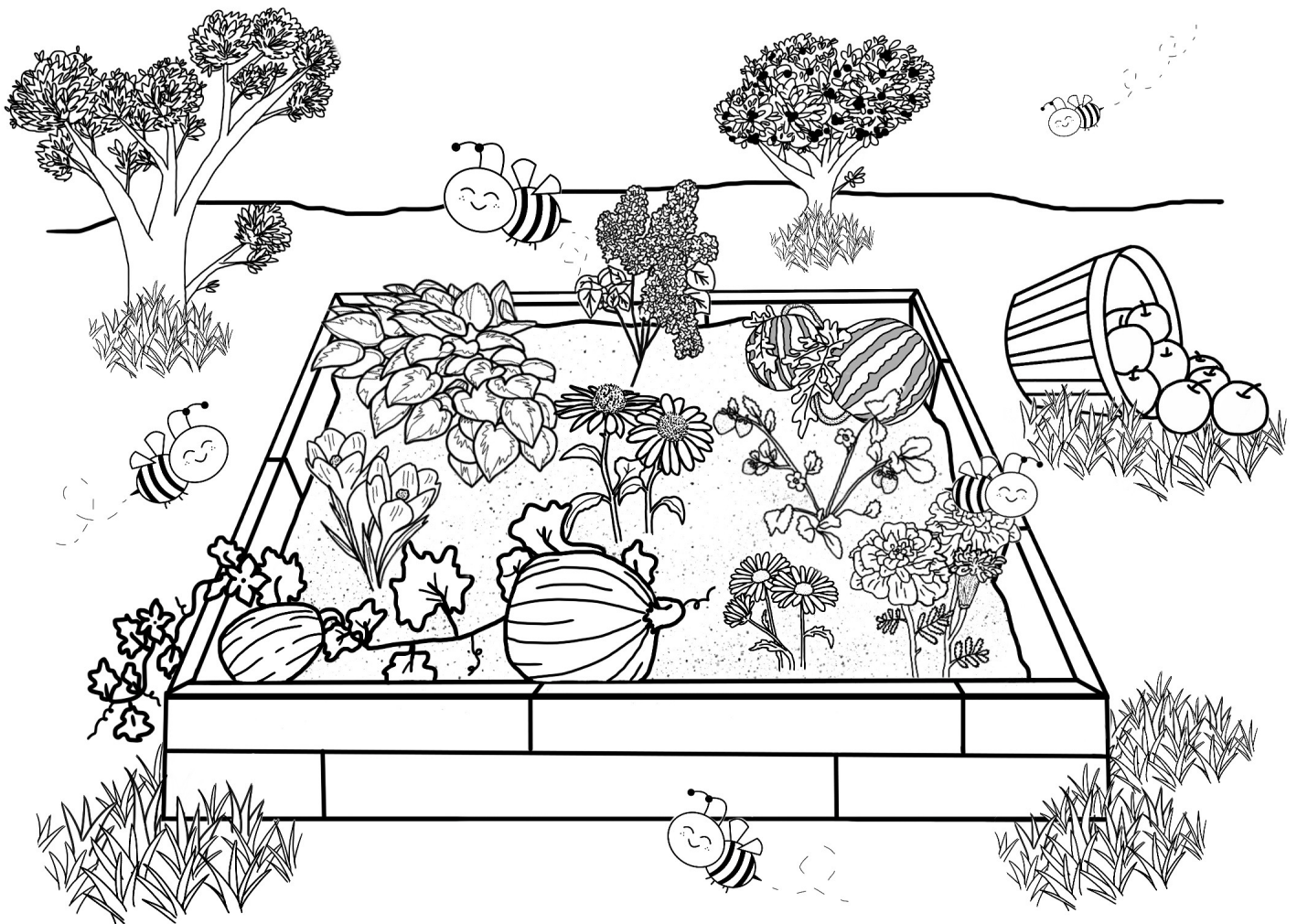
Near the end of autumn the weather makes Cal very tired and cold. Cal closes their bud and stops growing to save energy. They can't wait for next spring when they'll be able to bloom again!



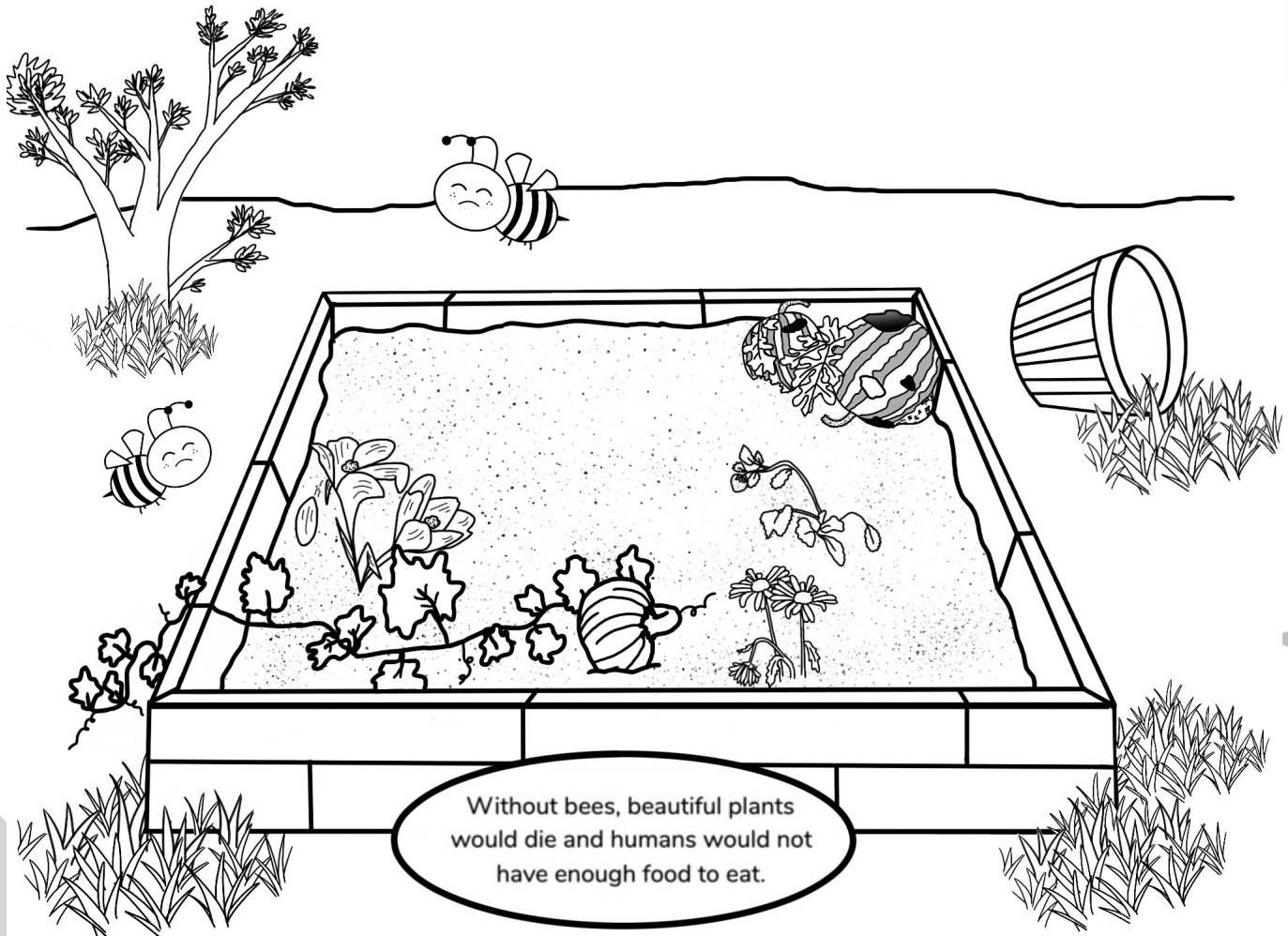
## Plants Need Bees

Bees spread pollen, which is a yellow powder in plants that helps them reproduce and grow. Plants also help bees by giving them food in the form of nectar. We would not have fresh fruits and vegetables like apples, pumpkins, watermelon, and strawberries without bees! We can help bees by growing flowers they like, including crocuses, wild lilac, echinaceas, hostas, daisies, and marigolds. Colour the scene below to see the difference bees make in our world.

This is what a healthy garden looks like. Bees help polinate many different plants, vegetables, flowers and even trees. Colour it in!



This is what an unhealthy garden looks like. Can you spot the differences that not having bees in nature make?



What can you do at home to help the bees?

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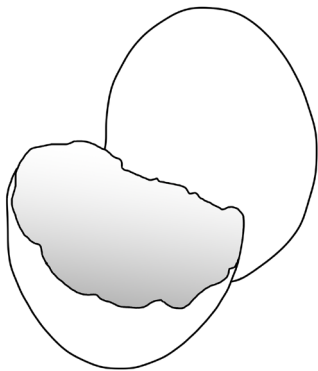
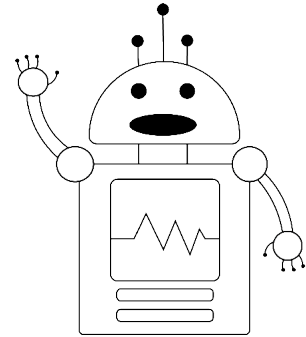
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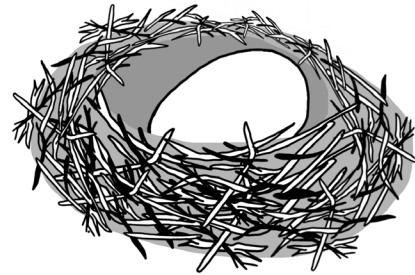
# Structures in Nature

Humans build and create a lot of different structures. These are designed to be strong and stay stable when there are forces applied. Did you know that animals use structures too? These structures are for protection and shelter, and a few examples of natural structures are included below!

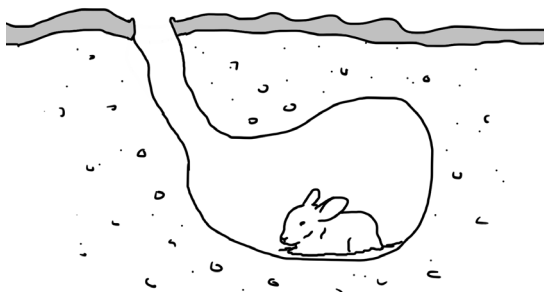
Esiw here ... my letters are all scrambled!  
Can you help me by debugging the data to  
show what some structures in nature are  
called?



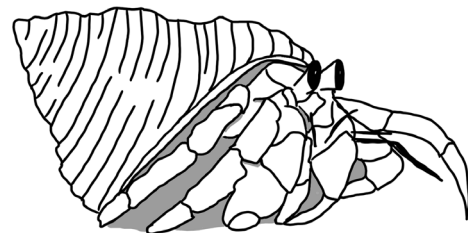
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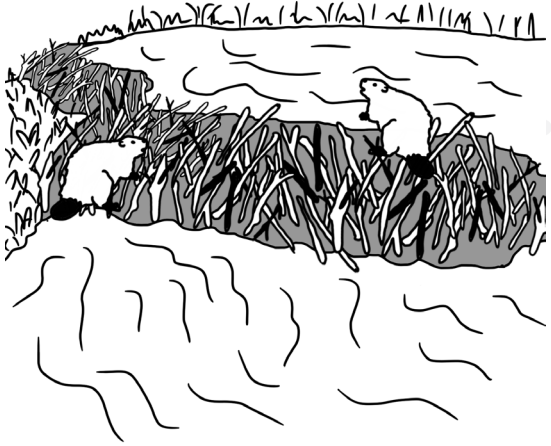


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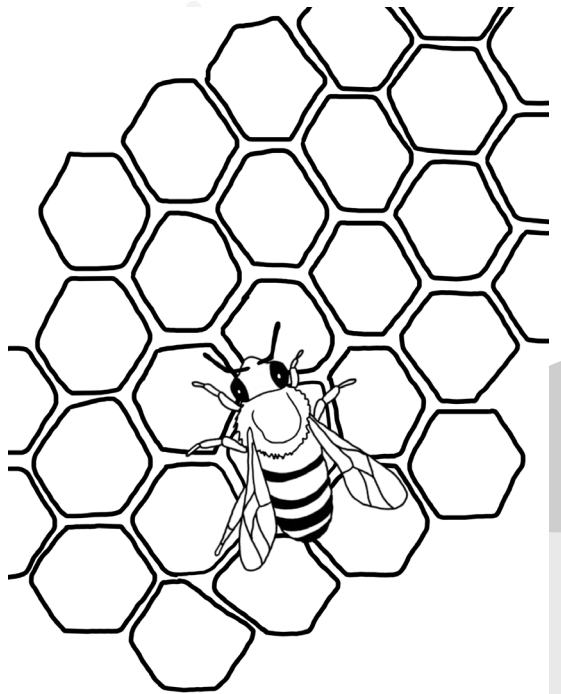


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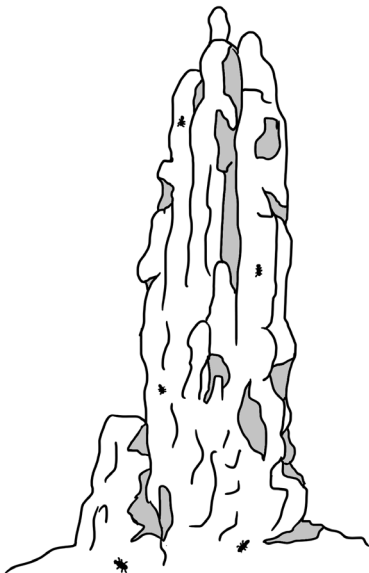




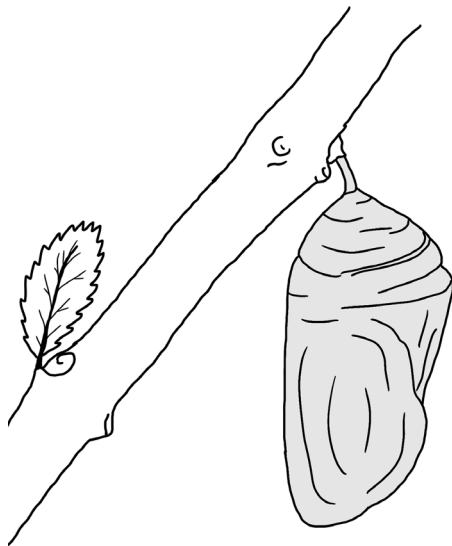
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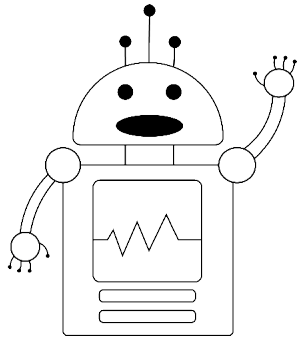
mirtet onmud



cocono

## Guide to the Forest

Some of these plants have adaptations that stop us humans from eating them. They do this by either making themselves poisonous or painful to touch. While some of these plants are edible for humans because they thrive from humans spreading their seeds and helping them grow their population.



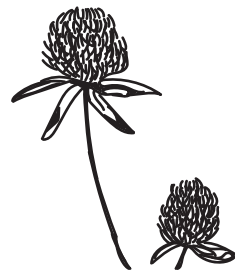
Can you tell the difference between the harmful plants and the safe ones? Place a check mark in the box under the safe ones and an X under the harmful ones.



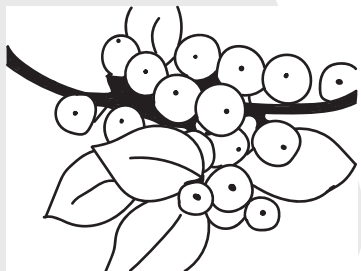
Poison ivy



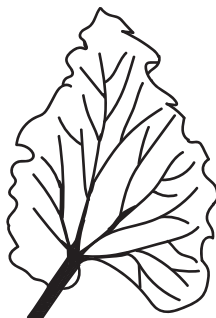
Cattails



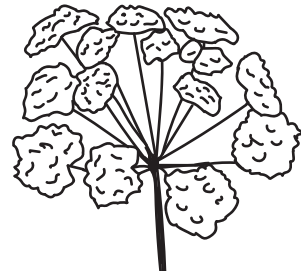
Clovers



Winterberry



Rhubarb leaf



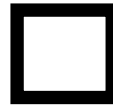
Water thorns



Dandelions



Broadleaf plantain



Do you know of any other plants that grow in Manitoba that you can eat safely?  
Ask your parents or family and list them below!

NOTE: Do not eat any of the plants unless you have adult permission.

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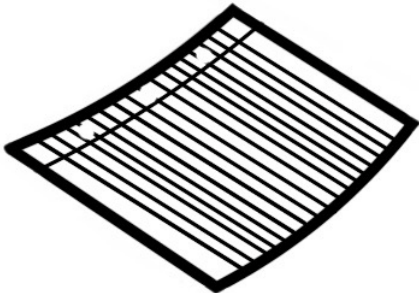
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# Use, Then Replenish

Below are just a few of the materials we use daily that come from natural resources. When we use these things, we need to replenish or replace what provided us with the material! For example, if you pick a flower from the ground, you should plant a seed so another flower will grow in its place! Beside each material, write what can be done so we can make more of it.

## Paper



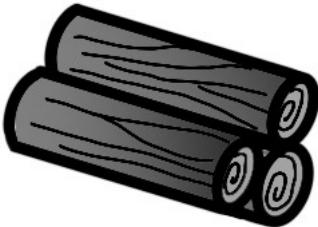
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## Wood



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## Water



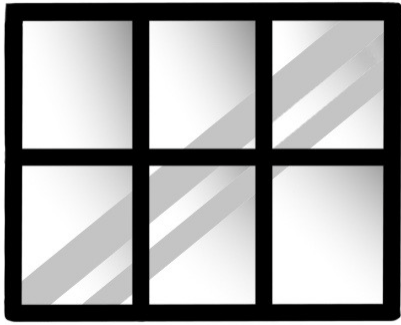
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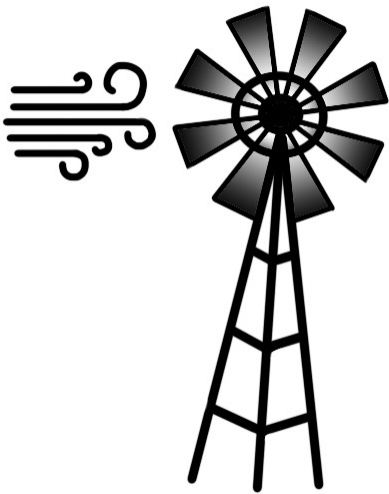
Window



Hint: glass is made from sand!

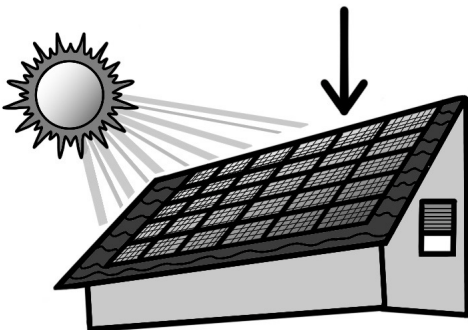
Five horizontal lines for writing.

Windmill



Five horizontal lines for writing.

Solar panels



Five horizontal lines for writing, with a dashed line arching over the bottom two lines.

Metal



Hint: metal is taken from deep in the ground, in the earth's crust!

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Plastic



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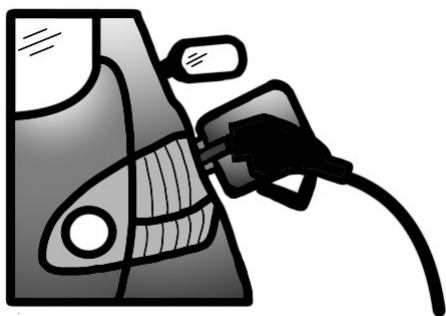
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Gas for cars



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## Plant



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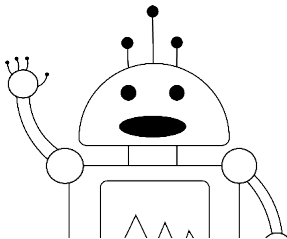
Did you have a hard time answering a few of these? That's because some of these cannot be replenished, once used, the resource is gone. Others rely on a resource that cannot be fully used up.

Which of these do you think we cannot replace? These are called **non-renewable resources**.

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- 
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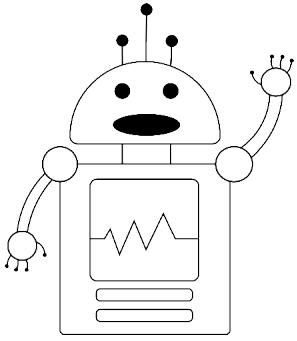
Which do you think cannot be used up? These are called **renewable resources**.

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Awesome job! You used logical thinking and sorting to decide which resources are renewable and which are non-renewable. These are essential skills in computer science!

## Opposites Attract

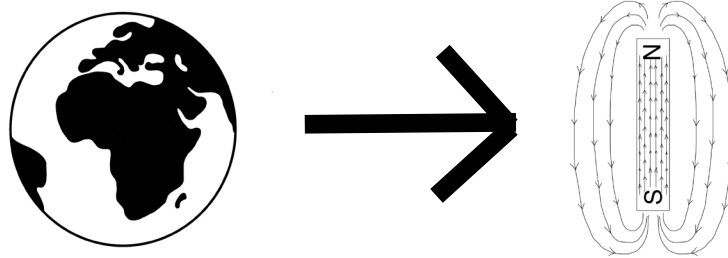


ESIW is learning more about the Earth. Something that ESIW finds confusing is some of our sayings. Today they are wondering where the saying “Opposites attract” comes from.

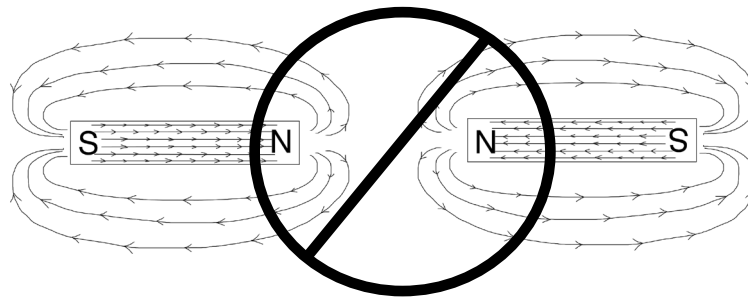
This sentence describes a really cool scientific property called “magnetism”. Magnets are specific rocks and metals that have invisible fields around themselves called “magnetic fields”.

These magnetic fields are made of super small particles called electrons travelling in a specific direction.

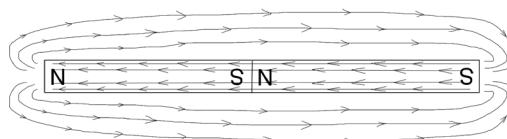
Have you ever heard of the Earth’s North and South Poles? Magnets have those too! One end of a magnet is its north pole and the other is its south pole. The electrons in a magnetic field always travel from the north to the south pole.



This means that if you try to put two of the same poles together, the magnets will repel away from each other. This is because their magnetic fields are going in opposite directions.



But if you try to put opposite poles of two magnets together, they attract each other and end up making a really strong magnetic field together. This is where the phrase “Opposites attract” comes from!





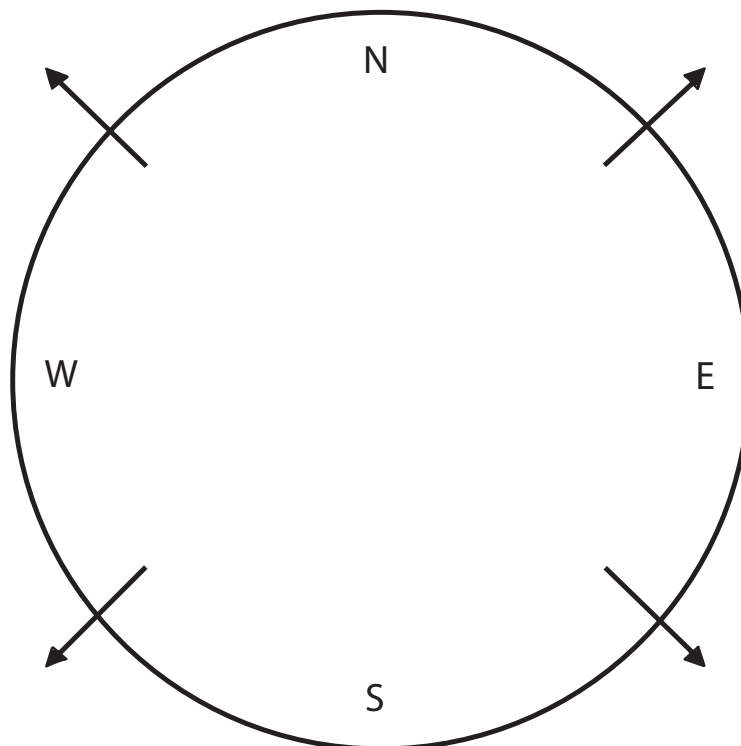
## Compasses

Speaking of north and south poles, did you know that Earth is a giant magnet? The Earth's core has lots of metal in it which means the Earth has a very big magnetic field around it. This means that we can use magnets to make sure we never get lost!

A compass is a navigation tool that people use to help them figure out what direction they need to travel in when they want to go somewhere. All compasses have a lightweight magnet that tells us where North is. Most compass magnets are red on one end and white on the other. The red side represents the south pole of the magnet. It is attracted to the north pole of the Earth's magnetic field. This is very important because if someone who is lost can figure out where North is, they know where all the directions are and can more easily find their way home!

On every magnet you'll see the four basic directions, North, South, East and West. What lots of compasses will also have is the directions in between, marked here with arrows. These directions include North West, South East, South West and North East.

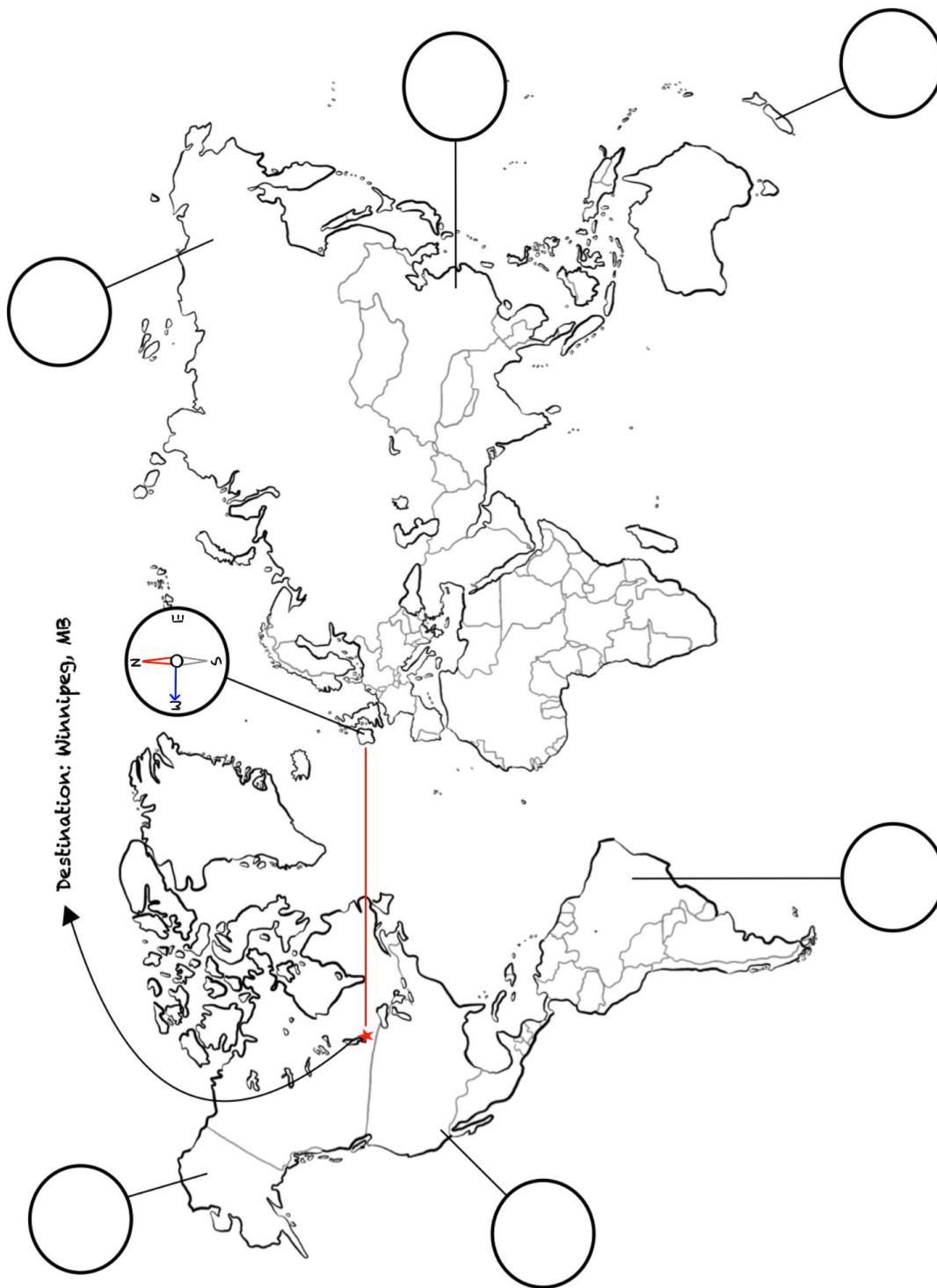
Based on the information above, can you label all the in-between directions on the compass? Can you draw what a compass' magnet would look like and colour it in?



Turn the page to continue this activity!

# Find Your Way Home

Now that you know how to use a compass, it's time to test out your navigation skills! Draw what your compass would look like in different parts of the world if you were trying to get back home to Winnipeg. Use an arrow to indicate your direction. Can you name the country that you're navigating from?



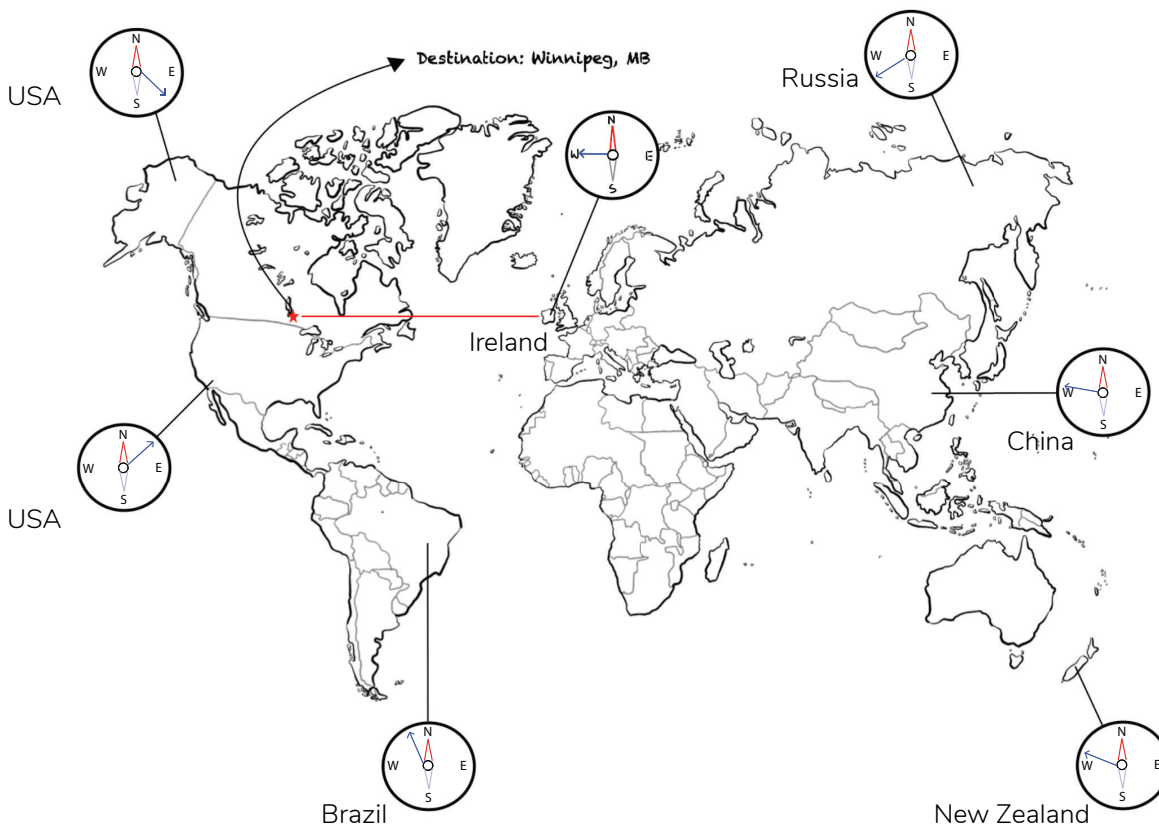
# Answer Key

**Page 8-9:** 1 - Eggshell; 2 - Bird nest; 3 - Burrow; 4 - Shell; 5 - Beaver dam; 6 - Honeycomb; 7 - Termite mound; 8 - Cocoon.

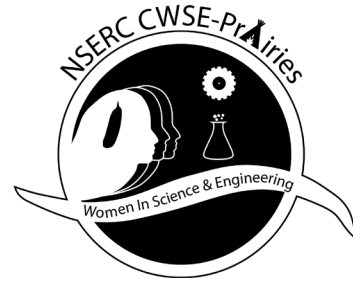
**Page 10-11:** Harmful plants: Water thorns, Winterberry, Poison ivy, Rhubarb leaf.  
Safe plants: Cattail, Clovers, Dandelion, Broadleaf plantain.

**Page 15:** Paper and wood- plant a tree. Plant - plant a seed. Non-renewable resources: plastics (made up of gas, oil, coal and other non-recyclable resources), gas, water, metal. Renewable resources: wind, sun, sand (windows).

## Page 18:



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