WISE Activity Booklets

A STEM activity booklet for fun on-the-go learning!

Made by WISE Kid-Netic Energy

DIY Activities,
Mazes,
Stories
... and more!

Grade 6
MAY 2020

Diversity of Living Things - Electricity
Flight - Exploring the Solar System

University of Manitoba

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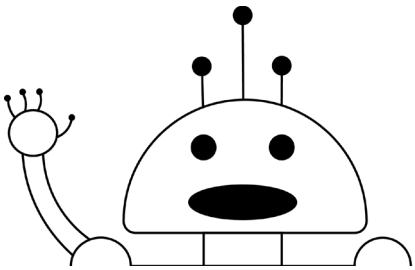


Hello there!

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 6 booklet, the science topics you will be exploring are: the diversity of living things, flight, electricity and the solar system!

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!

Amaris

Amaris just finished her first year as a science student at the University of Winnipeg and plans on majoring in biology. In her free time she likes reading, playing piano and baking.

Gagan

Gagan just finished her fourth year of her honours degree in psychology at the University of Manitoba. She enjoys being creative and loves to learn! In her free time she like reading, playing piano and baking!

Olivia

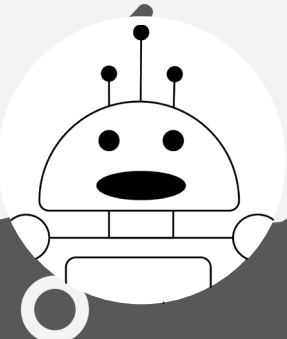
Olivia just finished her second year of biosystems engineering at the University of Manitoba. She hopes to work in renewable energy or water treatment in the future. In her free time, she plays and refs touch football and enjoys playing the piano.

Reem

Reem just finished her first year as a science student at the University of Manitoba; her favorite classes are psychology and microbiology. In her free time, she loves to watch movies and bake desserts.

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.



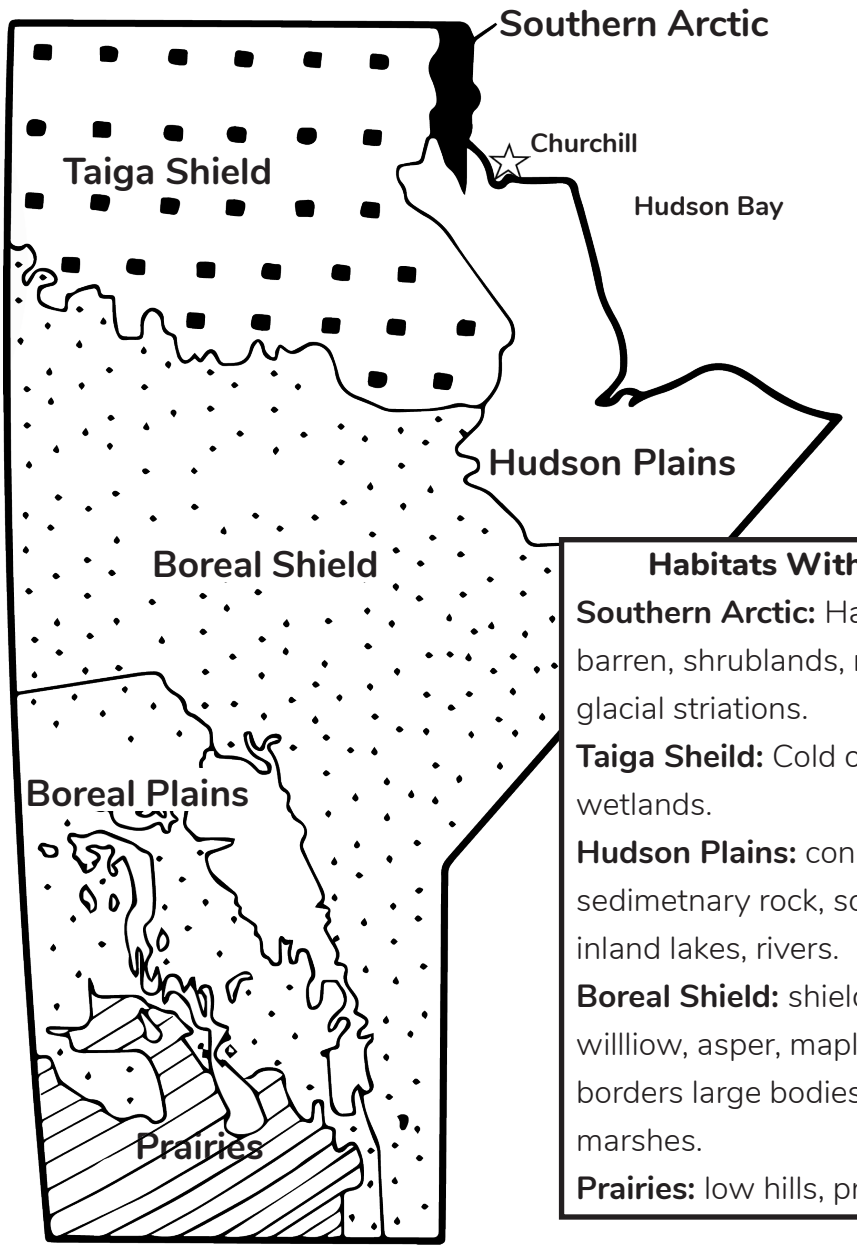
Esiw the Robot

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!

Habitats at Home

Different animals are found in different habitats, even here in Manitoba we have different habitats that different animals prefer.

Cut out the squares on the next page and draw the animal on them, then place them around your house in a space that most resembles their normal habitat. For example, snowy owls are found in the tundra, so try and find a spot in your house the is cold, like your fridge maybe? Use the map below to help determine the habitat of the different animals.



Habitats Within Each Ecozone

Southern Arctic: Harsh cold climate, barren, shrublands, rock, moss, dry grass, glacial striations.

Taiga Sheild: Cold ocean, ice sheets, rock, wetlands.

Hudson Plains: coniferous forest, sedimetnary rock, soil, soggy ground, inland lakes, rivers.

Boreal Shield: shield rock, trees (e.g., willliow, asper, maple, birch, spruce), borders large bodies of water, rivers, marshes.

Prairies: low hills, priaire grasses, shrubs.

SLO : 6-1-08

Polar Bears

Hint: found near the town of Churchill

Jack Pine

Hint: Found in Canada's largest Ecozone

Bald Eagle

Hint: Likes tall trees and are found near lakes, rivers and other large bodies of water

American Bison

Hint: Grazers, mostly eat grass

Monarch Butterfly

Hint: like warm climate and will migrate south to Mexico in the fall

Beluga Whales

Hint: found swimming near the surface of large bay of water

Arctic Ground Squirrel

Hint: Spend a long time hibernating and eat mosses, dry gass, lichens and seeds

Beaver

Hint: Live in marshy areas with lots of wood to help construct their dams

White-Tailed Deer

Hint: These herbivores like to live in areass with a moderate to dry climate

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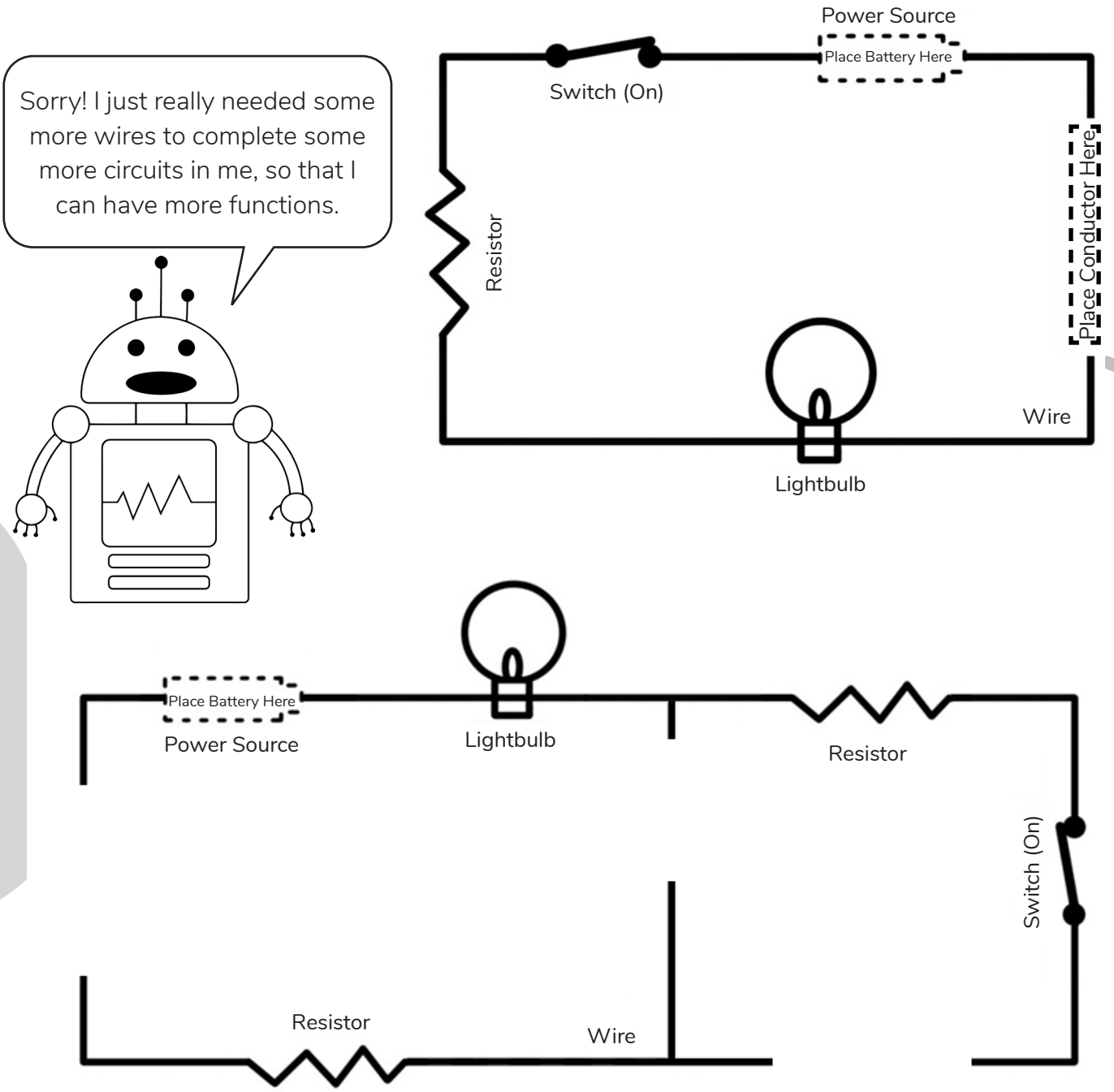
Complete the Circuit

Oh no! Esiw stole some of my wires and now some of my circuits don't work! Can you look around your house and see if you can find some conductors to help complete my circuit? Try finding things made of metal, like silver, copper or aluminum, and place them in the circuits below to complete the circuits.

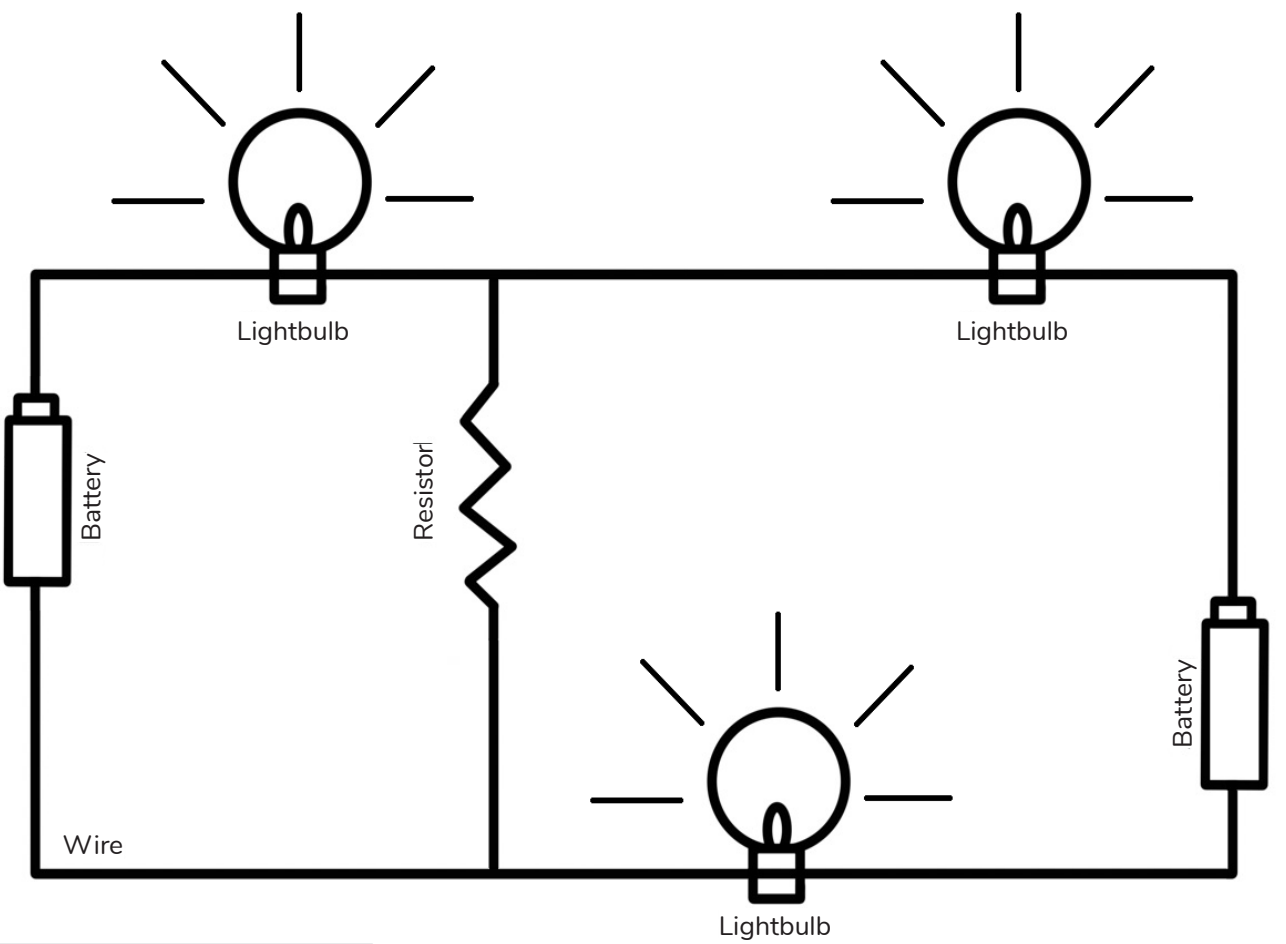


SLO : 6-3-01; 6-3-07; 6-3-08

This activity continues on the next page!

Wow! You did a great job at helping fix those circuits to get them working again!

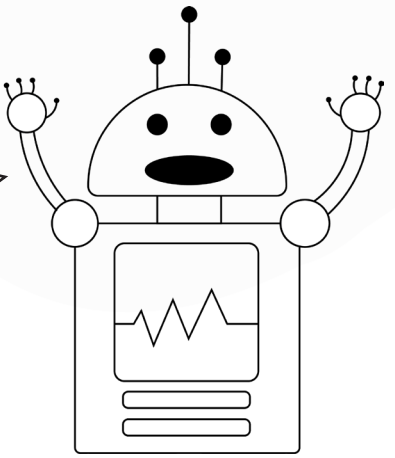
Could you help me with these circuits too? I messed up when I was making them and I forgot to install a switch and now I don't have any left! I still need to turn these lights off though, can you place a couple insulators from around your house to help turn off the lights in this circuit? Insulators are things that don't conduct electricity very well, things like wood, cloth and plastic.



Careful, this is a parallel circuit, which means there is multiple paths for the electricity to take. Make sure there is no complete circuits so that all of the lights go out. This will probably need a few insulators.

This page was created by Olivia

Build a Sundial

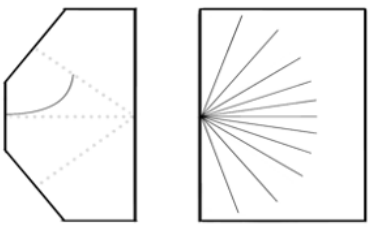


I am really good at following instructions, I have special instructions that tell me what to do all of the time! These special instructions are called a “code”! Are you good at following instructions?

Follow the instructions below to build your own sudial. The only supplies you will need is a pair of scissors.

STEP 1

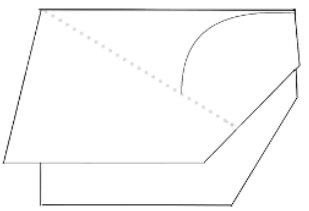
Cut out the gnomon and the base from the template (page 11).



gnomon base

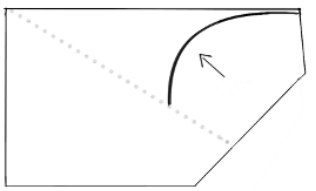
STEP 2

Fold the gnomon in half (on the dotted line).



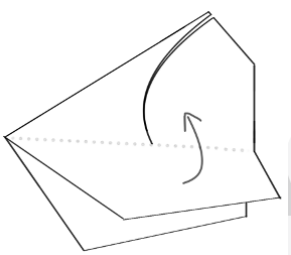
STEP 3

While the gnomon is folded cut on the curved black line (cut both sides of the paper).



STEP 4

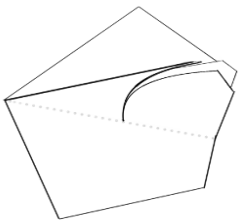
Fold either side, on the dotted line, towards the center.



SLO : 6-4-13

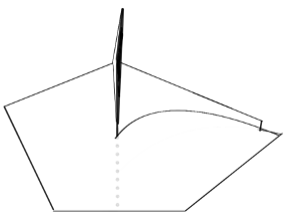
STEP 5

Use the parts you just folded to keep the gnomon standing.



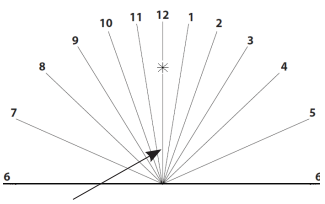
STEP 6

Tuck the circular cut-outs under one another so that the fin-shaped gnomon fit between them.



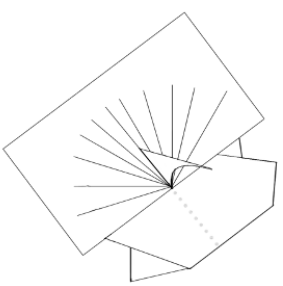
STEP 7

Take the base and cut down the center (“12”) line until the star.



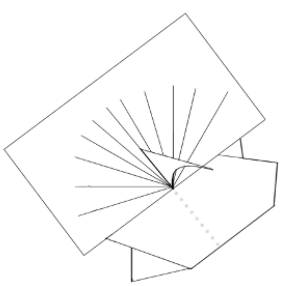
STEP 8

Slide the gnomon into the base and tape the two pieces together.



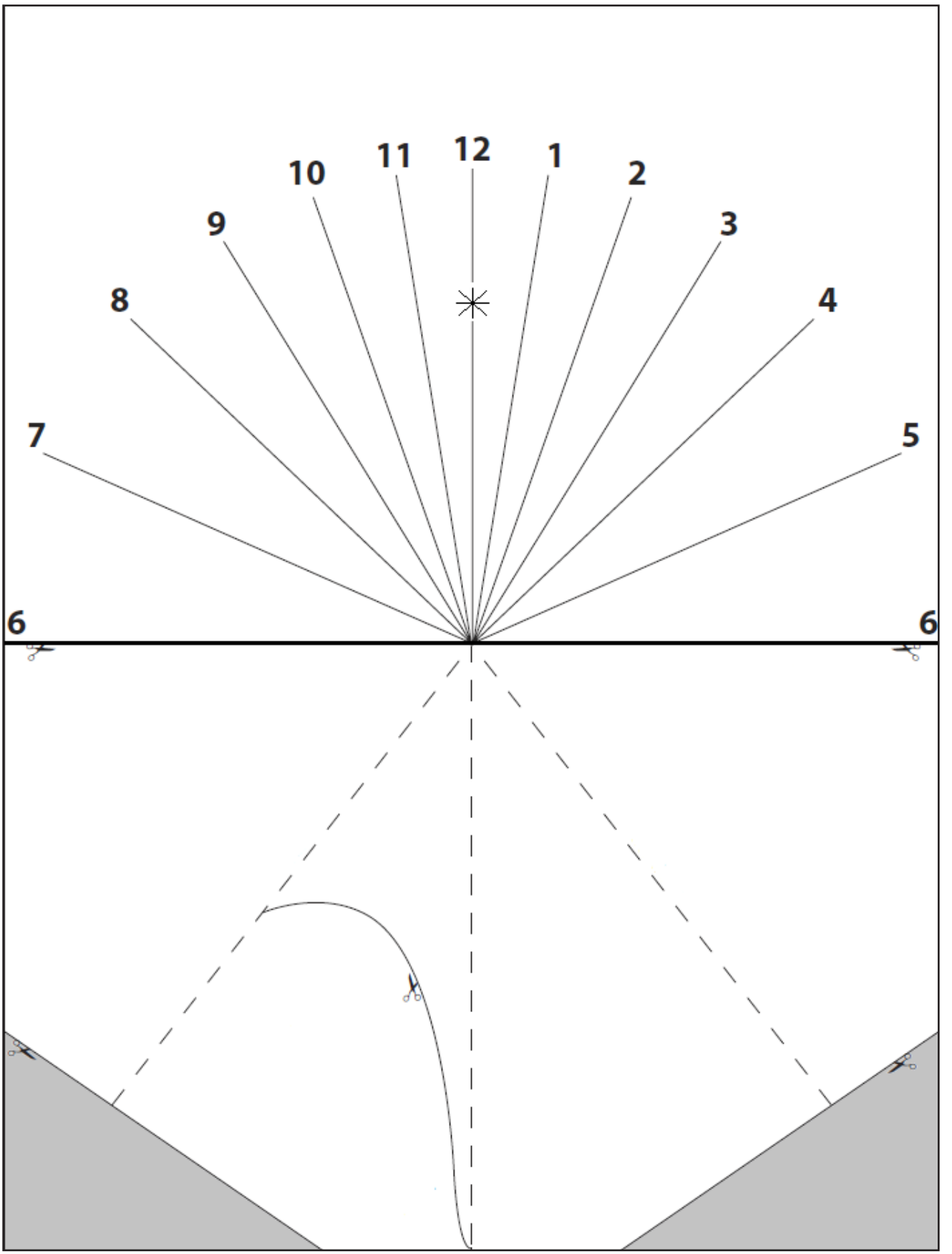
STEP 9

Set up your sundial so that the gnomon faces North. The sun will cast shadows that let you tell what time it is.



Fun Fact: Egyptians were the first group that we can reasonably prove made a version of the sundial. They built Obelisks which were tall four-sided tapered monuments and placed them strategic locations to cast shadows made from the sun. They served to partition the day into parts.

Sundial Template



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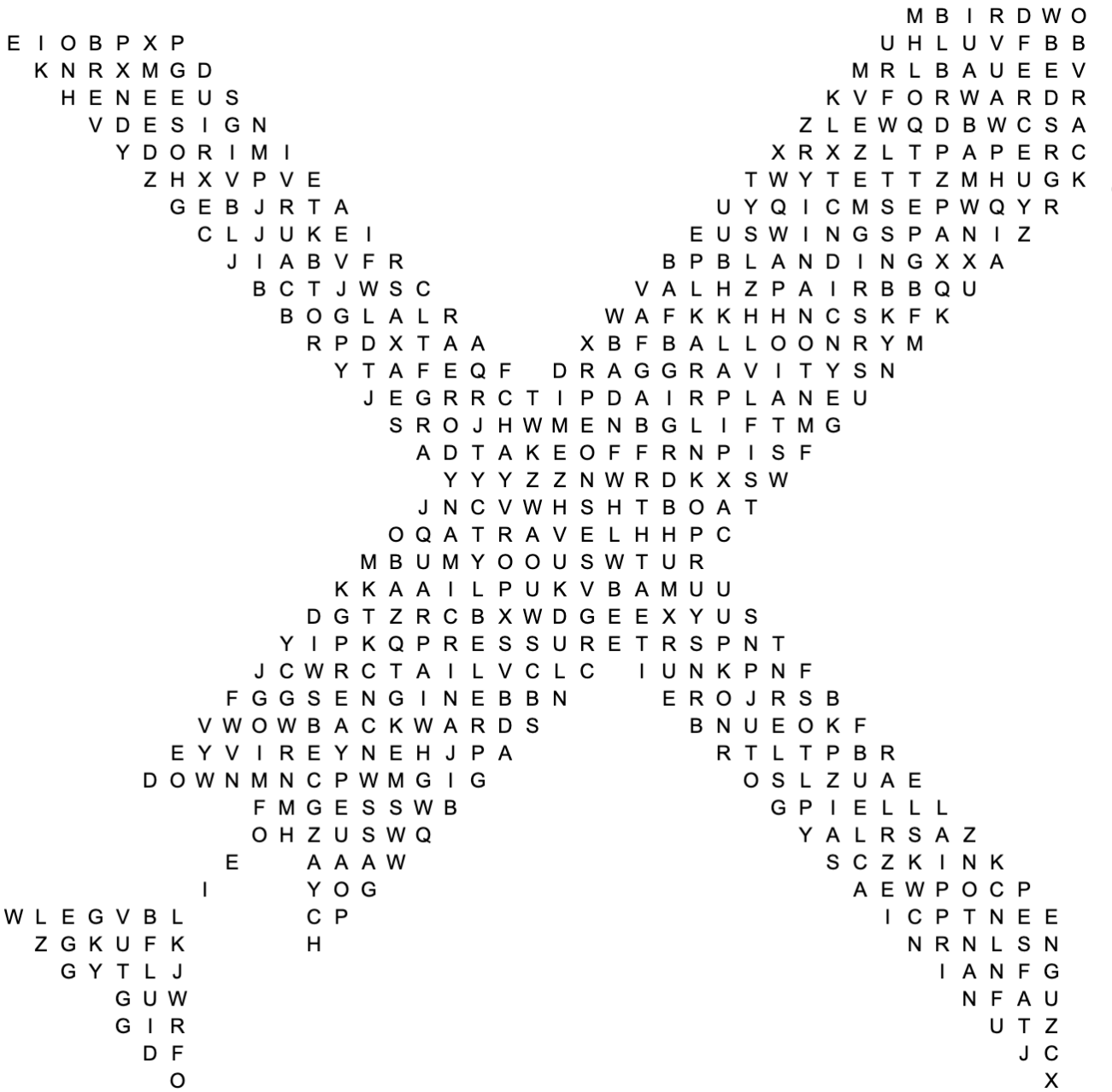
Flight Word Search

Find all of the words from the word list below.



AERODYNAMIC	BERNOULLI	FLUID	LIFT	THRUST
AIR	BIRD	FORCES	PAPER	TRAVEL
AIRCRAFT	BOAT	FORWARDS	PRESSURE	TURN
AIRPLANE	DESIGN	GRAVITY	PROPULSION	UP
BACKWARDS	DOWN	HELICOPTER	SPACECRAFT	WATER
BALANCE	DRAG	JET	TAIL	WING
BALLOON	ENGINE	LANDING	TAKEOFF	WINGSPAN

SLO : 6-2-01

Solar System Story

Roberta Bondar, Canada's first female astronaut is returning to space and needs your help! Using the coding blocks on the next page, correctly fill in the blanks and help Bondar complete her mission.

Mission

Currently, there are _____ artificial satellites orbiting the Earth. These satellites are used for _____. The first satellite launched was _____. There are also various telescopes in space, most notably being the Hubble Telescope. This telescope pictures some of the _____. This telescope is broken and needs to be fixed.

Basic Needs and Equipment

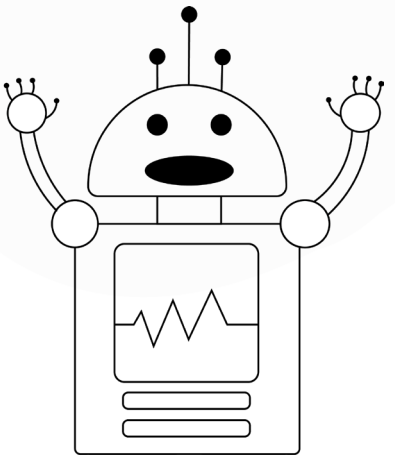
Before going into space, Bondar needs to have the appropriate equipment. The temperature in space, near Earth's atmosphere, is _____ and _____ in spaces between stars in the galaxies, known as the interstellar region. Bondar needs to wear a _____ to ensure she stays warm and protected from the sun's UV rays. Because space is considered a _____ there are no gases, including oxygen. Space crafts need to have their own supply of oxygen and _____. Finally, astronauts also need _____ food and add water to eat it.

Getting to Space

After there is enough _____ fuel in the rocket the _____ system can be used for lift off. This system makes up the majority of the rocket. Sitting in the _____, the rocket is propelled up using a _____ force making its way through the Earth atmosphere and into space. The _____ can be used to tell her where to go. Once in space, Bonard can use the _____ to help her position herself in space, capture, repair, and move the Hubble telescope!

SLO : 6-4-01; 6-4-02; 6-1-03; 6-4-06

Using coding blocks is a common way to learn coding! You can simply drag and drop the blocks in order to write the code! Can you cut out these “coding” blocks and glue them in place to finish writing the story?



guidance system

freeze dried

thrust

-270.15°

propulsion

kerosene

spacesuit

vaccuum

payload

Canadarm

2218

nitrogen

communication, space exploration, weather, navigation, surveillance

furthest galaxies

Sputnik 1

10.17°

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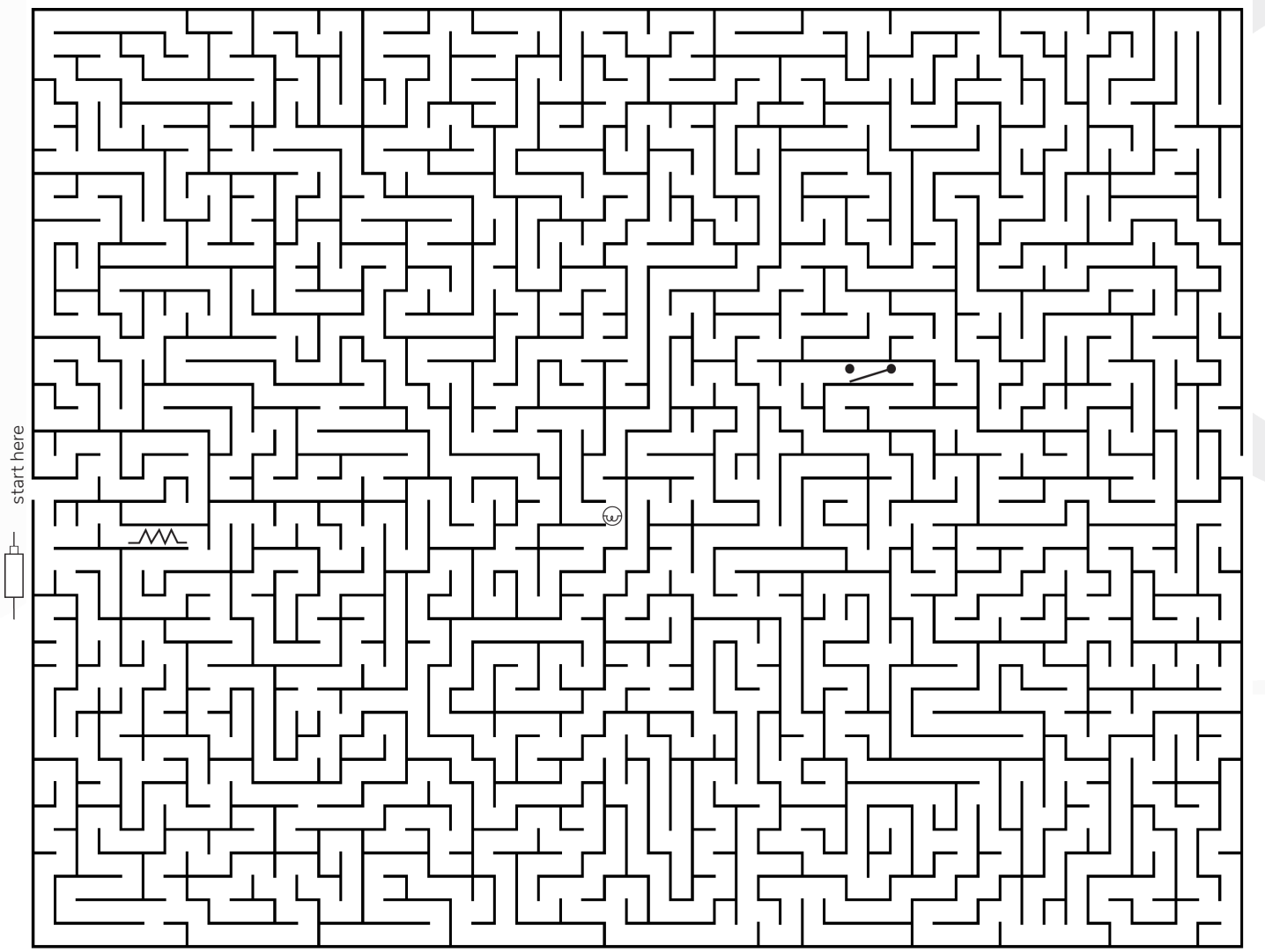
Electricity Maze

Find your way through the maze and collect the pieces for the circuit along the way! Then draw the complete circuit with pieces you collected below. Start with the battery.

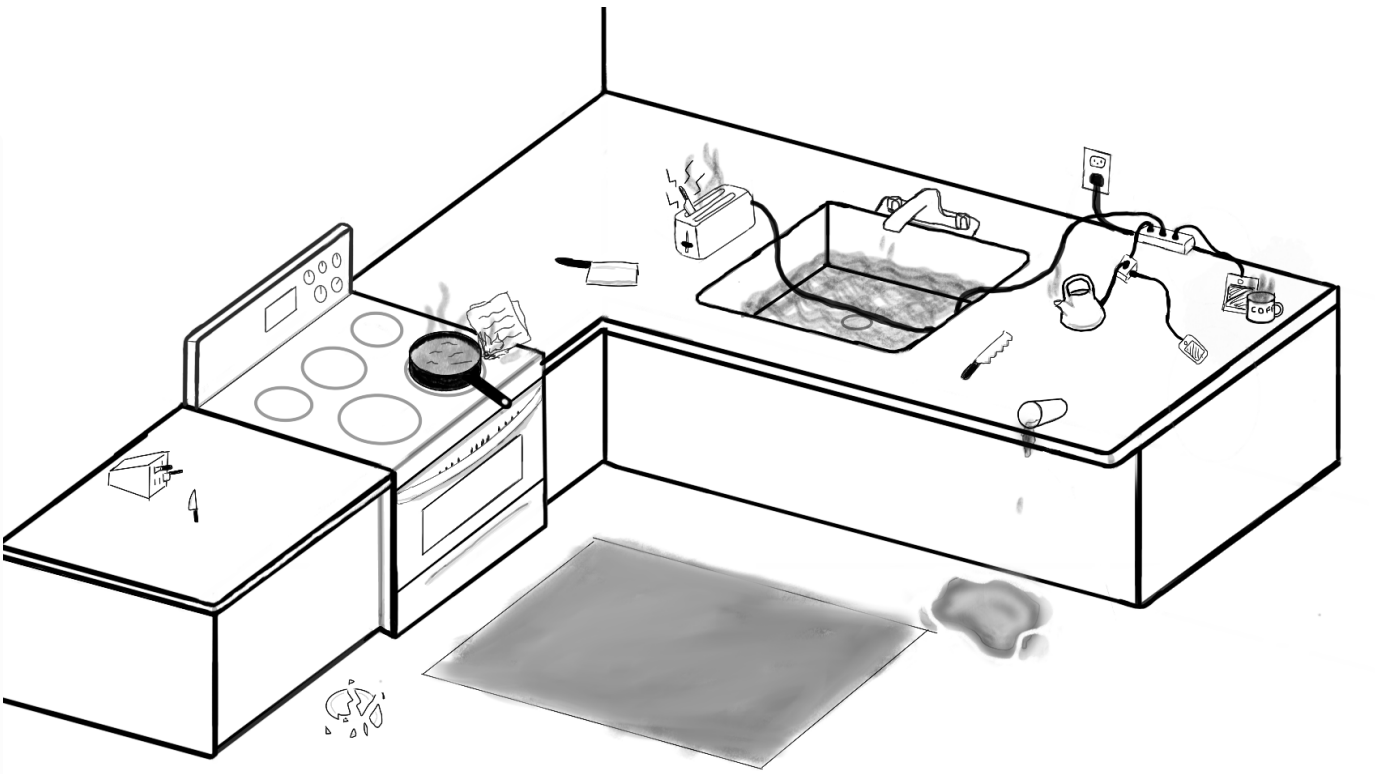


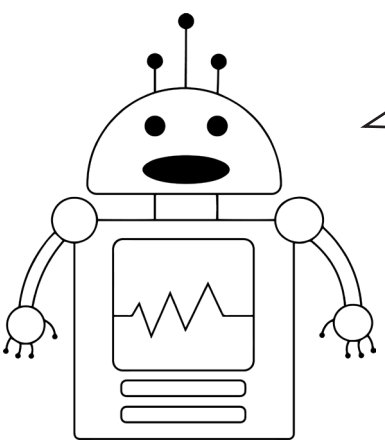
Draw the circuit here:

This page was created by Victoria and Olivia

Dumb Ways to Die

Can you spot the hazards in the scene below?
There are 12 hazardous things happening in this kitchen!





Things like water and metal are known as conductors. Conductors allow electricity to move more easily. You are made 60% of water, which makes you a great conductor, and I'm made almost entirely of wires and metal. We both better be careful with electricity so that we don't get electrocuted.

Helpful Hints

- The flow of electricity in our bodies can cause skin breakdown, electrical stimulation of skeletal muscles and nerves, cardiac dysrhythmias and arrest, electric shock leading to electrocution.
- Fires are often caused by electricity due to the overuse of extension cords, because if too many things are plugged in to an extension cord it over heats and can start a fire.

SLO : 6-3-04

Answer Keys

Habitats at Home (page 4)

Southern Arctic: Arctic Ground Squirrel

Hudson Plains: Polar Bear & Beluga Whales

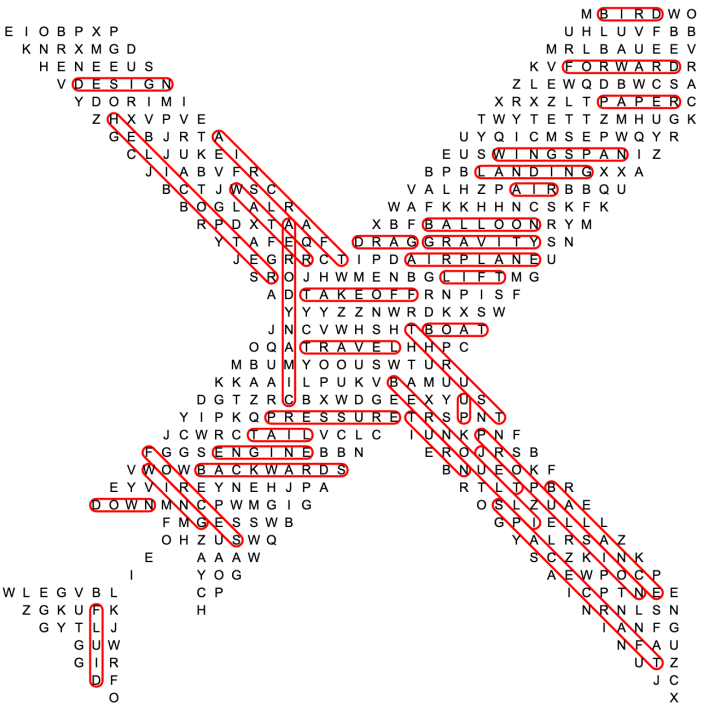
Taiga Shield: Bald Eagle

Boreal Shield: Jack Pine & Beaver (also sometimes found in Taiga Shield)

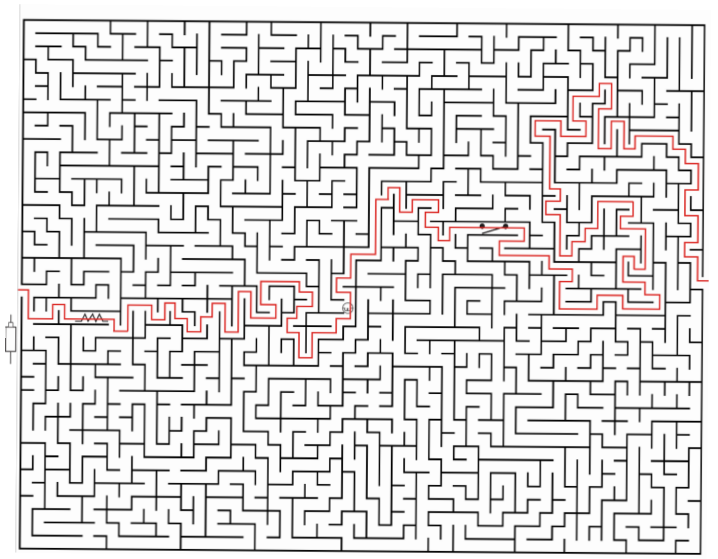
Boreal Plains: American Bison

Prairies: Monarch Butterfly & White-tailed deer (also sometimes found in Boreal plains)

Flight Word Search (page 13)



Electricity Maze (page 17)



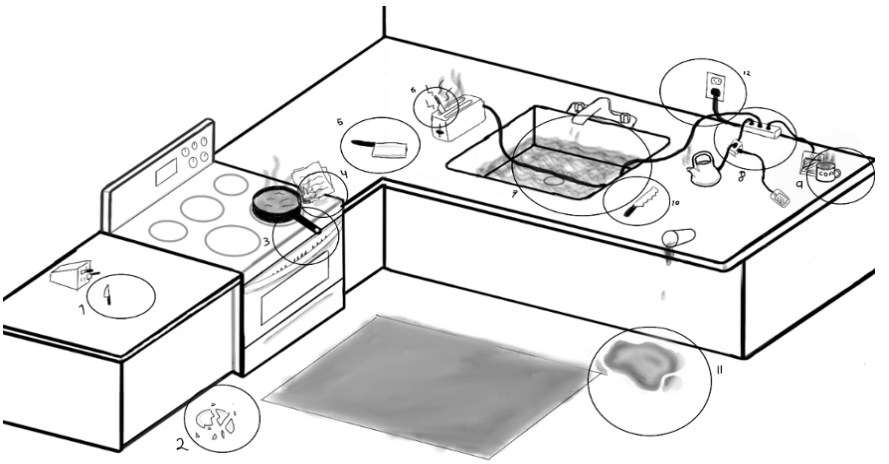
Solar System Story (page 14)

Mission: 2218; communication, space exploration, weather, navigation, surveillance; Sputnik 1, furthest galaxies

Basic Needs and Equipment: 10.17°, -270.15°, spacesuit, vacuum, Nitrogen, freeze dried

Getting to Space: Kerosene, propulsion, payload, thrust, guidance system, Canadarm

Dumb Ways to Die (page 18)



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