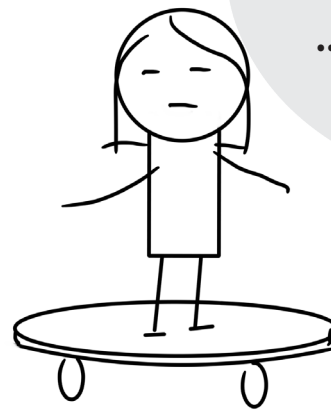
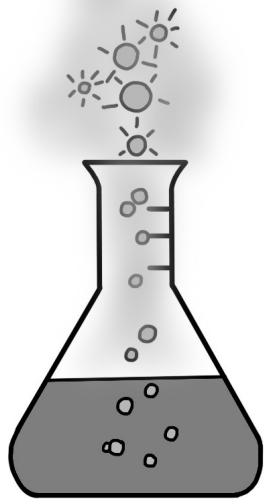


# WISE Activity Booklets

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

DIY Activities,  
Puzzles,  
Experiments  
... and more!



University  
of Manitoba

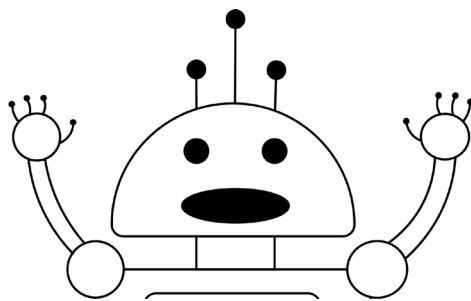
WISE Kid-Netic Energy is a proud member of Actua

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**actua**  
Youth · STEM · Innovation

With funding from  
**Canada**

## Grade 2 VOLUME 6

Growth and Changes in Animals  
Properties of Solids, Liquids and Gases  
Position and Motion  
Air and Water in the Environment



# 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 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.

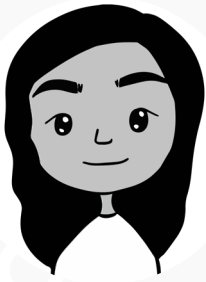
We hope that you enjoy doing the experiments and activities as much as we loved creating them for you.

In this Grade 2 booklet, the science topics you will be exploring are the growth and changes in animals, properties of different phases, position & motion and air & water in the environment!

**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!

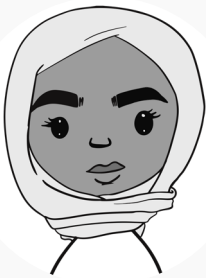
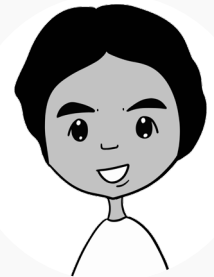


### Kajal

**Kajal** is in her second year of computer science. She likes to read and make new things! Her favourite fruit is mango.

### Olivia

**Olivia** is in her third year of biosystems engineering. 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 watching cooking shows.

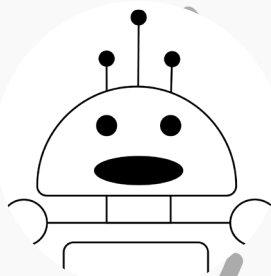
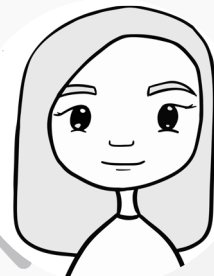


### Reem

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

### Sophia

**Sophia** is in her third year of science and plans to pursue a career in optometry. She loves math and biology, and in her free time loves reading, watching movies and trying new foods!



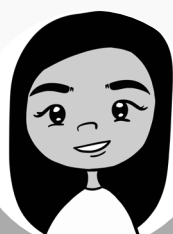
### Esiw the Robot

**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!



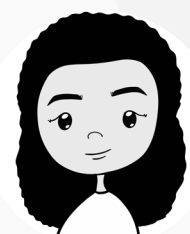
Alex



Bea



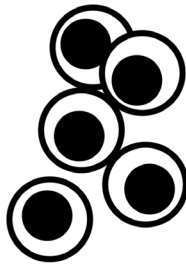
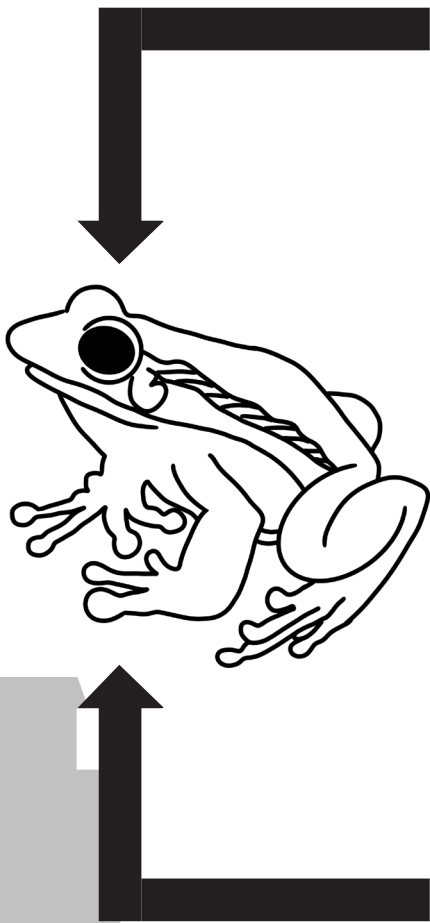
Mahalia



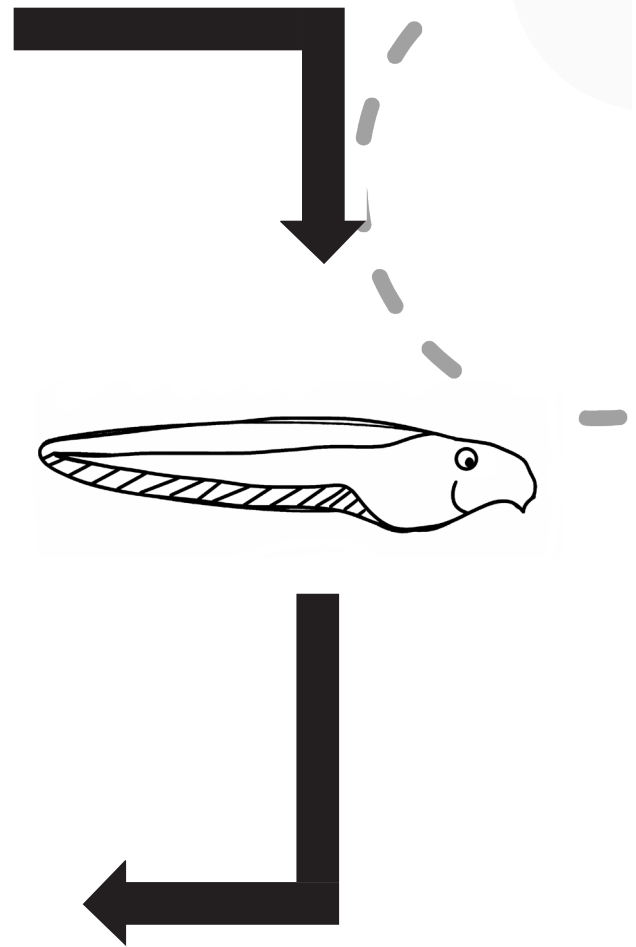
Michelle

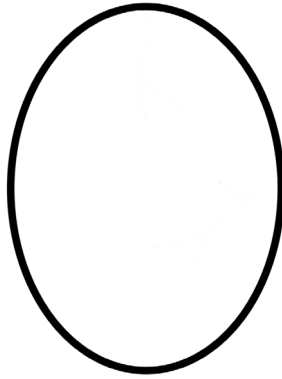
## The Circle of Life

Colour these animals' life cycles! Which ones are similar, and which ones are different?

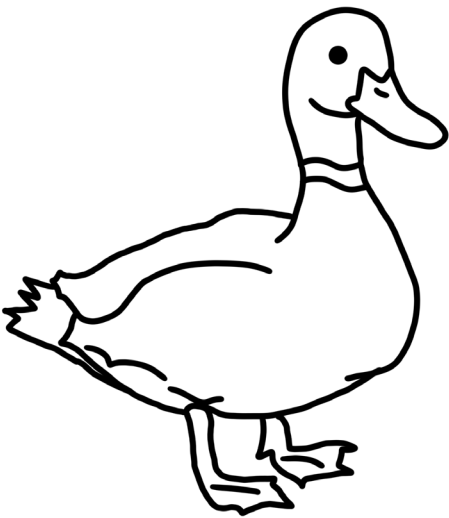


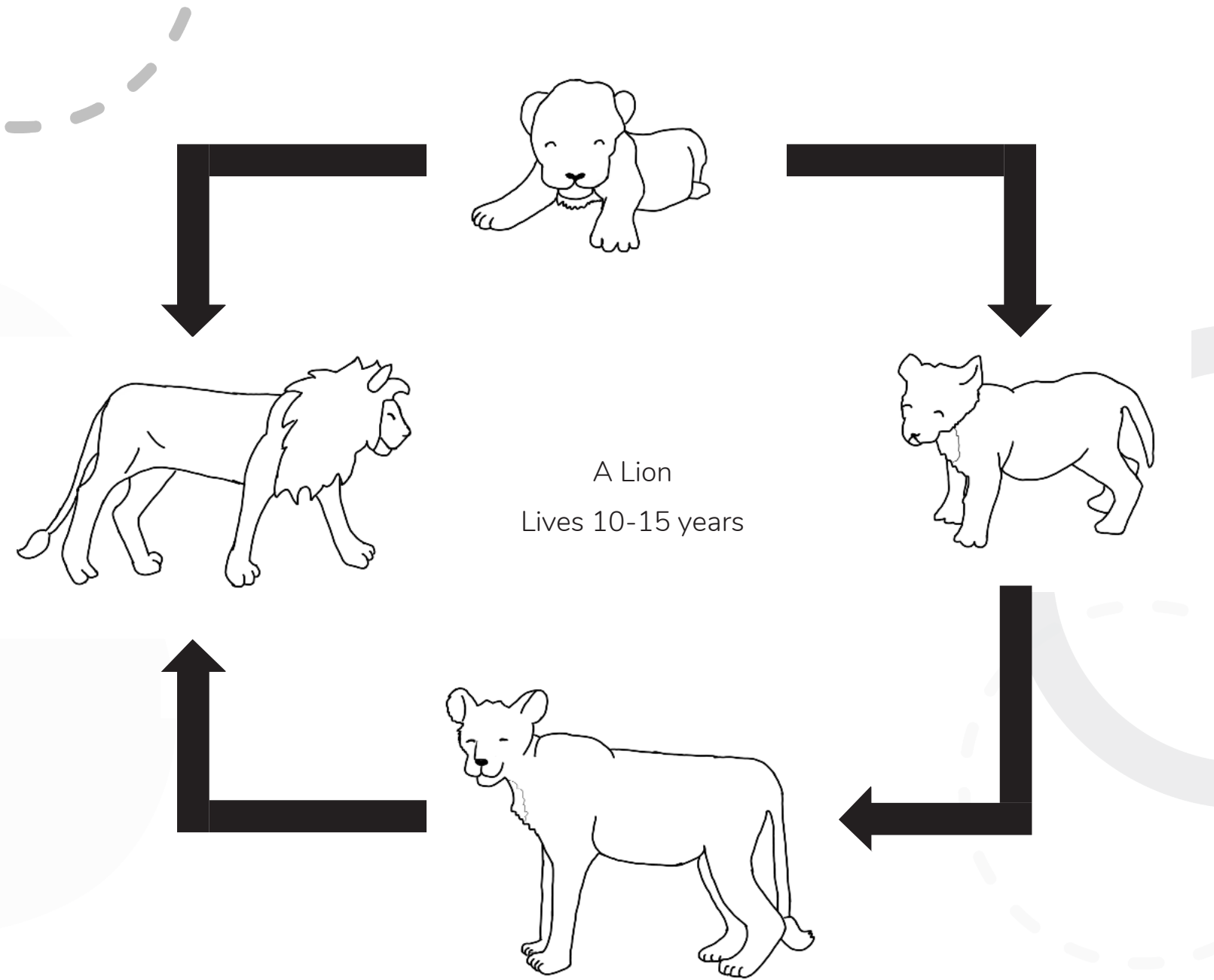
A Frog  
Lives 10-12 years



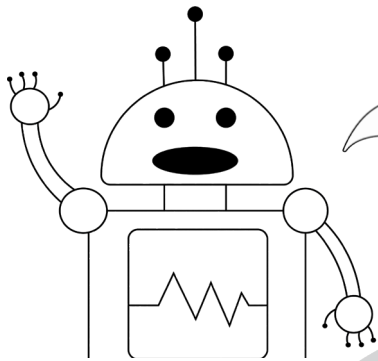


A Duck  
Lives 5-10 years





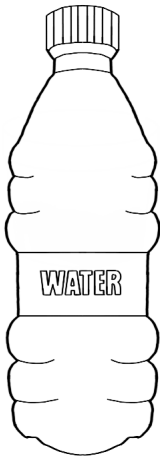
Which animals are similar and why? Which one is different?



A loop is something in a computer program. It means something that repeats over and over again. A life cycle is a kind of loop!

# Esiw's Gas Predictor

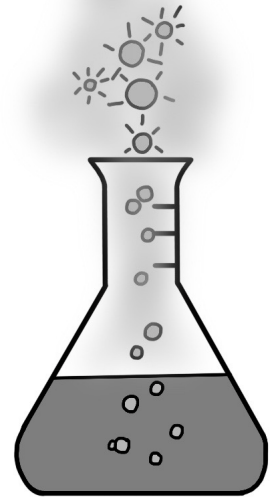
Gas takes up as much space as possible. Colour in the spaces where the gas would be in each of these pictures!



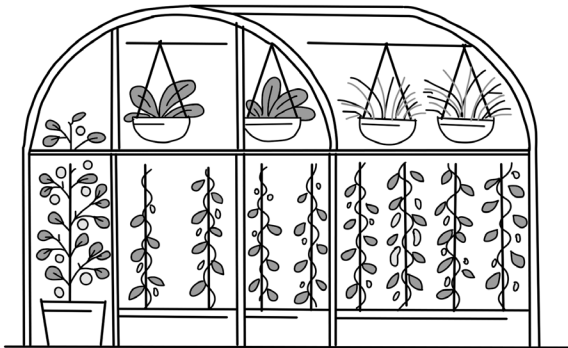
Empty, Closed Water Bottle



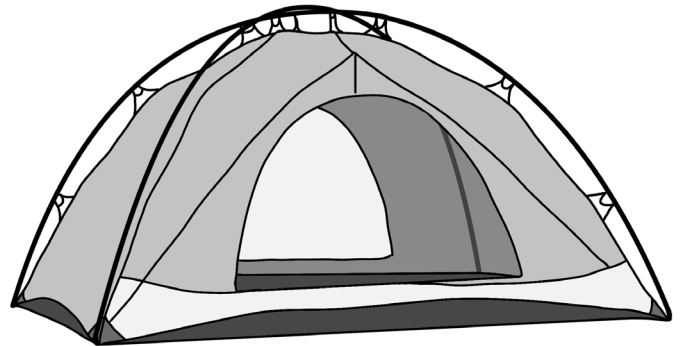
Half Full Flower Pot



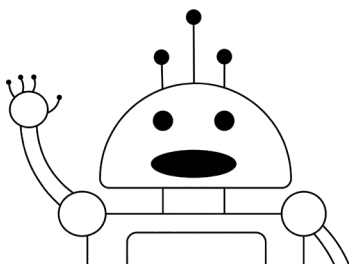
Beaker with a Liquid



Greenhouse with Plants



Tent



SLO : 2-2-13

Some computer programs make predictions. That means they guess or figure out what is going to happen. In this activity, we are predicting where the gas will go!

## Rainbow Absorption Experiment

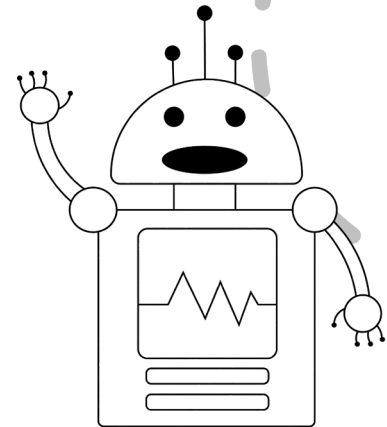
**Absorption** is when a material takes in another substance. In this experiment you will see how a material can absorb a substance and move it along.

### What you will need:

- 6 paper towels
- Food colour: Blue, Red and Yellow
- Water
- 6 clear cups (Plastic or glass)

Let's make a hypothesis! A hypothesis is like making a guess based on what you think will happen.

What do you think will happen when you mix certain colours together?



### Hypothesis time!

What do you think will happen when you mix these colours together?

Yellow + Blue = \_\_\_\_\_

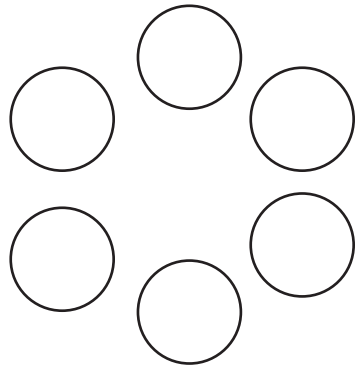
Red + Blue = \_\_\_\_\_

Red + Yellow = \_\_\_\_\_

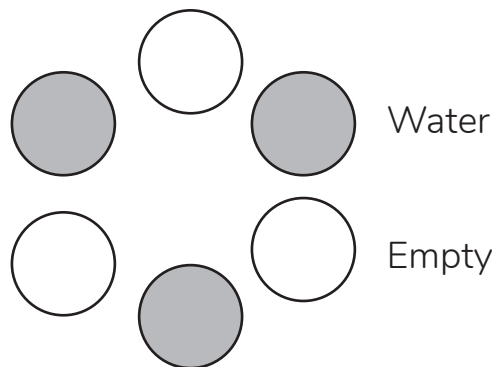


## Experiment time!

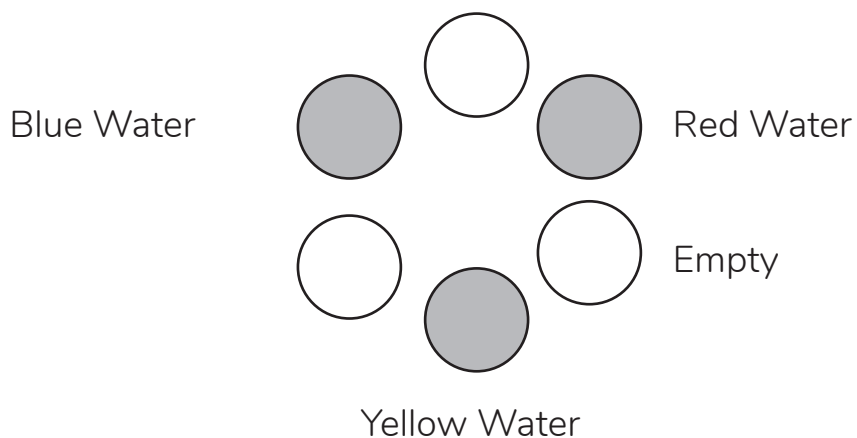
- 1 Place the cups in a circle, leave some space in between the cups like this:



- 2 Pour water 3/4 full into every other cup, leaving three empty

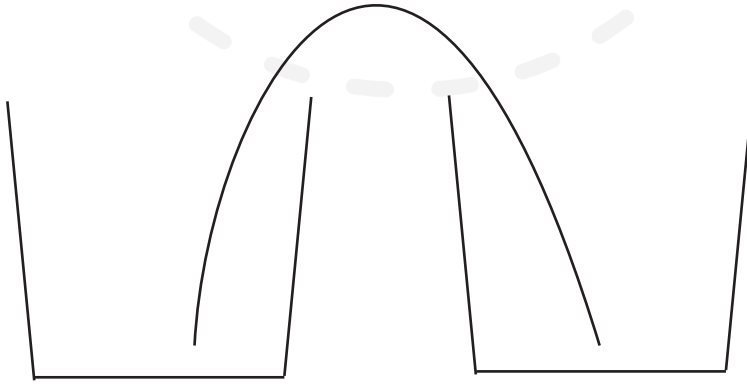


- 3 Add 4 drops of food colouring into the cups. One colour per cup.

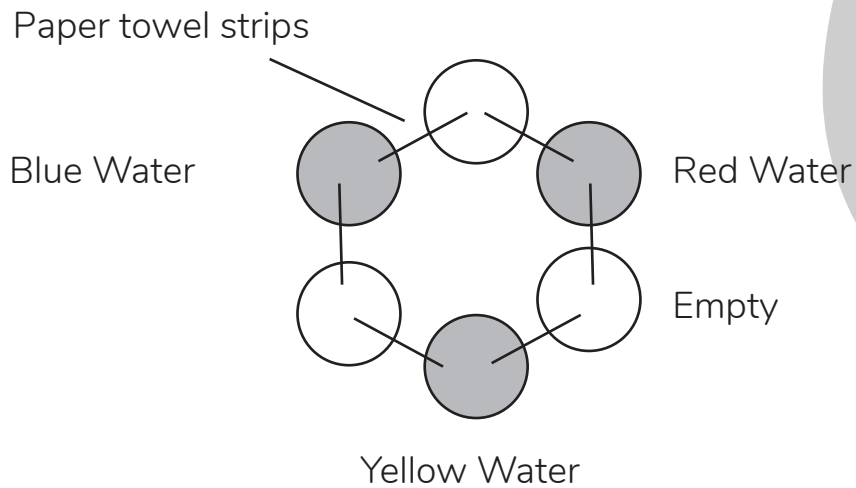


This activity continues on the next page!

- 4 Fold each paper towel into strips, they need to be long enough to touch the bottom of each cup when it's folded over.



- 5 Put one end of the paper towel into the empty cup and the other in the coloured water cup.

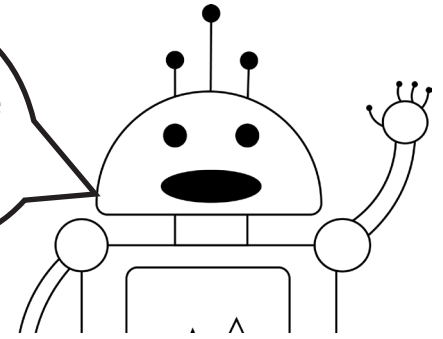


- 6 Watch and wait to see the empty cups start to fill up!

## Wheels and Axles

Axles are an important part of our lives. Pushing an object on a wheel and axle reduces friction, making it easier to move!

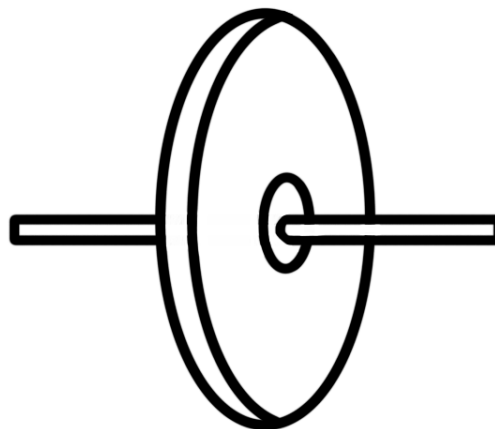
Searching for the wheels and axles in a pool of pictures is like searching an algorithm for specific information!

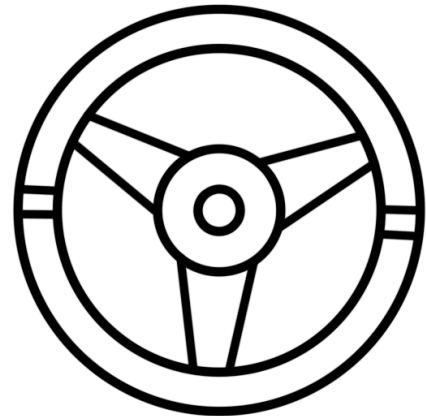
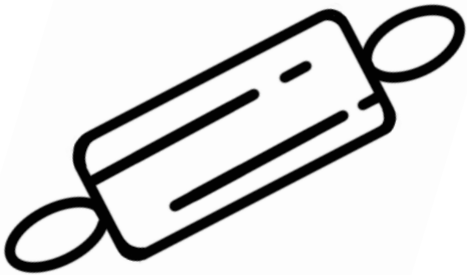
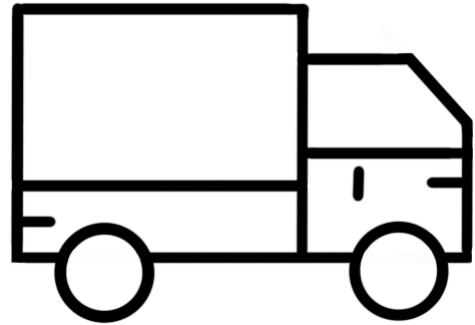
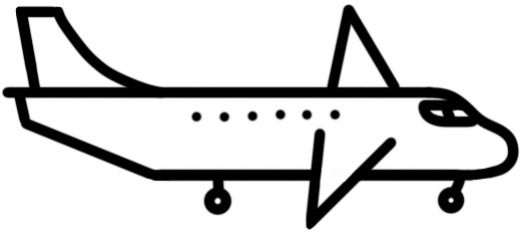
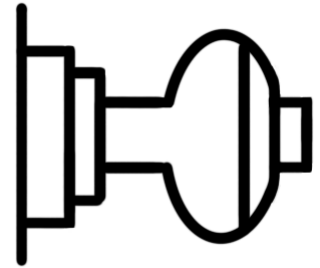
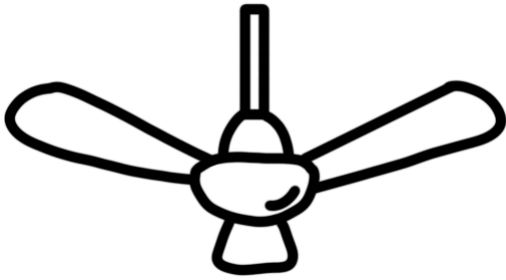
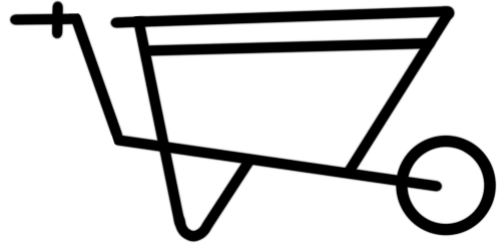
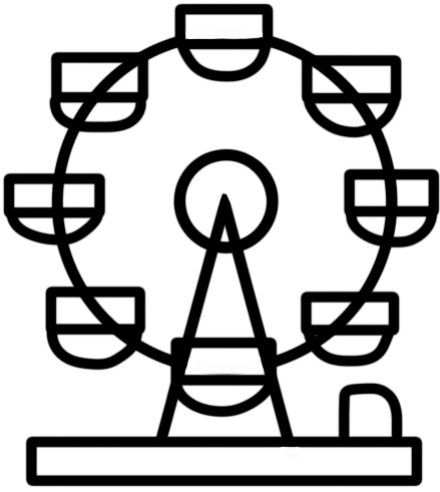


Grab a toy car you have and take a look at it. Put a finger on both of the front wheels and hold it there. What happens? The car should flop down against your hand.

Grab the back end of the car and move it while still holding the wheels. Notice how it moves? Think about how hard it would be able to move your car if it didn't move like that!

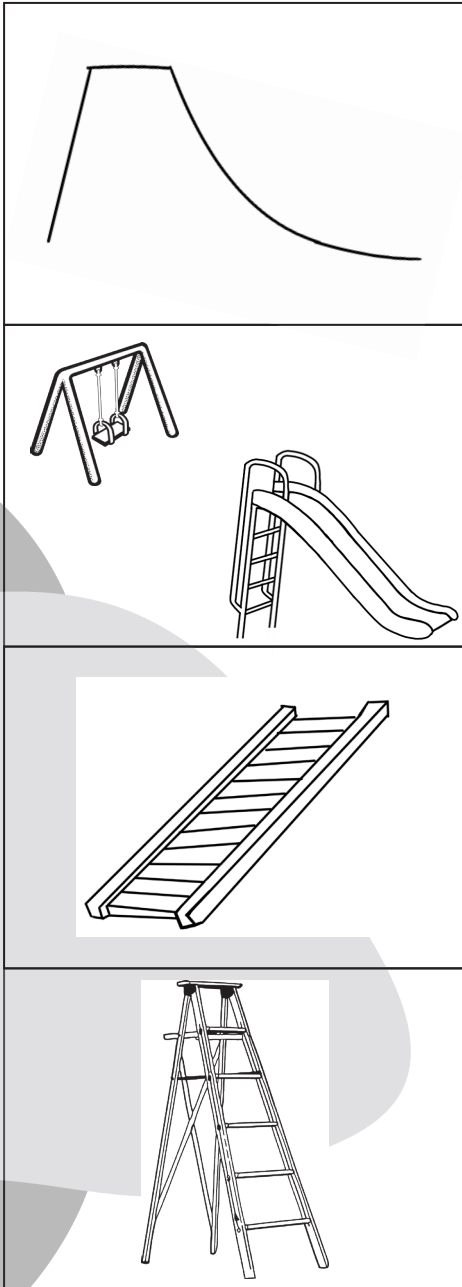
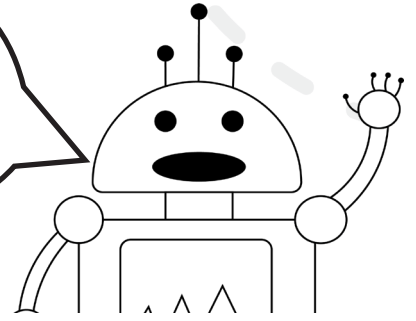
All of the objects below and on the next page (12) have a wheel and axle that are important to how they work and move. Colour in the wheel and axle (if you can see both) in green and colour the rest whatever colour you'd like!





## Are You Inclined to Solve This?

Can you help me **DEBUG** these situations? Just connect the correct inclined plane on the left that would solve the problem on the right.



## Friction Experiment



When things rub together there is a force between them. This force is called friction. Friction slows things down. The more friction there is, the slower the object will go. In this fun experiment you will try to see how far your object can go on different surfaces.



### What you will need:

- Your favourite toy car

### Surfaces to experiment on:

- Solid flooring (hardwood or laminate)
- Grass
- Carpet
- Sand
- Cement
- White paper
- Sandpaper
- Bubble wrap
- Aluminum (tin foil)
- Cardboard

Experiment on the surfaces you have around you that are on this list.

### Step One:

Pick a toy car.

### Step Two:

Try driving your car on the surfaces and circle whether it is easy, medium or hard to drive on it. On the next page, circle your answer for each surface you try!

Surface Type

How was driving on this surface?

Solid flooring  
(hardwood or  
laminated)

Easy

Medium

Hard

Grass

Easy

Medium

Hard

Carpet

Easy

Medium

Hard

Sand

Easy

Medium

Hard

Cement

Easy

Medium

Hard

White paper

Easy

Medium

Hard

Sandpaper

Easy

Medium

Hard

Bubble wrap

Easy

Medium

Hard

Aluminum (tin foil)

Easy

Medium

Hard

Cardboard

Easy

Medium

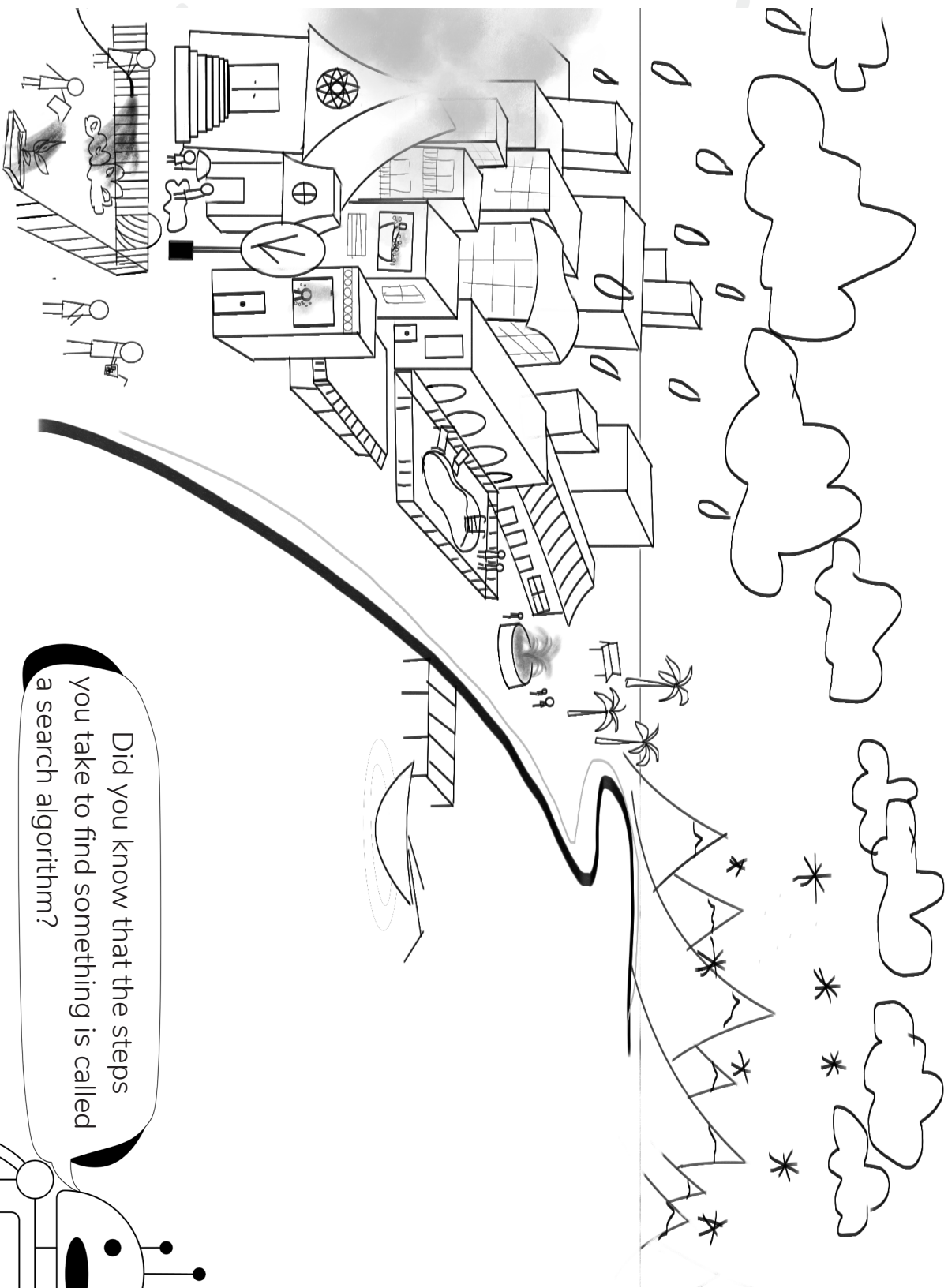
Hard

What did you learn from this experiment?

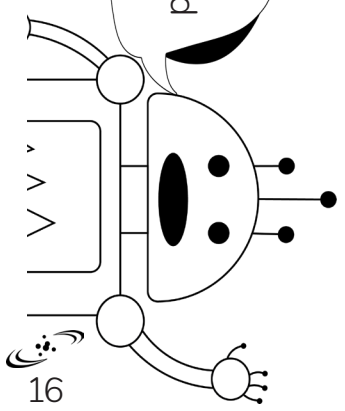
# Where's Water?

Grab your crayons and colour in all the water and water sources in this photo blue.

SLO : 2-4-10



Did you know that the steps you take to find something is called a search algorithm?





## Windy Weather Worries

Binary is the language computers know how to read. Usually, 1 means yes and 0 means no. For this activity, let's say that 1 means better, and 0 means worse.

Read through each story and decide if the change in temperature or wind makes things better or worse than before.

1

You want to have a nice bowl of ice cream for a snack, but you have to go clean up your toys first, so you leave the ice cream on the counter. Your dad turns up the thermometer.

**If your house gets hotter, this is:            1    or    0**



2

Your mom tells you to put on a coat before you go to the park. You say no because the sun is out, and you'll get too hot. At the park, a cool wind starts to blow and you wish you brought your coat.

**You're very cold, this is:            1    or    0**



3

A small pond full of fish, seaweed and bugs is doing well during the summer. There is a huge snowstorm in the fall and the pond doesn't have time to freeze over.

**If the fish get very cold, this is:            1    or    0**



4

In Niverville, a small local farm is drying up quickly due to a drought. Overnight, rain falls, and the fields cool the next few days.

**It gets colder! This is:            1    or    0**



5

You want to fly a kite, so you head outside and feel that there's no wind. You decide to still walk to the park and wait outside. The wind starts to pick up and soon you feel very strong winds.

**The wind speeds up! This is:            1    or    0**

6

A person living seaside is too hot and their air conditioning is broken! They go outside and feel a cool breeze start to blow off the water. This lowers the temperature.

**The wind is cold! This is:            1    or    0**

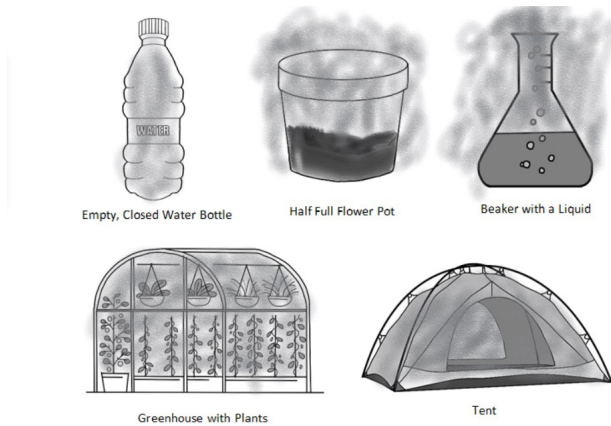


# Answer Keys

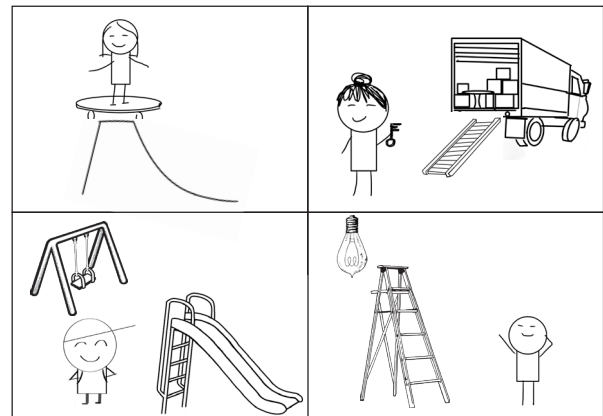
## The Circle of Life (pages 4-6)

Frogs and ducks are similar because they both start out as eggs. They are different than lions, who have cubs.

## Esiw's Gas Predictor (page 7)



## Are You Inclined to Solve This (page 13)



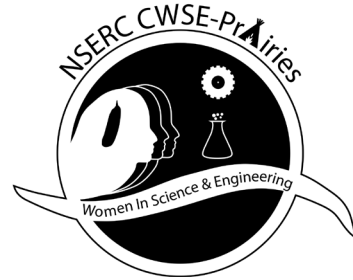
## Where's Water? (page 16)

Ocean, clouds, snowflakes, rain, snow on mountains, mist on the left side of the picture, two people watering their plants, puddle where two people are playing, glass of water in person's hand on the beach, person taking a shower in window, person taking a bath in the window, swimming pool, water fountain.

## Windy Weather Worries (pages 17-18)

1. 1
2. 0
3. 0
4. 1
5. 1
6. 1

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