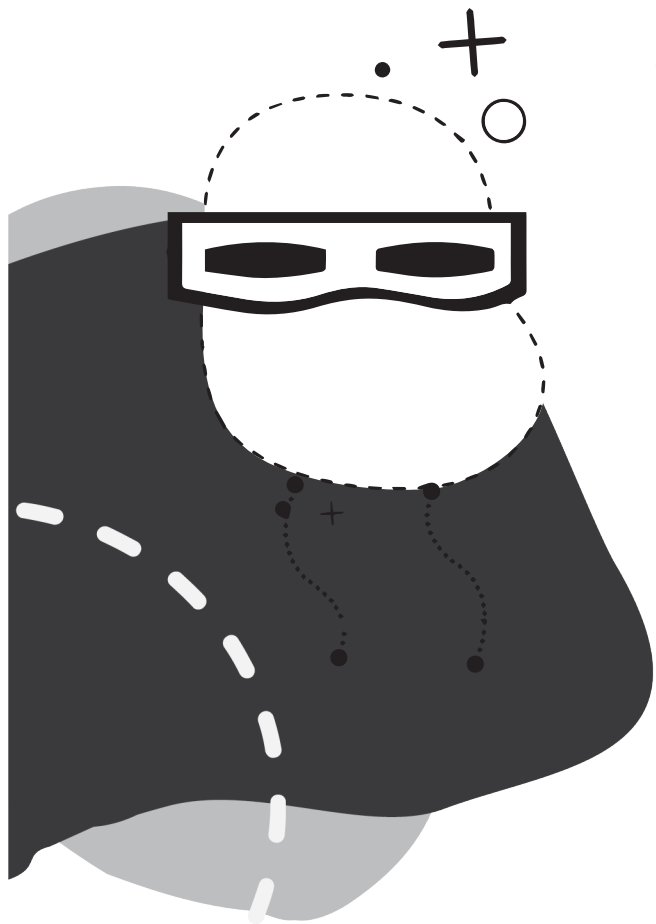


WISE Activity Booklets

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



University
of Manitoba

WISE Kid-Netic Energy is a proud member of Actua

A network
member of
actua.ca

actua
Youth · STEM · Innovation

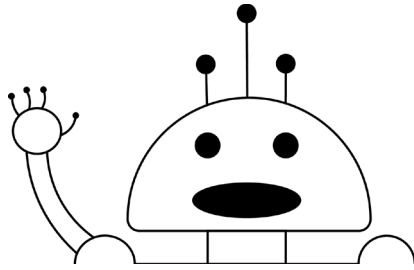
With funding from
Canada



DIY Activities
Puzzles
Challenges
... and more!

Grade 5
MAY 2020

Science Topic 1 - Science Topic 2 - Science Topic 3
Science Topic 4 - Science Topic 5



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 5 booklet, the science topics you will be exploring are: forces and simple machines, maintaining a healthy body, properties of and changes in substances and weather!

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!

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

Brenna

Kajal

Kajal is in her first year of Computer Science and is pursuing a Bachelors of Computer Science. She loves to read, sketch, and make things. She is excited to visit new places across Manitoba and work with kids!

Katy has completed her second year of Biosystems Engineering at the University of Manitoba and is passionate about environmental sustainability and working with kids. In her spare time she enjoys running, painting, and spending time outside.

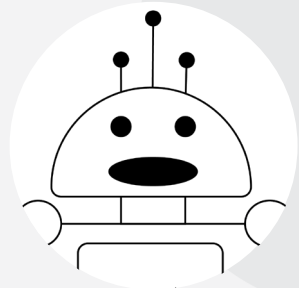
Katy

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.

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!

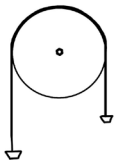
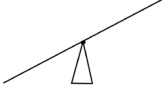
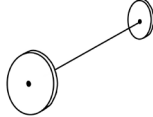





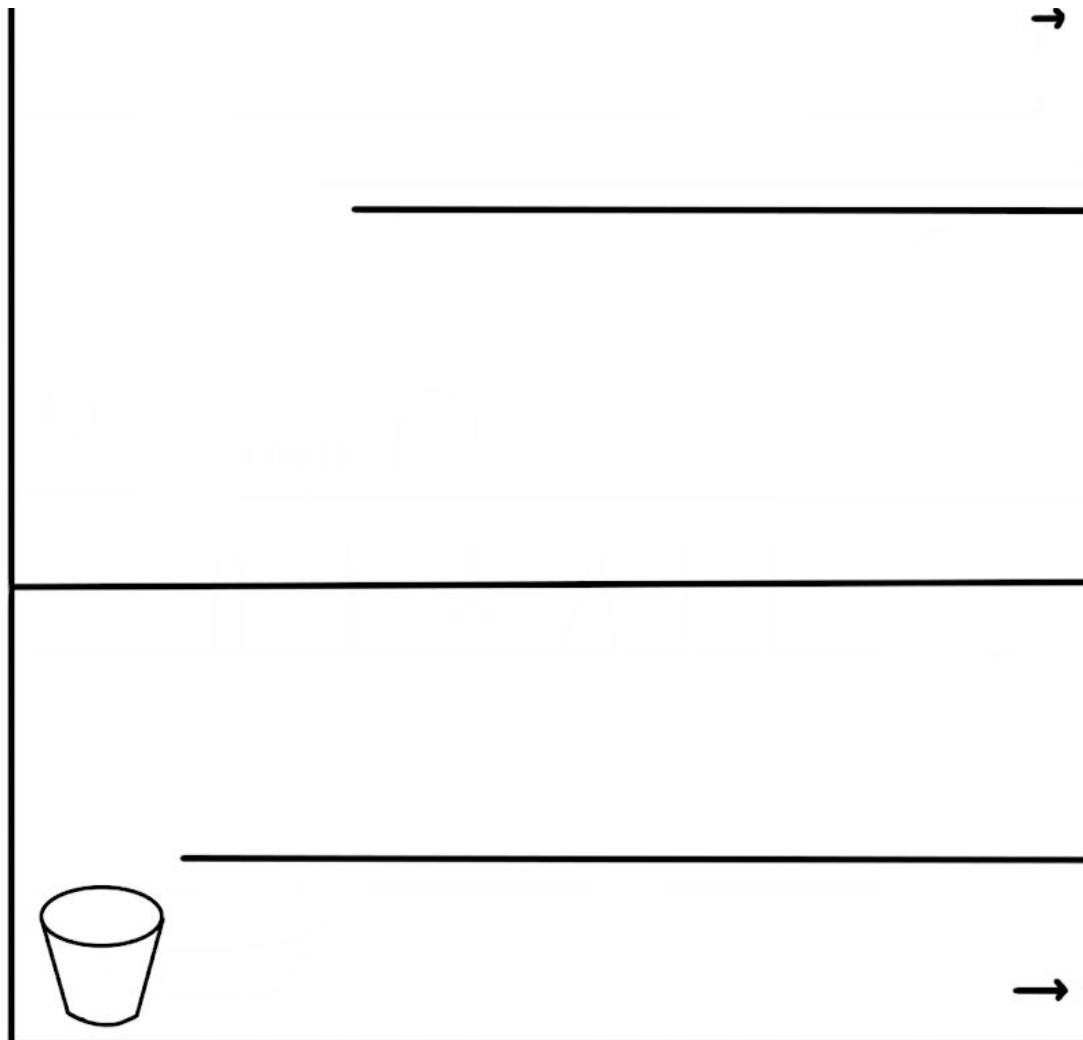
Complete the Chain Reaction!

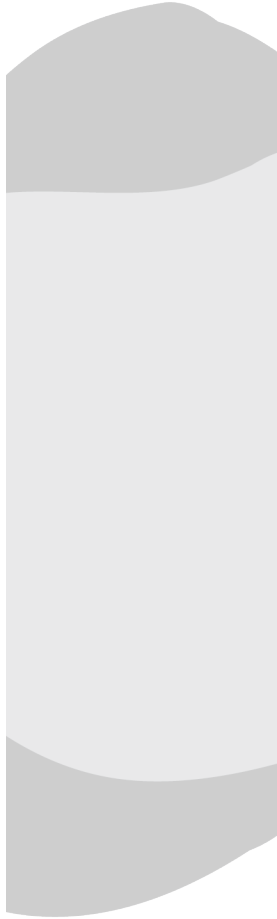
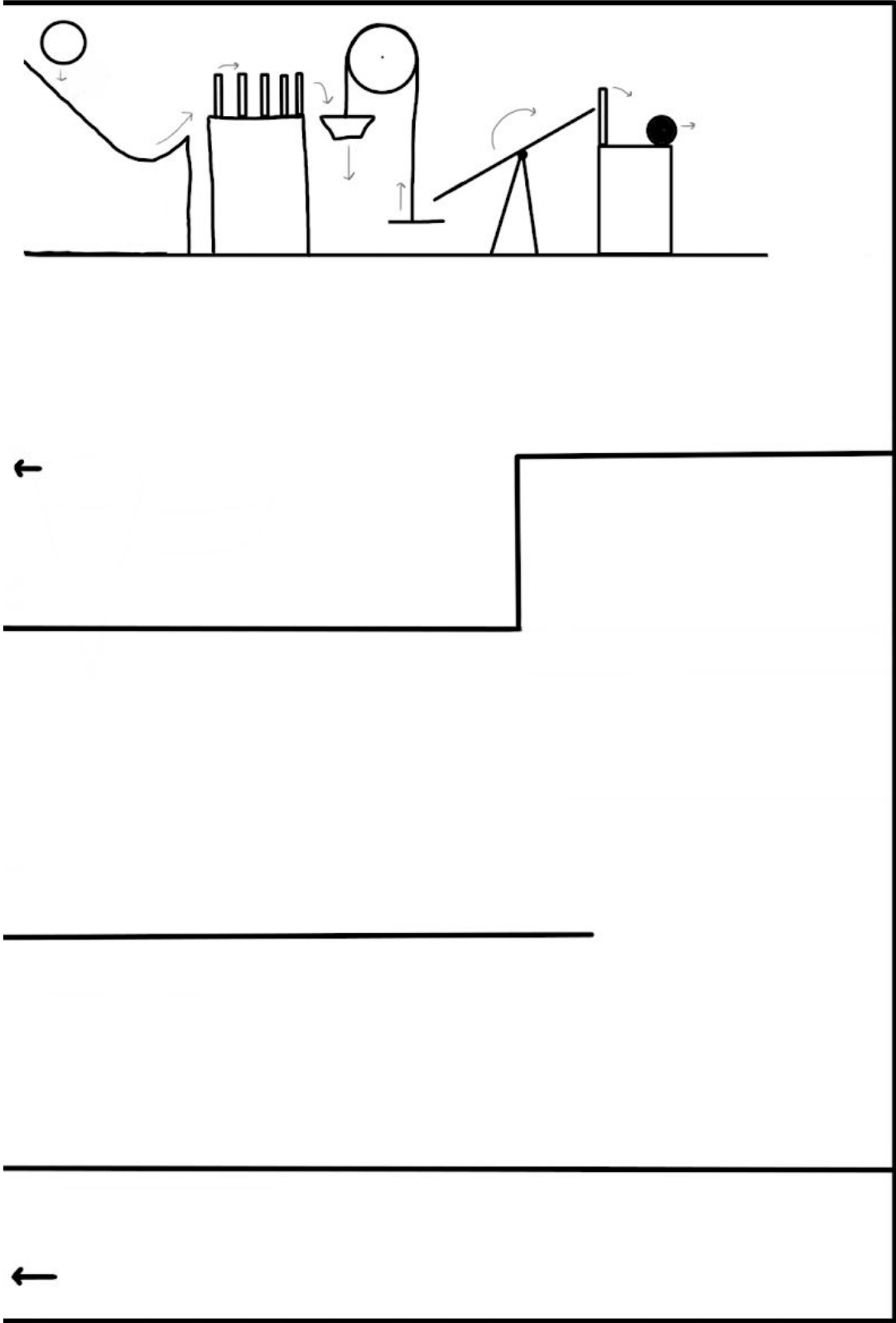
Use your imagination to complete the chain reaction! Draw simple machines and objects that will help the black ball land in the bucket at the bottom of the page. Think about how gravity will affect the movement of different pieces. Feel free to doodle arrows to help visualize where the ball will go!

To see the full activity, attach the two pages together at the arrows.

Here are some simple machines you can include:

Pulley	Lever	Wheel and axle	Screw	Inclined plane	Wedge
					

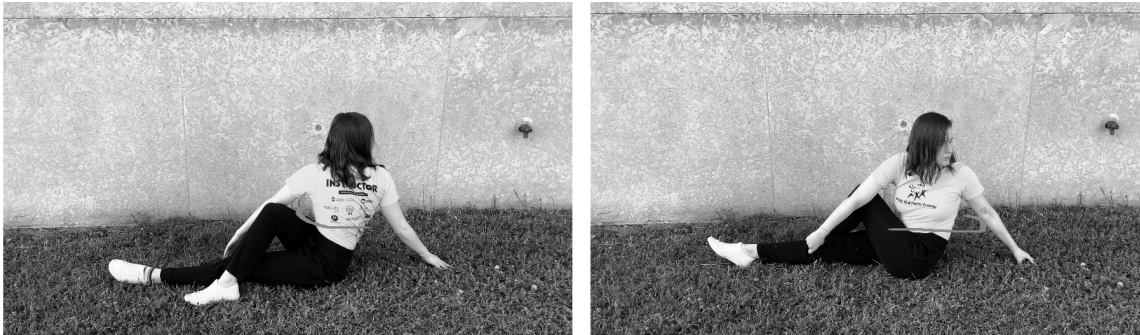




Simple Machine Stretches

There are simple machines all around us, but did you know you can make them with your body? Lots of common stretches and exercises use the same movement as the six simple machines: screws, wedges, levers, pulleys, inclined planes and wheel & axles.

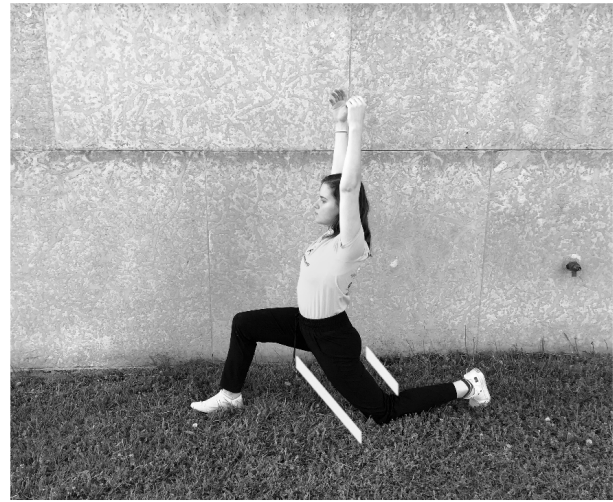
Try out the stretches shown in the images below. Can you name what Simple Machine your body becomes after doing each stretch?



Simple machine: _____



Simple machine: _____



Simple machine: _____



Simple machine: _____

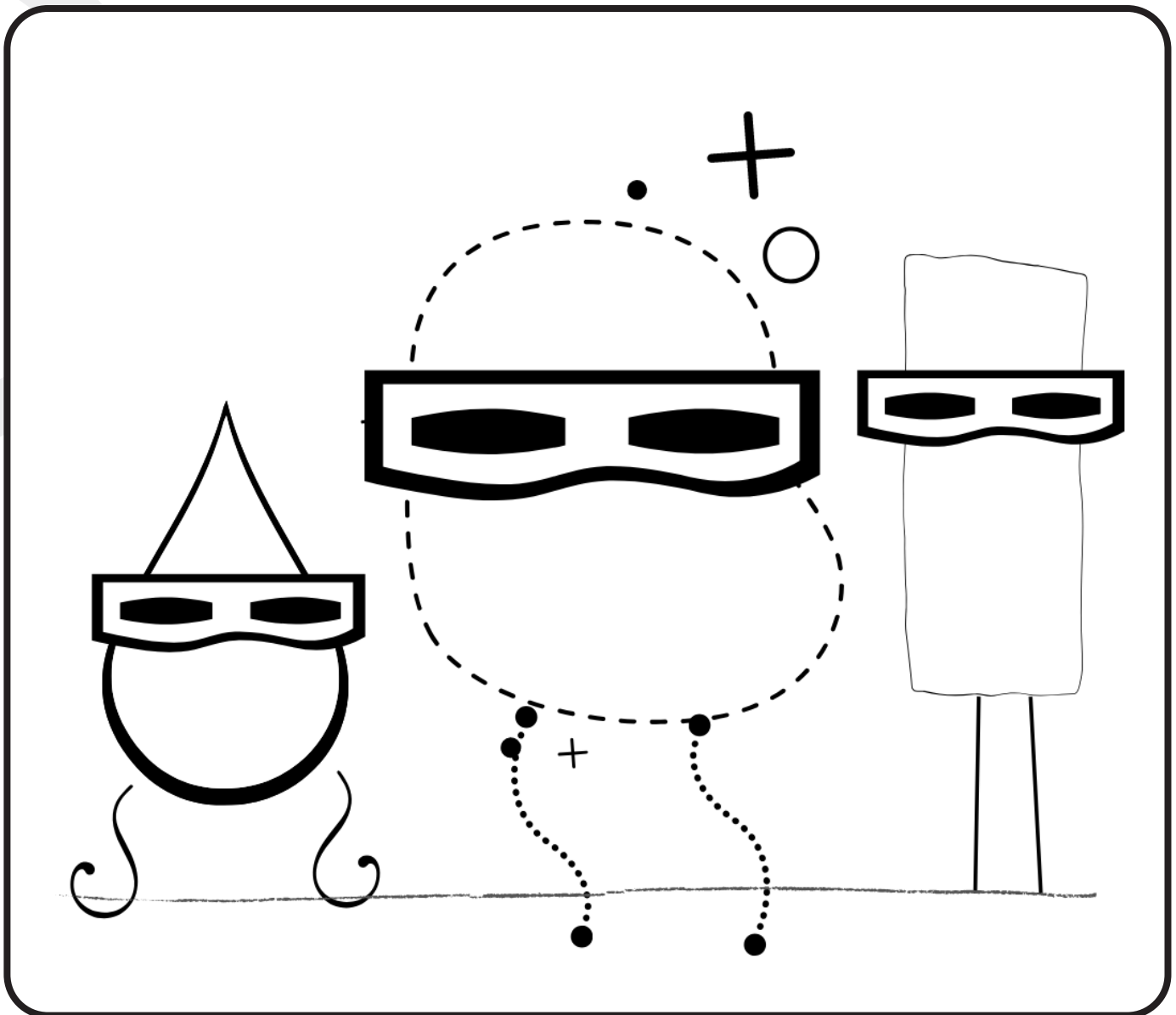
Now it's your turn! Try your own stretches to make a Simple Machine with your body!

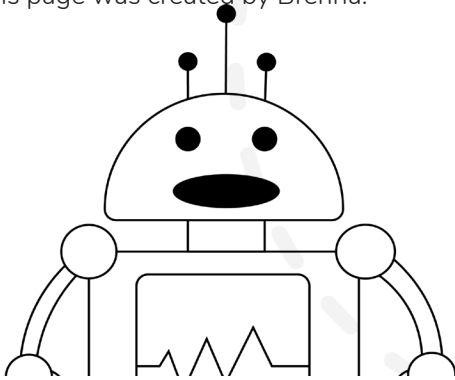
Do you know other exercises besides stretching where your body acts like a simple machine? Try them out and name the simple machine you created!

Our Body's Superheroes!

Did you know that our body is always fighting off diseases and viruses? Our body's superheroes are our tears, skin and white blood cells. That's right! Tears aren't only there to make you sad, they actually keep our eyes moist so that germs can't enter our body. Our skin protects us from bad bacteria and white blood cells fight off any bacteria that gets in!

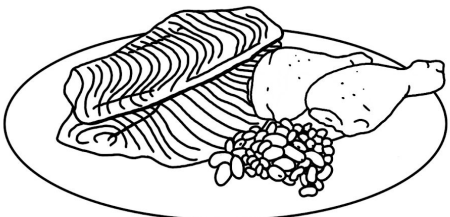
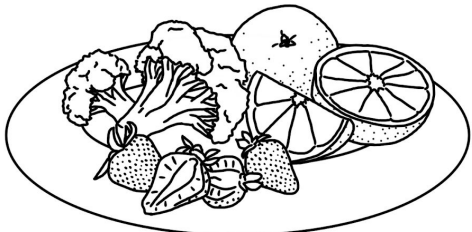
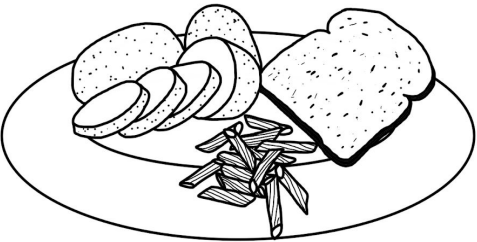
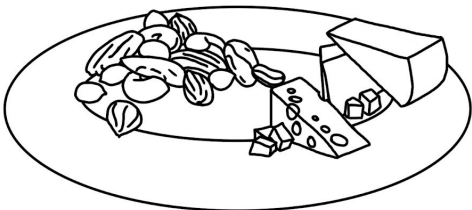
Can you finish drawing what you think your body's superhero team looks like in the box below? Do they wear capes or uniforms? Don't forget to color it in!





Food Inputs and Outputs

Esiw the Robot is studying people to learn more about them. They have noticed that our bodies are like machines, and different food inputs help our bodies in different ways. Can you match the food to how it helps your body stay healthy? Draw lines to connect each input to its output.

Input	Output
 <p>(beans, fish, chicken)</p>	Fats for healthy skin
 <p>(oranges, broccoli, berries)</p>	Carbohydrates for energy
 <p>(potatoes, bread, pasta)</p>	Vitamins and minerals for growth and nourishment
 <p>(nuts and cheese)</p>	Protein for muscle growth

The Changes and States of Matter (Part 1): An Introduction

To understand states of matter first we need to learn about matter and mass. Matter is anything that has mass and takes up space. Look around your room! Matter is all around you. All matter is made up of little particles called molecules, and mass is a number that tells us how close together these particles are.

The three states of matter are **solid, liquid** and **gas**. These states tell us how far apart the molecules in an object are.

The three states of matter:

Solid: The molecules in a solid state are super close together. They are so close together that objects in a solid state are hard and they don't easily change shape. Some examples of solids are a table, your clothes, and skateboard. Can you think of more?

Liquid: The molecules in a liquid are still close to each other, but not as close as they are in a solid state. Since the molecules are a little farther apart liquids can take the shape of any container (but it can also overflow). Some liquids are water, hot chocolate, and milk. How many more can you think of?

Gas: The molecules in a gas are very far apart. They are so far apart that sometimes they can let go of each other completely. They move around way more freely, this means that gas can fit in a bunch of different sized containers (without overflowing like liquids).

What's interesting is that we can change the states of matter! One way to do this is by adding or taking away heat (energy).

Some of the ways we can change states are:

Evaporation: we add heat to a liquid in order to excite the molecules. The matter then changes from a liquid to a solid.

Melting: we add heat to a solid to melt it, this results in a liquid.

Condensation: we remove heat from a gas to turn it into a liquid.

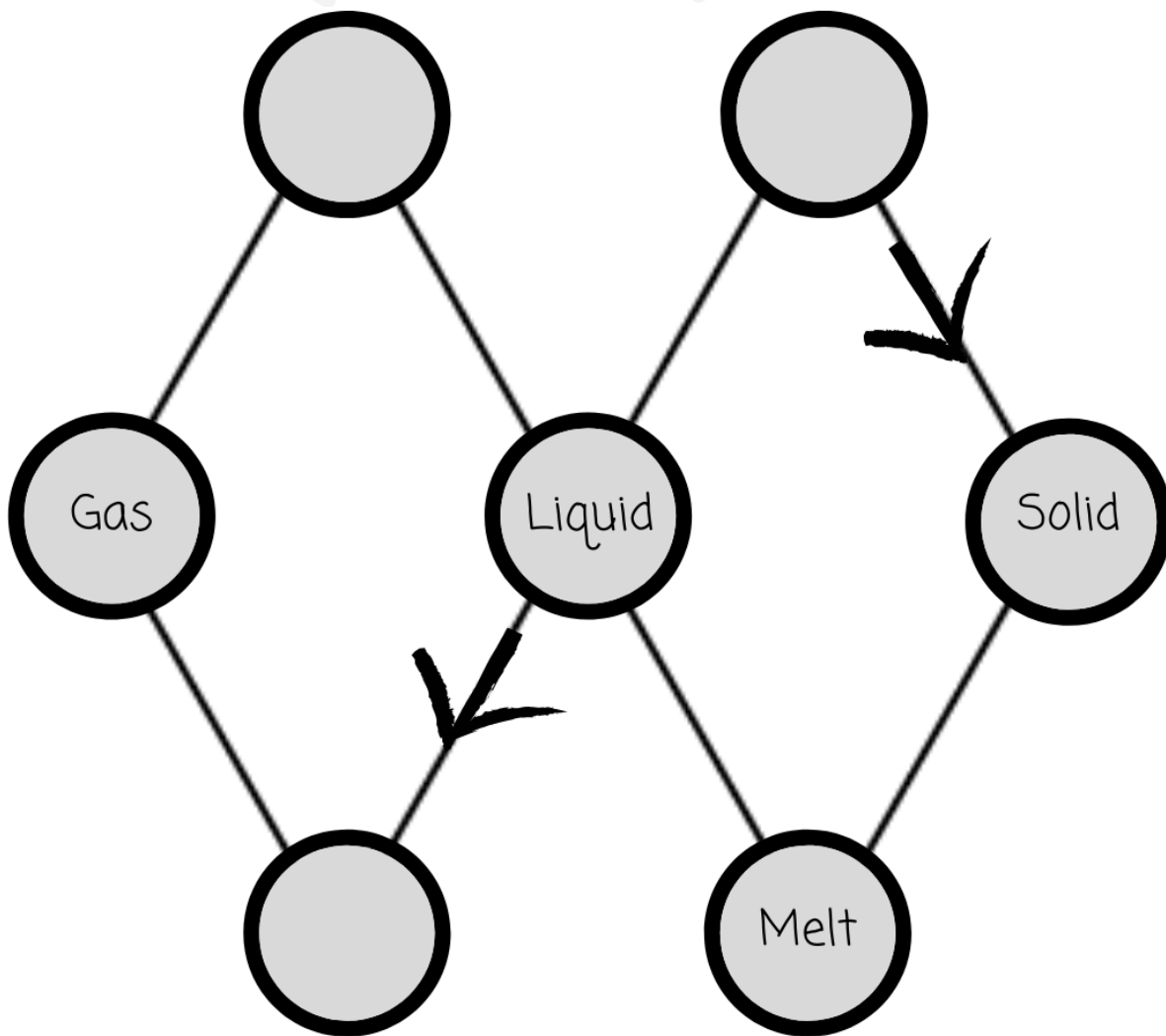
Freeze: we remove heat from a liquid by freezing it and it turns into a solid!

Can you figure out how these changes affect water? Look at the next page to try!

The Changes and States of Matter (Part 2): Changes in State

The diagram below is a graph! It shows us the process water goes through when it changes from one state to another. Label the bubbles below with the correct processes and draw the missing arrows to connect them.

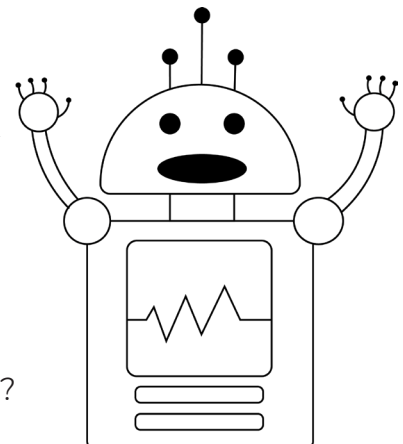
The processes are: **condensation**, **evaporation**, **melting**, and **freezing**.



Did you know that computers like me often use graphs just like this to understand things? These graphs help computers relate things to each other!

Some changes are reversible! That means that you can change the material back to how it already was. You can find reversible changes on this graph by drawing loops. These 'loops' are called circuits.

For example, can you start at gas and follow the lines to get back to gas? That's a reversible change!



Create your own Restaurant!

Have you ever wanted to be a professional chef or have your own restaurant? Well, here's your chance! Create a menu for your very own restaurant using all you know about food and nutrition.

Fill out the templates on the next few pages. Here are some things you should think about before building your menu:

- What are you going to call your restaurant?
- What will be the theme of your restaurant?
- What type of food will you serve?
- What will you call your dishes?
- What ingredients will you put in them?

When picking what you want to serve in your restaurant, make sure you think about each dish's nutritional value. How are you going to promote healthy eating in your restaurant? Do your dishes have:

- Proteins
- Fats
- Carbohydrates
- Fruits
- Veggies
- Meats
- Dairy products
- Grains

Feel free to use the space below to brainstorm ideas about your restaurant.
Bon Appetite!

Thanks for eating at my restaurant!
Here's a little more about it:

I named my restaurant _____ and gave it a _____ theme.
It is _____ cuisine because _____.

I included all of my favourite appetizers, main course dishes, desserts and drinks.
I hope you enjoyed the dishes served, see you next time!

WELCOME TO

_____ CUISINE

ESTABLISHED 2020

The Ultimate Healthy Body Wordsearch

K Q Z Q E P R O T E I N O O N O S E Q A
Q K L A R G E I N T E S T I N E S D Y I
N G R A I N S N T E N D O N S R N U L J
U I E X E R C I S E F C Q T R A C H E A
T D W Z F Q H B R A I N N E R V E S S M
R I P O T E A R S E R V I N G S I Z E U
I Y M A J K Y O K P V E G E T A B L E S
E C E E B L O O D V E S S E L S P T R C
N J A W A T E R B E S O P H A G U S Y L
T D T W H I T E B L O O D C E L L S Z E
S A S Z O S M A L L I N T E S T I N E S
H I S T O M A C H C Z L C Y U J I L T T
C R V I T A M I N S M I I S N F B U E C
T Y M M V R H E A R T Y E G L B T N E B
E J D L O J A I J W U L S F A E M G T F
G M C S T S P I N A L C O R D M E S H R
S K E L E T O N D S A F A T S D E P M U
C A R B O H Y D R A T E S C W K N N K I
B M O U T H I C M I N E R A L S T L T T
Y N S K I N S F O O D G R O U P C F V S

Word List

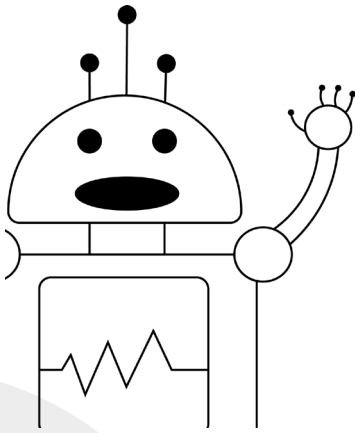
BLOOD VESSELS
BRAIN
CARBOHY-
DRATES
DAIRY
ESOPHAGUS
EXERCISE
FATS
FOOD GROUP
FRUITS

GRAINS
HEART
LARGE INTESTINE
LIGAMENTS
LUNGS
MEATS
MINERALS
MOUTH
MUSCLES
NERVES

NOSE
NUTRIENTS
PROTEIN
SERVING SIZE
SKELETON
SKIN
SLEEP
SMALL INTESTINE
SPINAL CORD
STOMACH

TEARS
TEETH
TENDONS
TRACHEA
VEGETABLES
VITAMINS
WATER
WHITE BLOOD
CELLS

The Science of Weather (Part 1): The Forecast



Esiw the Robot wants to learn about the weather! Weather can be defined as the state of the atmosphere. A person who studies the science of weather is called a meteorologist and their job is to make a weather forecast, meaning a prediction of future weather conditions.

When making predictions, meteorologists must consider short-term and long-term weather trends. Clouds, precipitation, and temperatures help with short-term predictions, and long-term weather trends include seasons and climate change. Your job is to make a forecast for the next seven days to show Esiw how weather can be predicted before it happens. Start by filling out the Weekly Weather Forecast below!

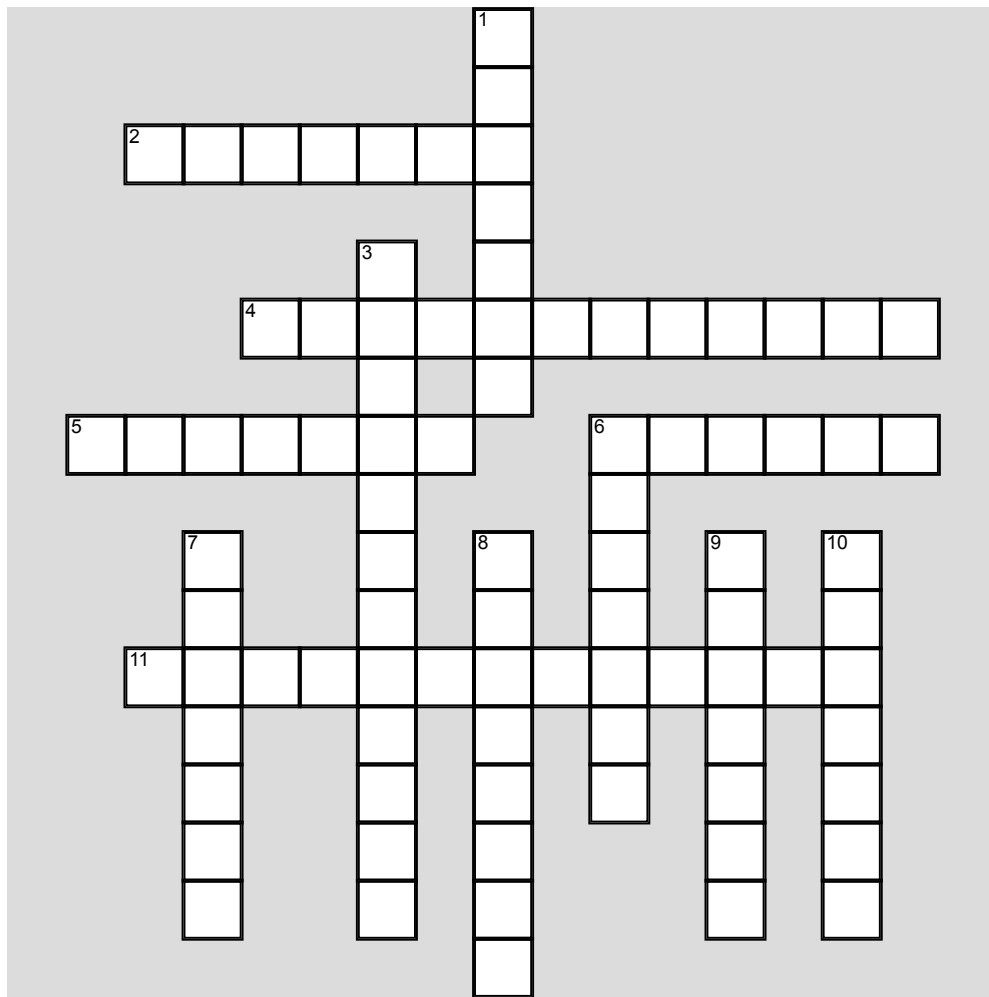
Day of the Week	Picture	Information
Example Date: _____ May 1, 2020 _____		Temperature: High +5, Low -5 C Precipitation: Snow in the morning, rain in the afternoon Wind Conditions: 10 km/hr North
Monday Date: _____		Temperature: _____ Precipitation: _____ Wind Conditions: _____
Tuesday Date: _____		Temperature: _____ Precipitation: _____ Wind Conditions: _____
Wednesday Date: _____		Temperature: _____ Precipitation: _____ Wind Conditions: _____
Thursday Date: _____		Temperature: _____ Precipitation: _____ Wind Conditions: _____
Friday Date: _____		Temperature: _____ Precipitation: _____ Wind Conditions: _____
Saturday Date: _____		Temperature: _____ Precipitation: _____ Wind Conditions: _____
Sunday Date: _____		Temperature: _____ Precipitation: _____ Wind Conditions: _____

The Science of Weather (Part 2): The Logbook

Now it's time to record the weather conditions each day for a week to show Esiw how to keep a scientific logbook. After one week of recording the weather below, you can compare the logbook with your predictions from your weather forecast. How accurate were your predictions? Remember, not even meteorologists can make predictions that are guaranteed to be accurate, so don't worry if the weather didn't follow your forecast. Have fun trying the work of a meteorologist by filling out the Weekly Weather Logbook below!

Day of the Week	Picture	Information
Monday Date: _____		Temperature: _____ Precipitation: _____ _____ Wind Conditions: _____ _____
Tuesday Date: _____		Temperature: _____ Precipitation: _____ _____ Wind Conditions: _____ _____
Wednesday Date: _____		Temperature: _____ Precipitation: _____ _____ Wind Conditions: _____ _____
Thursday Date: _____		Temperature: _____ Precipitation: _____ _____ Wind Conditions: _____ _____
Friday Date: _____		Temperature: _____ Precipitation: _____ _____ Wind Conditions: _____ _____
Saturday Date: _____		Temperature: _____ Precipitation: _____ _____ Wind Conditions: _____ _____
Sunday Date: _____		Temperature: _____ Precipitation: _____ _____ Wind Conditions: _____ _____

Weather Phenomena Crossword



Across

- 2 The atmospheric conditions of a region at a specific time
- 4 A storm with heavy rain or hail, lightning or thunder
- 5 Fluffy clouds with a flat base
- 6 Wispy clouds that are high above the ground
- 11 Rain, snow, sleet or hail

Down

- 1 A rapidly spinning and dangerous column of air
- 3 Rain or thunderstorm clouds
- 6 The weather trends in a region over a long period of time
- 7 Layered clouds that are close to the ground
- 8 A long severe thunderstorm
- 9 Warm, dry winds that happen at the edge of the mountain ranges
- 10 Concentrated patches of sunlight to the left and right of the sun

Word Bank

BLIZZARD
CHINOOK
CIRRUS

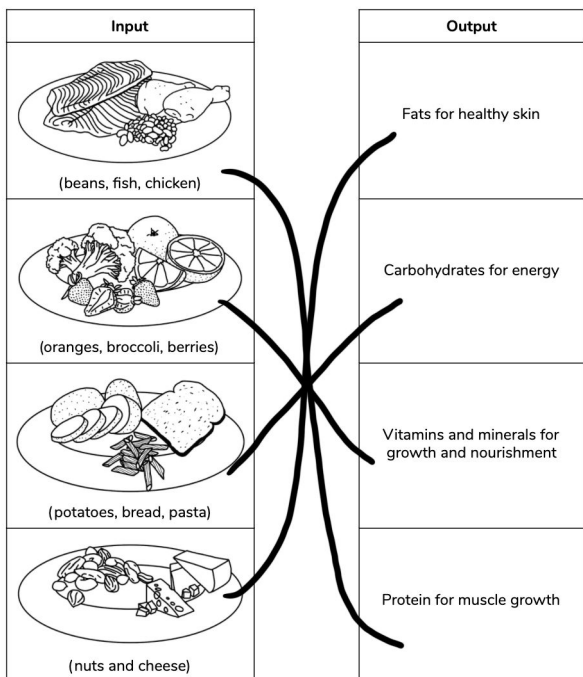
CLIMATE
CUMULONIMBUS
CUMULUS

PRECIPITATION
STRATUS
SUNDOGS

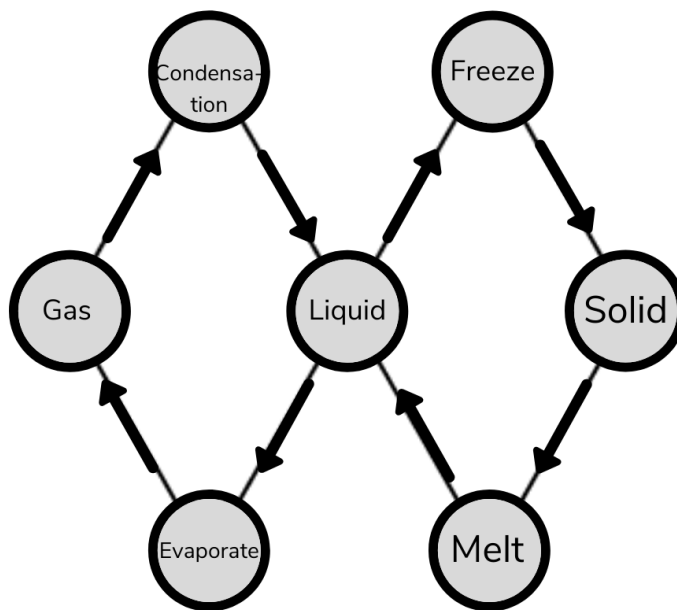
THUNDERSTORM
TORNADO
WEATHER

Answer Keys

Food Inputs and Outputs (Page 9)



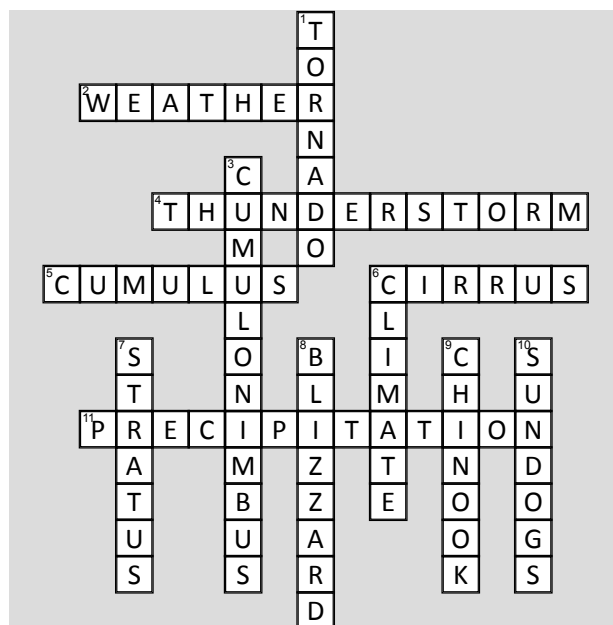
Changes in State (Page 11)



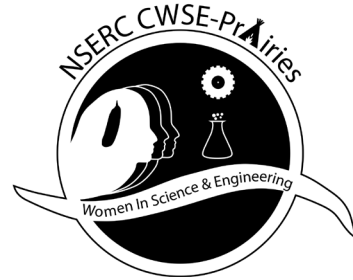
The Ultimate Health Wordsearch (Page 15)

K Q Z Q E PROTEIN O O NOSE Q A
 Q K LARGE INTESTINE S D Y I
 N GRAINS N TENDONS R N U L J
 U I EXERCISE F C Q TRACHEA
 T D W Z F Q H BRAIN NERVES S M
 R I P O TEAR SERVINGS I Z E U
 I Y M A J K Y O K P VEGETABLES
 E C E E BLOODVESSELS P T R C
 N J A WATER B ESOPHAGUS Y L
 T D T WHITE BLOOD CELLS Z E
 S A S Z O SMALL INTESTINE S
 H I STOMACH C Z L C Y U J I L T T
 C R VITAMINS M I I S N F B U E C
 T Y M M V R HEART Y E G L B T N E B
 E J D L O J A I J W U L S F A E M G T F
 G M C S T SPINALCORD M E S H R
SKELETON D S A FATS D E P M U
CARBOHYDRATES C W K N N K I
 B MOUTH I C MINERALS T L T T
 Y N SKIN S FOOD GROUP C F V S

Weather Phenomena Crossword (Page 18)



Thanks to our Amazing Sponsors!



MOTOROLA SOLUTIONS
FOUNDATION



ENGINEERS
GEOSCIENTISTS
MANITOBA

green équipe
team verte
.....
Manitoba 



NSERC
CRSNG



UM | Price Faculty
of Engineering



faculty of SCIENCE
discover the unknown + invent the future

WISE Kid-Netic Energy is a proud member of Actua.

A network
member of
actua.ca

actüa
Youth · STEM · Innovation

With funding from
Canada 

For more fun, STEM content, visit us at wisekidneticenergy.ca and follow us on social media!



@wisekidnetic

WISE Kid-Netic Energy