

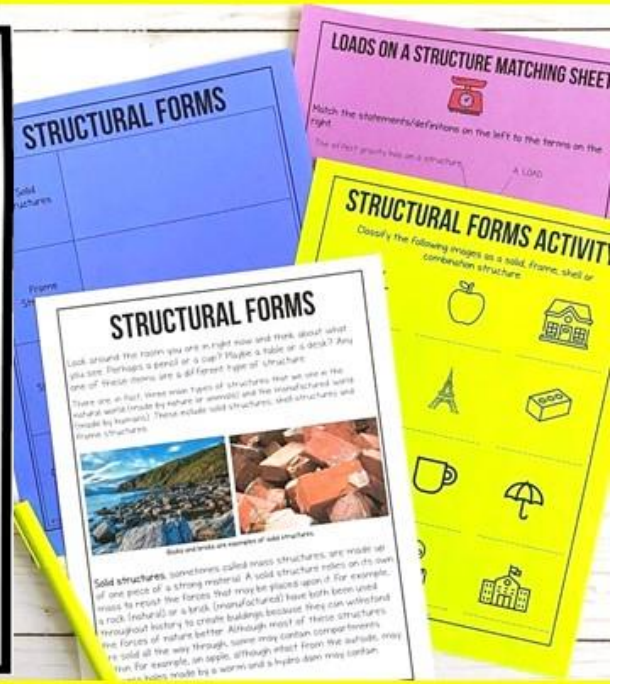
GRADE 7/8 SCIENCE BUNDLE PDF & DIGITAL FORMATS

RESOURCE INCLUDES

1. Aligned to the 2022 Ontario Science Curriculum
2. 150 Differentiated Lessons
3. 8 Units
4. MP3 Audio Files
5. Detailed Unit Plans
6. Answer Keys & Assessment Rubrics
7. Quizzes & Unit Tests
8. Hands On Science Labs
9. Inquiry Activities
10. 8 Digital Escape Rooms
11. Split Grades Teaching Plan
12. Sub Plans
13. Print & Digital Formats

Bundle

- ✓ 8 Units
- ✓ 150 Lessons
- ✓ MP3 Audio Files
- ✓ Hands-On Labs
- ✓ Inquiry Activities
- ✓ Split Grades Plan



2022 ONTARIO CURRICULUM



2 Peas and a Dog
Middle School Teaching Resources



8 FULL SCIENCE UNITS



Grade 7 Science Interactions in the Environment

PDF & Digital Formats



Grade 7 Science Heat in the Environment

PDF & Digital Formats



Grade 8 Science Cells

PDF & Digital Formats



Grade 8 Science Systems in Action

PDF & Digital Formats



Grade 7 Science Pure Substances and Mixtures

PDF & Digital Formats



Grade 7 Science Understanding Structures

PDF & Digital Formats



Grade 8 Science Fluids

PDF & Digital Formats



Grade 8 Science Water Systems

PDF & Digital Formats



TEACHER FEEDBACK

Stop using your evenings and weekends to plan your science program. Use these detailed ready-to-go lessons that include videos, readings, inquiries, labs, assessments and digital escape rooms.

“This is such a life saver! I’ve just started using it with my class for the heat/water units...amazing!” – Sarah N.



“I have a difficult 7/8 split this year—and this resource has helped one group stay on task while I work with the other. It has saved my science period.” – Daniela L.

WHAT'S INSIDE?



GRADE 7 & 8 SCIENCE

Grade 7 Science	Grade 8 Science
September & October 1. Pure Substances and Mixtures	September & October 1. Fluids
November, December, January 2. Understanding Structures and Mechanisms	November, December, January 2. Systems in Action
January, February, March 3. Heat in the Environment	January, February, March 3. Water Systems

SPLIT GRADE TEACHING PLAN

- For Grade 7 Science, teach units 3 & 4 alongside Geography. If your school teaches Geography during the first part of the year, reverse the order of units taught.
- For Grade 8 Science, teach Unit 3 Water Systems alongside Grade 8 Geography. These units complement the Geography units.

DAILY LESSON PLANS

LESSON #1

Unit Vocabulary

Lesson Overview:

Students will work on reviewing the vocabulary for this unit.

Materials Needed:

- Photocopy a class set or use the provided Google Slides version of the:
 - Vocabulary sheets (QR Code or Non-QR Code option)
 - Vocabulary graphic organizer
 - Definitions (for IEP and ESL students)
 - [Definitions Google Slides](#)

Teacher Instructions:

- Hang the vocabulary words up around the classroom using QR code or non-QR code format.
- Divide the class up into groups of 4.
- Have students walk around the classroom or hallway and uncover the mystery words. Students need to scan the QR code to uncover the mystery word. Once they have uncovered the mystery word, have them write it on the vocabulary organizer sheet.
- This activity can be done digitally by making a copy of the Google Slides version for each group.
- Once students have completed this activity - definitions as a class using the [provided slide](#) sheets.

LESSON #4

Processes and Components of a System

Lesson Overview:

Students will identify the various processes and components of a system that allow it to perform its function efficiently and safely.

Materials Needed:

- Reliable technology (computer, internet, data projector)
- Video 1: [How are Robots Built?](#)
- Video 2: [Robot delivers food for Toronto Restaurants / CBC Kids News](#)
- Article: [These Little Pink Robots Deliver Food Across Toronto](#)
- Photocopy a class set or use the provided Google Slides version of the:
 - Robot Brainstorming Activity
 - Processes and Components of Robots article
 - Processes and Components of Robots graphic organizers
 - Understanding Processes and Components of Systems Research Activity
 - Research Websites sheet

WHAT'S INSIDE?



ASSIGNMENTS & GRAPHIC ORGANIZERS

115 LESSONS

EVOLUTION OF A SYSTEM

Instructions: Through a presentation, you are asked to choose a system and research the social factors that have influenced its evolution.

Presentation Requirements:

1. Name and picture of the system.
2. An explanation of how the system was originally developed, and how people could adapt to make it better.
3. A description of the following:
 - How has society, or how have people, influenced the system's development?
 - Why the evolution was necessary and how it happened.
4. Source list - remember to keep track of the websites or books used.
5. The presentation needs to be organized, easy to read, and informative.

Possible Topics (but not limited to these):

- Recycling centres
- Elevators
- Roller coasters
- Air conditioning units
- Changing traditional work hours
- Hospitals
- Health care systems
- Bikes

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ENERGY IN MECHANICAL SYSTEMS

How do mechanical systems produce heat?

What is friction?

How does it work?

Provide an example.

In what ways can you make a mechanical system more efficient?

Think of another example of a mechanical system that produces heat due to friction.

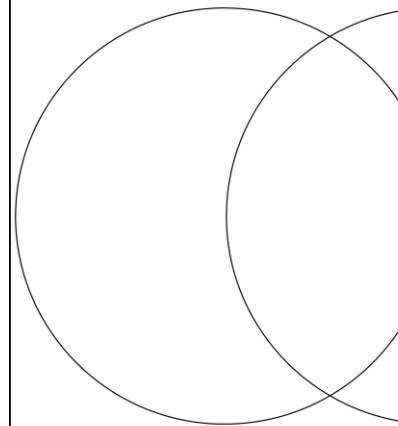
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VENN DIAGRAM: PLANT VS. ANIMAL CELLS

As you watch the video, note any similarities and differences you hear between plant and animal cells.



Plant Cells



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CALCULATING DENSITY

Why Calculate Density?

If we learn how to calculate density, we can understand how dense each material is. The density of solids is g/cm^3 , whereas liquids is kg/L .

How is density calculated?

Density is calculated using the equation $p=m/v$.

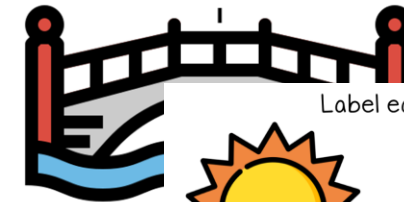
Dens

Note: The Greek word for density is ρ . The equation shows $p=m/v$.

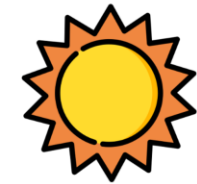
In any given problem, if you are given the mass and volume, you need to divide the mass by the volume.



SYMMETRY IN STRUCTURES

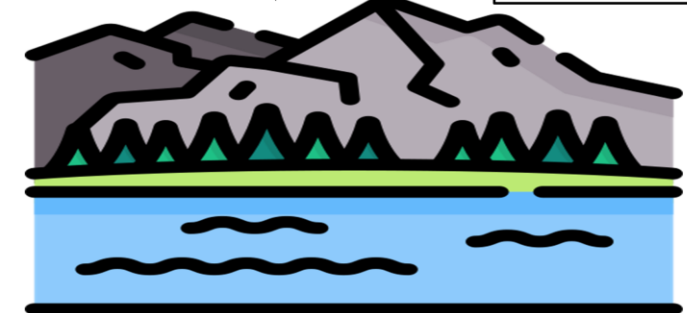
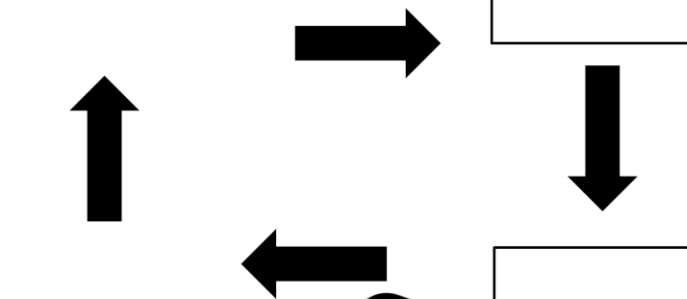


Label each part of the water cycle.



If an object is symmetrical, it has two equal parts that are identical to each other. A vertical line that divides the structure into two equal halves is called a line of symmetry. This means that the force of gravity is balanced on both sides. Symmetrical objects also have a balanced load of mass more evenly distributed. An excellent example of a symmetrical object is a suspension bridge. When engineers are designing a structure, symmetry is often a very important consideration. It not only increases the structural integrity but also the overall aesthetic of a structure.

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LESSONS INCLUDE

- ★ Articles & MP3s
- ★ Graphic Organizers
- ★ Student Choice

WHAT'S INSIDE?



ANSWER KEYS

What is an ecosystem?	An ecosystem is a small or large environment where living and non-living things interact. It's a community of different interconnected insects, animals, plants, and their environment. Examples: pond and rainforest.
What are the two essential parts of an ecosystem?	The ecosystem has two essential parts: abiotic (non-living components) and biotic elements (living components.)

SAMPLE ANSWERS

pH Levels	pH is used to measure how acidic water is. If water is too acidic, it means that there are too many chemicals or cleaners in the water, making it unsafe to drink. The best pH levels for drinking water are between 6.5 - 8.5 on a scale of 0-14. When the test shows a pH level of less than 7, the water is probably too acidic to drink.
Salinity	Salinity refers to how much salt is in water or how much salt is dissolved in the water. As
Chlorine	show the amount of chlorine present in the water.

Abiotic	Abiotic elements are the non-living components of an ecosystem. These include water, air, soil, rocks, sunlight, temperature, weather, and others.
Producers	
Consumers	
Decomposers	

SAMPLE SCIENCE LAB

1. Gather the materials, read the coffee pack measurements to make coffee. You will make two times.
2. Use kettle to heat the water in two different beakers/transparent.
3. Have the measured grounds prepared to make one cup.
4. Stir the coffee into the grounds mixing with the water.
5. Prepare your coffee press/sieve. You will use empty beakers/transparent.
6. Place the filter above the beaker and pour one of the coffee mixtures slowly.
7. Place sieve above empty one of the coffee mixtures. If you are using a French press, pour the solution into the beaker.
8. As a class, compare the coffee solutions and make qualitative observations about each beaker. Which tool did a better job of separating the coffee grounds from the water?

Procedure

List all of the steps that you will take to complete this lab.

This needs to be approved by your teacher.

HUMAN AND NATURAL IMPACTS ON WATER TABLE INQUIRY PEER ASSESSMENT

Student Name: _____

Topic: _____

Peer Assessment by: _____

Science Content Criteria	Level 1	<input type="checkbox"/> Information is inaccurate or incomplete
	Level 2	<input type="checkbox"/> Information is basic and requires more details
	Level 3	<input type="checkbox"/> Information is relevant to the topic
	Level 4	<input type="checkbox"/> Information is detailed and demonstrates extensive research using variety of sources

CELLULAR ORGANISMS INQUIRY PEER ASSESSMENT

Student Name: _____

Topic: _____

Peer Assessment by: _____

MEETING NEEDS WITH EXISTING SYSTEMS PERSPECTIVE ASSIGNMENT



Student Requirements:
 of the topic and issue.
 s, videos, or images to help engage the audience.
 ed explanation about:
 how the chosen topic impacts the individual, society, and the environment.
 Why the chosen perspective is important to you.
 Why this alternate way of meeting needs is more efficient.
 e list - remember to keep track of the websites, videos, or books
 ized showcase of your learning.

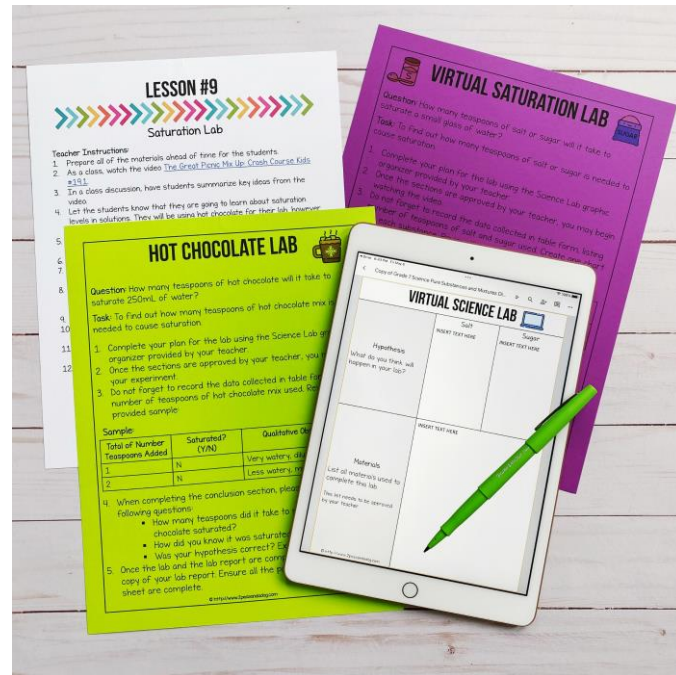
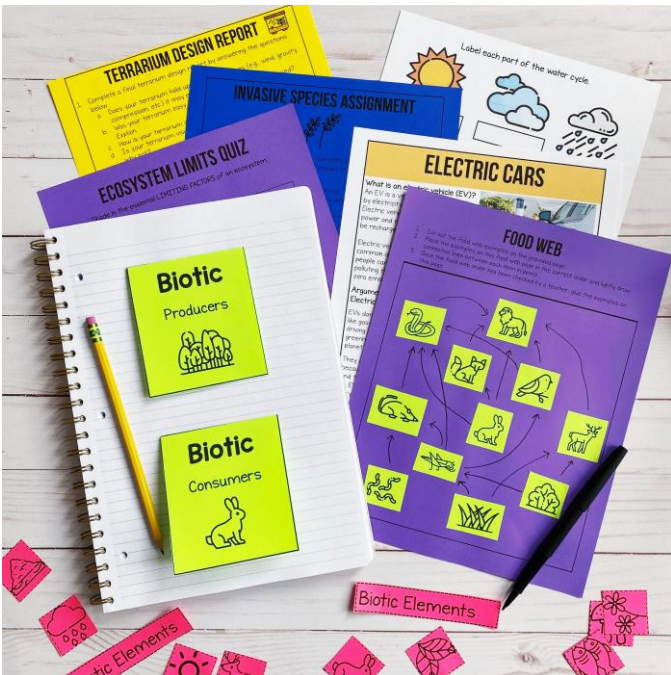
	Level 1	Level 2	Level 3	Level 4
Relevance of Research	Limited research provided.	Research includes some information relevant to the chosen perspective.	Researched with most details provided. More information is needed on different perspectives.	Thoroughly researched details and perspectives provided.
Overall Appearance And Quality	Final project has several missing elements. There was little information related to the topic.	Final project needs more attention to detail. There was some information related to the topic.	Final project is complete. Information was related to the topic.	Final project shows an extensive attention to detail. Information was related to the topic and demonstrates an extensive understanding of the topic.
Sources	No sources were provided.	Some sources were provided.	Most sources provided.	All sources are provided.

ANSWER KEYS & RUBRICS

FREE UP YOUR WEEKENDS

THIS RESOURCE IS FOR GRADE 7/8 SCIENCE TEACHERS WHO:

- ✓ Want their students to enjoy what they are learning
- ✓ Want their evenings and weekends free from lesson planning
- ✓ Want to ensure that they are covering the curriculum expectations in a meaningful yet engaging way



LESSON FORMATS



PDF

✓ Individual & Whole Unit

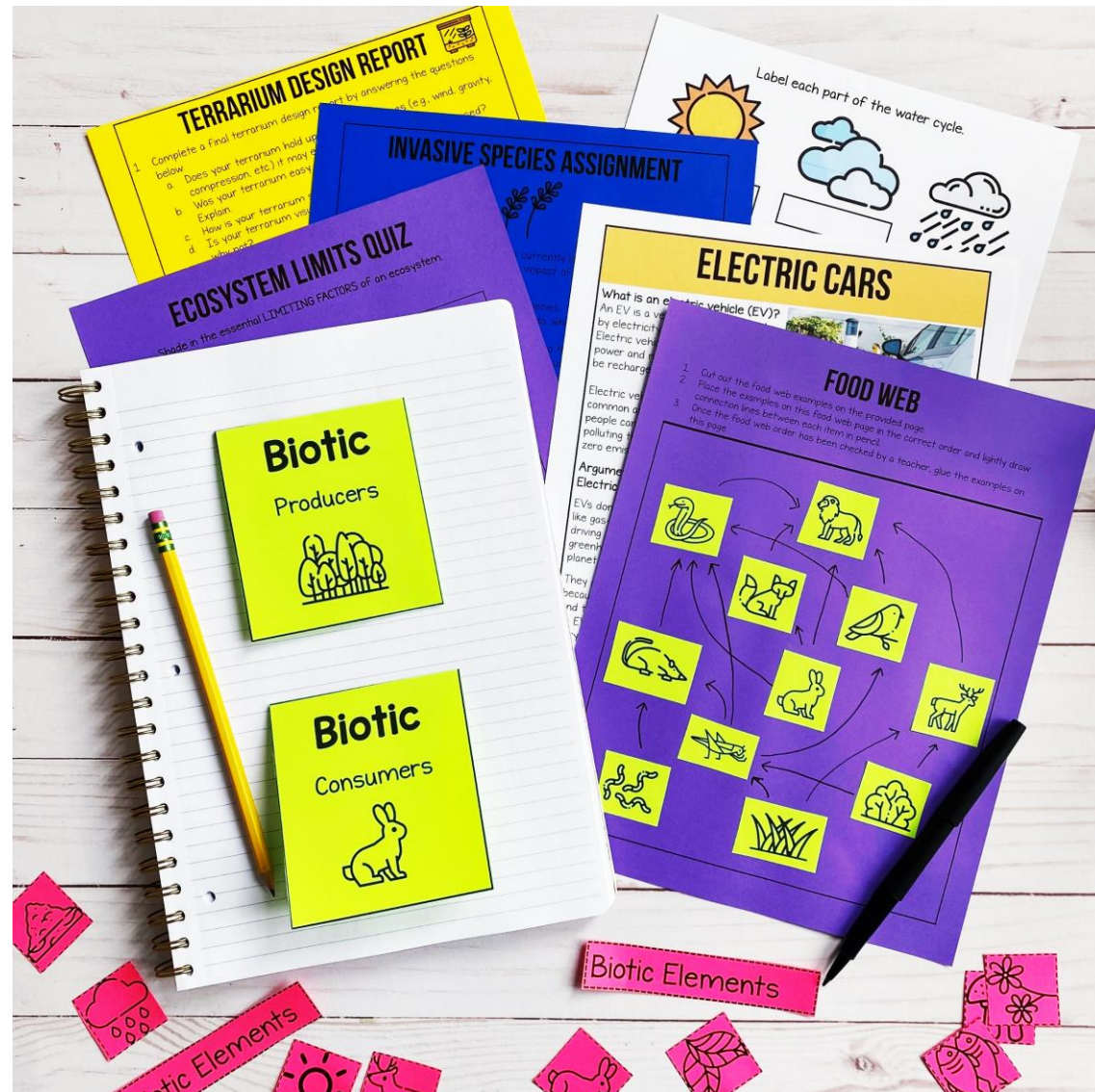


DIGITAL

✓ Google Slides

RESOURCE CAN BE USED IN-PERSON OR ONLINE

GRADE 7 - INTERACTIONS IN THE ENVIRONMENT



Included Lessons

1. Unit Vocabulary QR Code Matching Activity
2. Elements of Ecosystems
3. Ecosystems – Examples and Interactions
4. Energy Transfer and Food Chains
5. Biotic Elements Quiz
6. Matter Cycling
7. Ecological Succession
8. Ecosystem Limits
9. Species At Risk & Invasive Species Assignment
10. Human Interactions in the Environment
11. Indigenous Perspectives
12. Environmental Investigation Case Study: Electric Cars
13. Environmental Protection Stations
14. Ecosystem Summative Lab (3 options)
15. Ecosystems Unit Test
16. Sub Plans

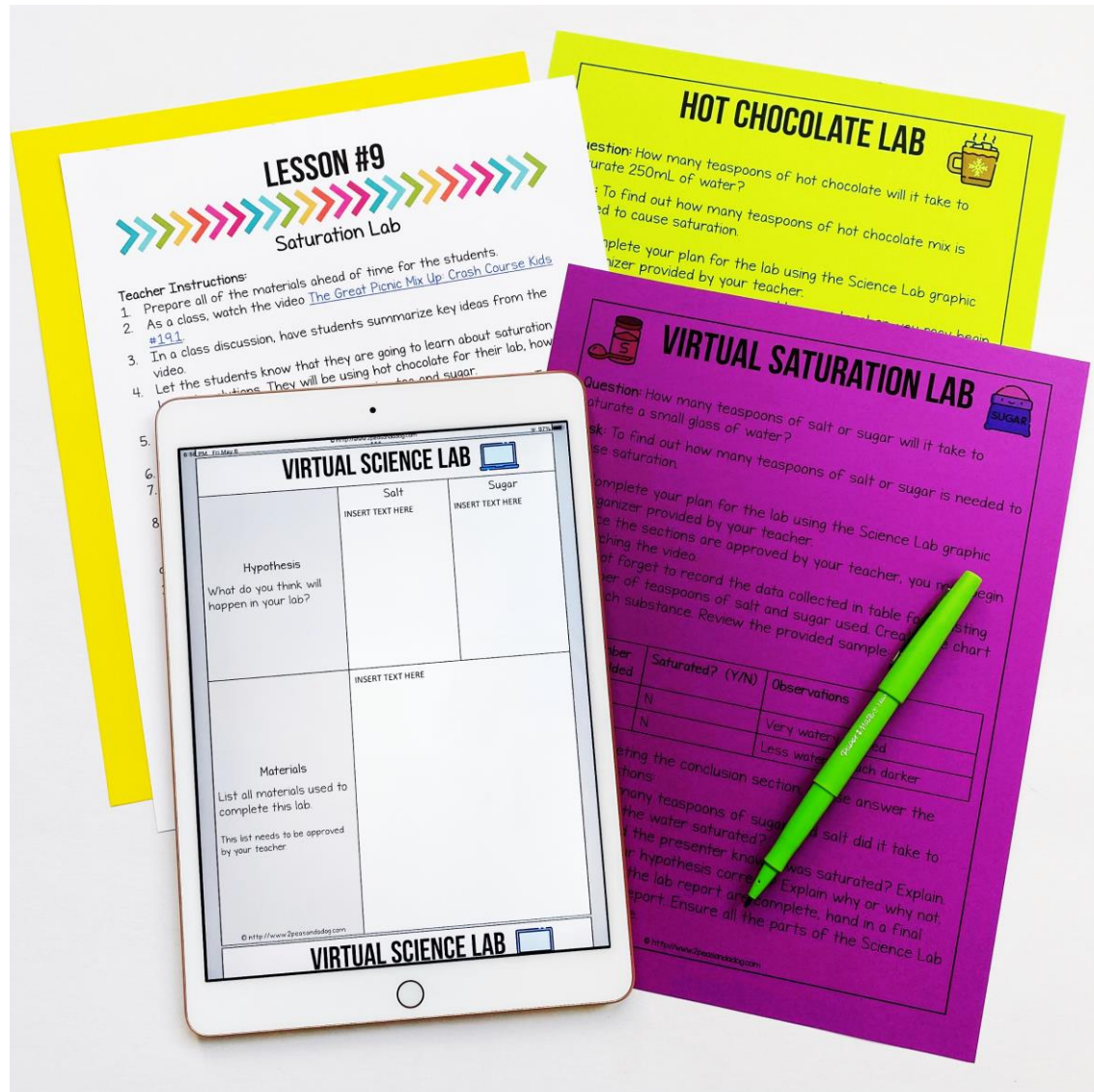
GRADE 7 - HEAT IN THE ENVIRONMENT



Included Lessons

1. Safety Lesson
2. Unit Vocabulary QR Code Scavenger Hunt
3. Introduction To Heat
4. Heat Production
5. Heat and Temperature
6. The Particle Theory
7. Heat and Volume
8. Conduction, Convection, and Radiation
9. Heat Video
10. Teacher Demonstration: Boiling Water in a Paper Cup
11. Student Lab: Melting Ice Cubes
12. Heating and Cooling of the Earth
13. Greenhouse Gases
14. Investigation: Benefits of Technology With Heat
15. Stations & Project-Based Learning
16. Unit Test

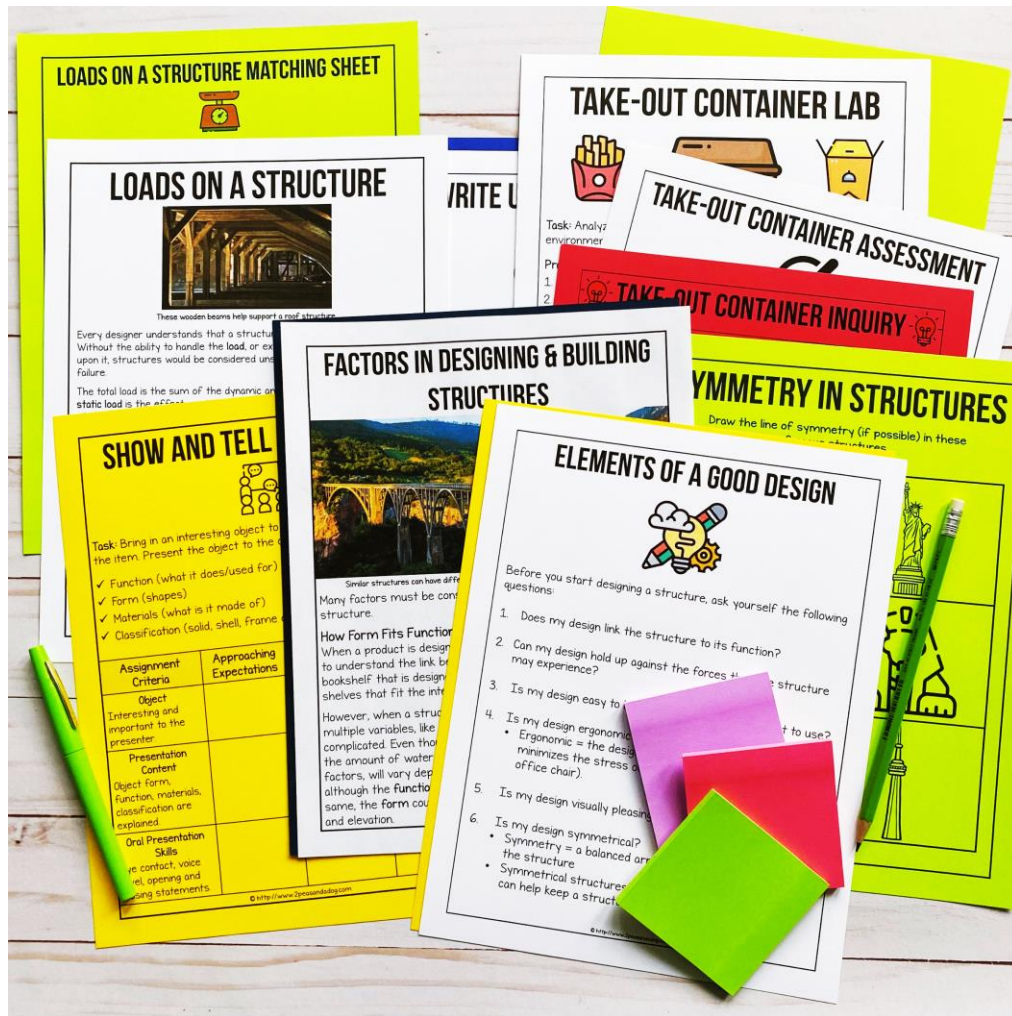
GRADE 7 - PURE SUBSTANCES AND MIXTURES



Included Lessons

1. Safety Rules & Unit Vocabulary
2. The Particle Theory
3. Pure Substances and Mixtures
4. Pure Substances and Mixtures Activity
5. Solutions and Mechanical Mixtures
6. Solutions
7. Solution Examples Activity
8. Concentration of Solutions
9. Saturated Solutions
10. Saturation Lab
11. Separating Mixtures
12. Separating Mixtures Lab
13. Positive and Negative Impacts on the Environment
14. Tar Sands Investigation
15. Unit Test
16. Sub Plans

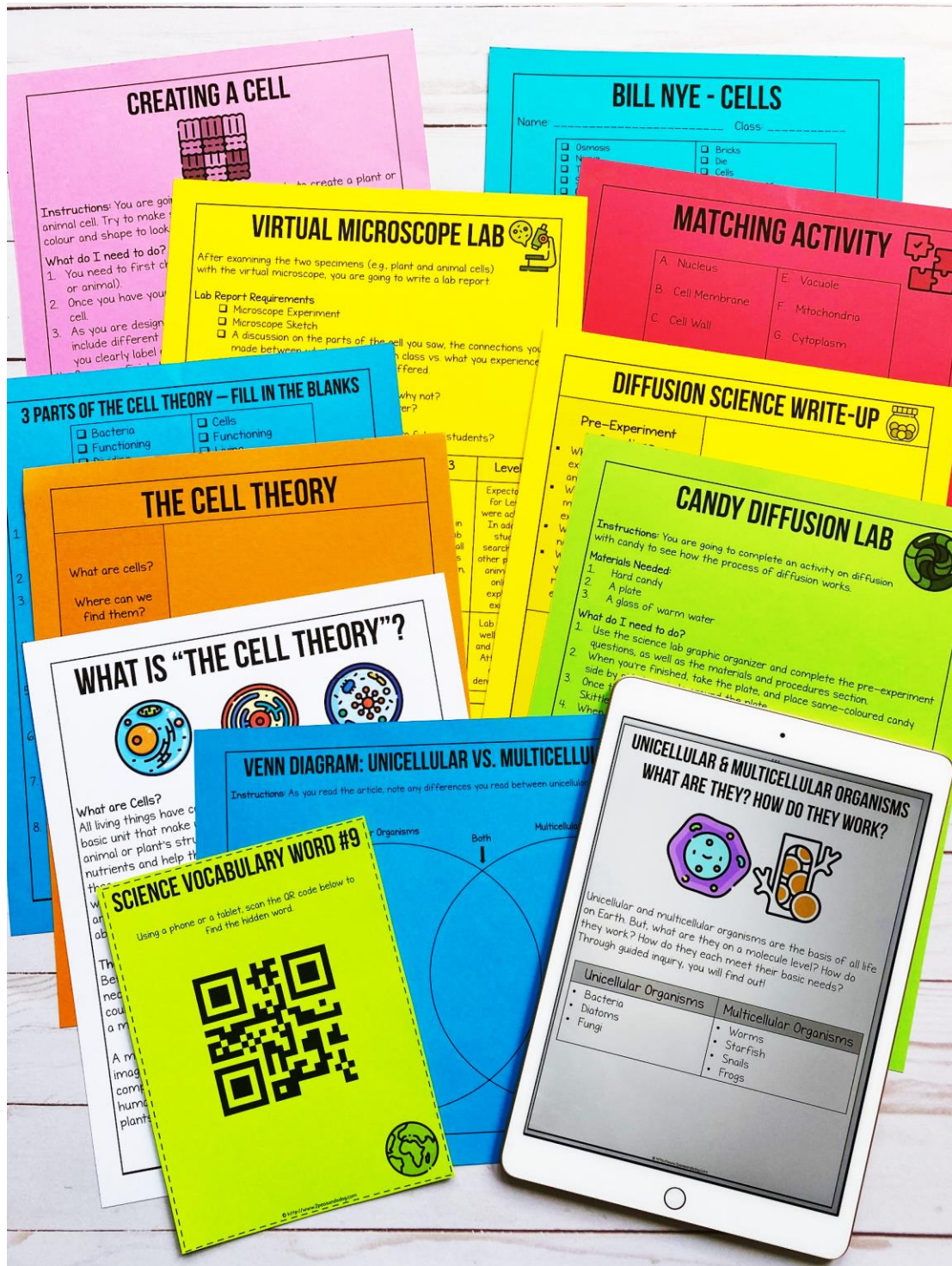
GRADE 7 - UNDERSTANDING STRUCTURES AND MECHANISMS



Included Lessons

1. Safety Lesson, Unit Vocabulary, Unit Introduction
2. Classifying Structures
3. Structures Video
4. Centre of Gravity & Stability
5. Force
6. Show and Tell Assignment
7. Classifying Structures Quiz
8. Internal and External Forces
9. Card Pyramid Activity
10. Symmetry in Structures
11. Structure Failure
12. Manufacturing Factors
13. Loads
14. Structural Safety
15. Design Factors
16. Ergonomic Design
17. Take-Out Container Lab
18. Egg House Lab
19. Unit Review & Test

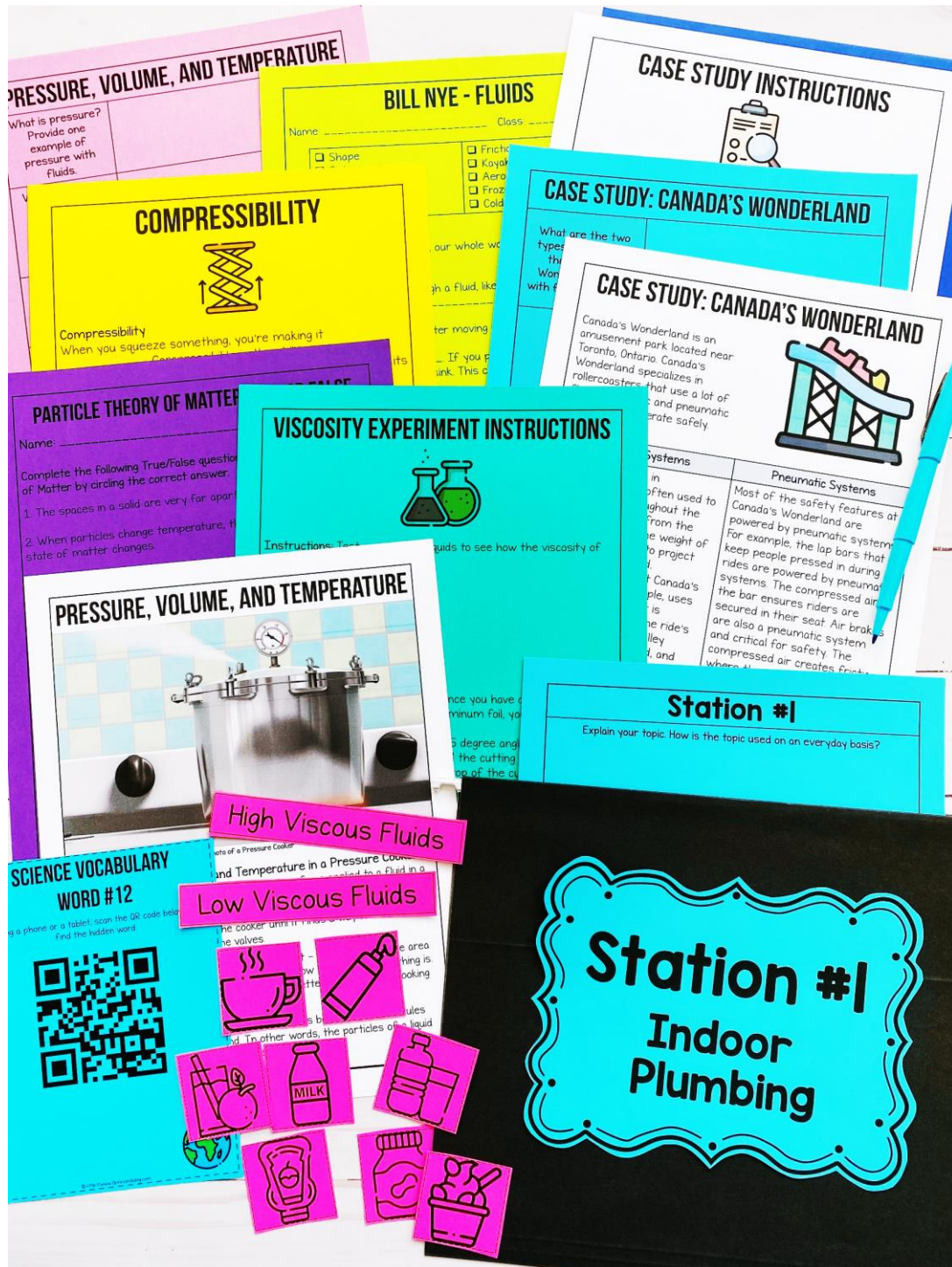
GRADE 8 - CELLS



Included Lessons

1. Introduction: Safety Rules & Cells Interview
2. Unit Vocabulary
3. The Cell Theory
4. Structures and Organelles in Cells
5. Plant vs. Animal Cells
6. Create Your Own Cell - Plant or Animal Cells
7. The Process of Diffusion and Osmosis
8. Candy Diffusion & Potato Osmosis Experiments
9. Unicellular and Multicellular Organisms
10. Cellular Organisms Inquiry
11. Organization of Cells into Tissues, Organs, and Organ Systems
12. Organ Systems Infographic & Presentation
13. Mid-Unit Quiz
14. What is a Microscope?
15. Plant and Animal Cells Microscope Lab
16. Dry and Wet-Mount Slides
17. Cell Technology and Our Understanding of Cells
18. Perspectives on Cell Processes
19. Cells Final Unit Test
20. Sub Plans

GRADE 8 - FLUIDS



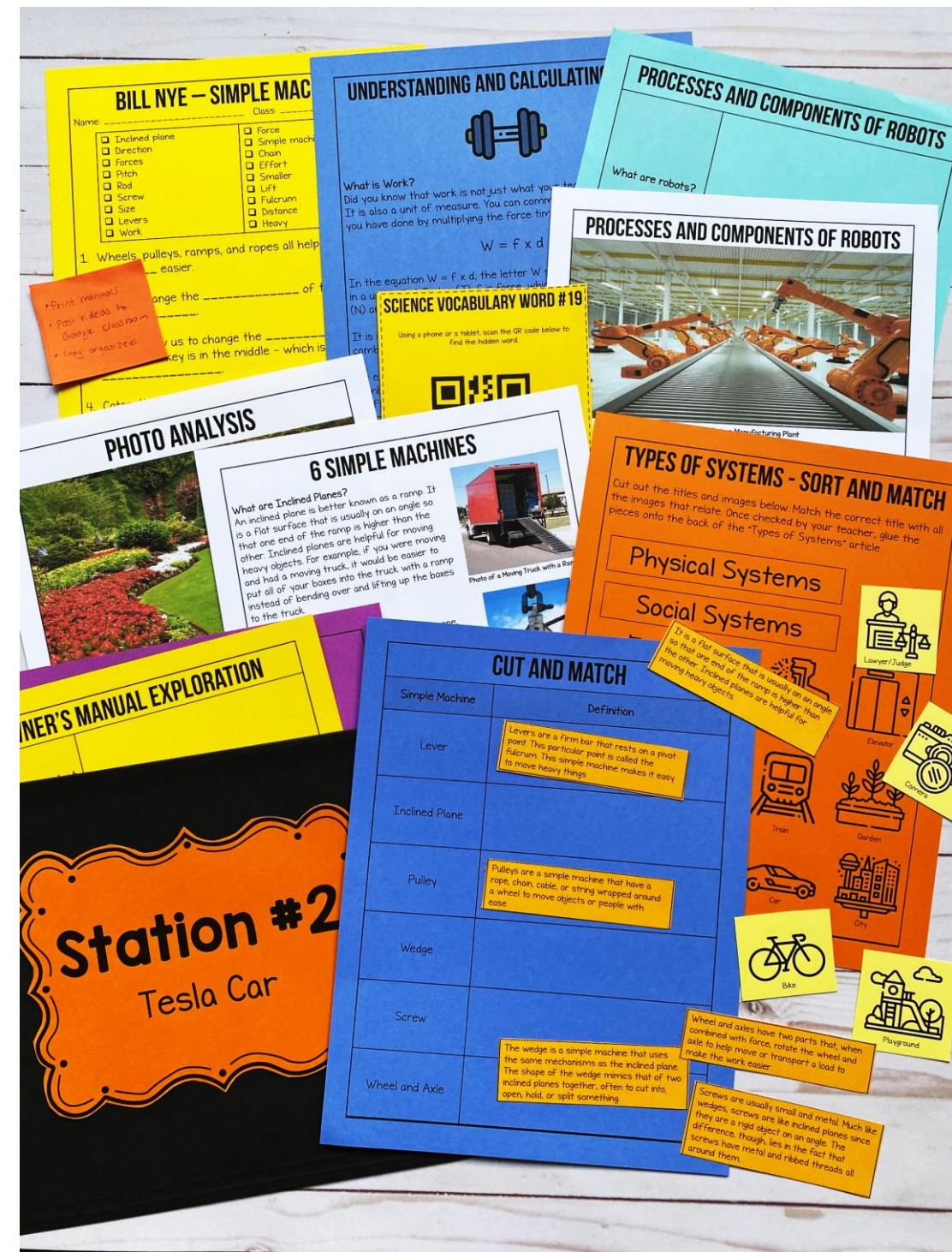
Included Lessons

1. Introduction: Safety Rules, Fluids Introduction & Unit Vocabulary
2. Particle Theory of Matter
3. What is Viscosity? and What is Flow Rate?, Experiment
4. Mass, Volume, and Density
5. Mass, Volume, and Density
6. Mass-to-Volume Ratio Experiment
7. Compressibility
8. Canada's Wonderland Case Study
9. What is Buoyancy & Float or Sink Experiment
10. Mid-Unit Quiz
11. Pressure, Volume, and Temperature & Optional Experiment
12. Pascal's Law
13. Fluids in Controlled and Manufactured Devices
14. Building a Pneumatic or Hydraulic Device (2 options)
15. Investigating Applications of Fluid Mechanics
16. Fluid Technologies Research Inquiry
17. The Impact of Fluid Spills
18. Unit Test for Fluids
19. Sub Plans

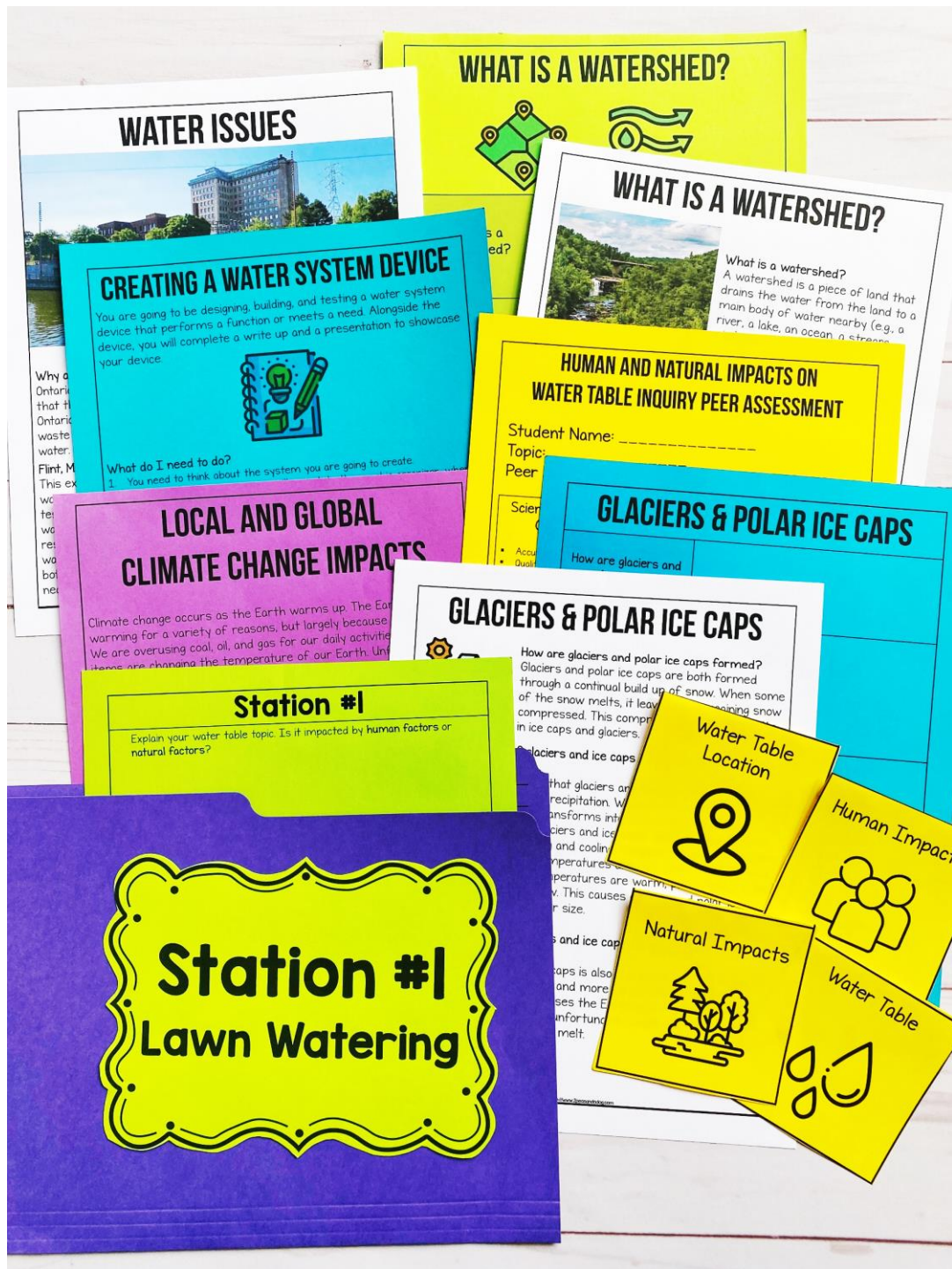
GRADE 8 – SYSTEMS IN ACTION

Included Lessons

1. Introduction - Safety Introductions & What Are Systems?
2. Vocabulary
3. Types of Systems
4. Purpose, Inputs & Outputs of Systems
5. The Processes and Components of a System
6. Quiz
7. Work, Energy, Force, and Efficiency
8. Calculating Work
9. Understanding Work
- 10.6 Simple Machines
11. Understanding Mechanical Advantage
12. Quiz
13. Energy in Mechanical Systems
14. Productivity with Systems in Various Industries
15. Evolution of the Cell Phone
16. Quiz
17. Pulley Experiment and Mechanical Advantage
18. Rube Goldberg Machine
19. Owner's Manual Exploration
20. The Impacts of New and Evolving Systems
21. Meeting Needs with Existing Systems - Different Perspectives
22. Unit Test



GRADE 8 – WATER SYSTEMS



Included Lessons

1. Introduction Lesson – Safety Lesson
2. Unit Vocabulary QR Code Scavenger Hunt
3. The Water Cycle & States of Water
4. Watersheds
5. Human & Natural Factors Cause Changes in the Water Table
6. Human & Natural Factors Cause Changes in the Water Table
7. Inquiry
8. Factors that Affect Glaciers & Polar Ice Caps
9. Atmospheric Conditions & Bodies of Water
10. Mid-Unit Water Systems Quiz
11. Virtual Water Treatment Plant
12. Testing Water Samples (3 options)
13. Investigating Local Water Issues
14. Bottled Water Case Study
15. Building a Water System Device
16. Global Water Consumption
17. Human Impact on Water Systems
18. Innovative Water Technology
19. Water Systems Unit Test
20. Sub Plans