

YOU WILL LOVE THIS BECAUSE



Hands-On and Interactive Learning

These interactive activities include videos, games, design challenges, diagrams, and experiments. Students engage actively, making complex concepts accessible and memorable.



Aligned to NGSS 4-PS4.C

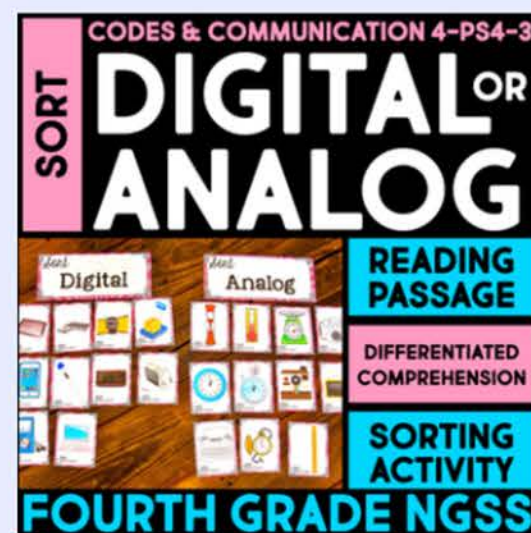
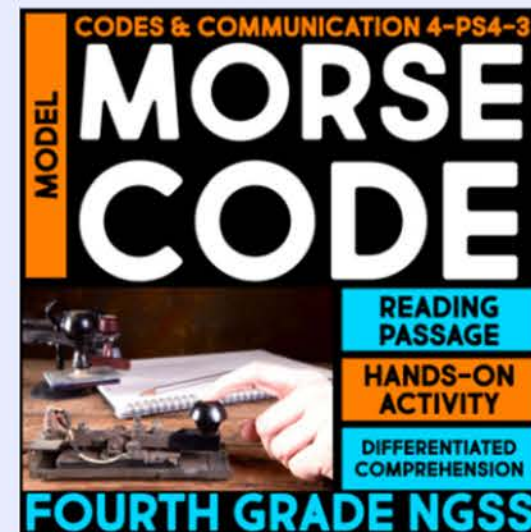
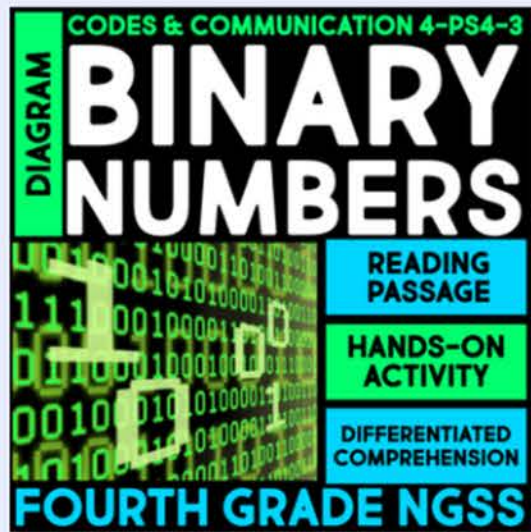
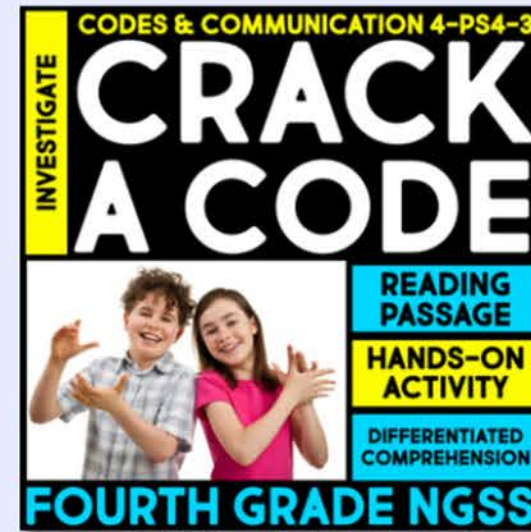
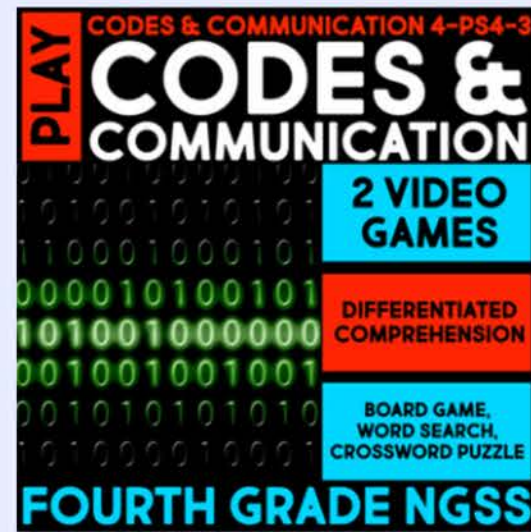
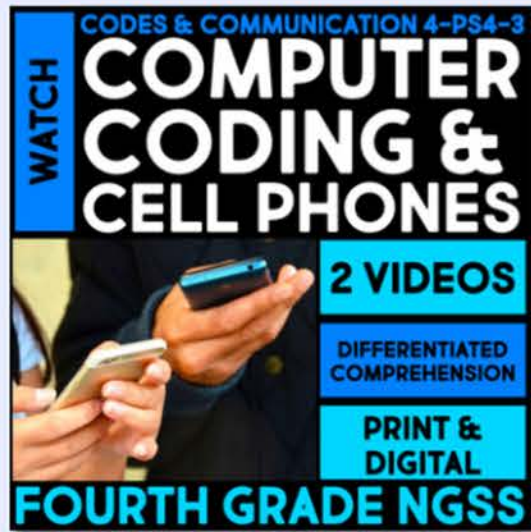
Directly supports Next Generation Science Standards, covering communication, technology, and engineering in an easy-to-implement format.



Flexible Classroom Implementation

Multiple response formats and activity choices allow teachers to tailor instruction to diverse learners, supporting independent, group, and online environments.

WHAT'S INCLUDED IN THE BUNDLE?



- ✓ 8 Science Stations aligned with the NGSS for 4th grade
- ✓ 6 Reading passages
- ✓ Hands-on activities
- ✓ Differentiated comprehension questions
- ✓ Digital Videos & Video Games
- ✓ Digital Google Slides & Forms

WATCH • PLAY • INVESTIGATE • DIAGRAM • READ • MODEL • EXPLORE • SORT

CODES COMMUNICATION & TECHNOLOGY STATION ACTIVITIES

SUGGESTED USES

Learning Stations

Use all eight stations or just a few as learning stations that students complete at their own pace.

Science Centers

Set up a rotation where students visit each center to complete the activities.

Whole Class

Use the activities in a whole class format.

Small Group

Use the activities with a small group who need extra help.

6 READING PASSAGES



6 Reading Passages that provide all scientific background knowledge for each station

Available in two formats + Digital

Includes pictures and visuals

UNIT OVERVIEW

CODES

COMMUNICATION

& TECHNOLOGY

GRADE 4

BUNDLE

8 STATIONS

POSTERS

ACTIVITIES & LABS

PASSAGES

DIFFERENTIATED

VIDEOS & GAMES

Talk to Me Unit Bundle			
Station & Name	Standards	Objective	
Big Idea Posters & Vocabulary Cards (included with the BUNDLE)			
Watch	Computer Coding What is a Computer Program? How a Cell Phone Works Morse Code	4-PS4C, (ELA) SL.4.3	Students watch a video in order to learn about how computer programs work, how cell phones work, and about Morse code. They answer questions in order to reinforce what they have learned.
Play	Video Game, Board Game, Crossword or Word Search	4-PS4C, (ELA) SL.4.2	Play a video game, board game, or do a crossword or word search to reinforce learning about codes and communication technology.
Investigate	Crack a Code	4-PS4C, (ELA) RI.4.1, RI.4.3, RI.4.4, (Math) 4.OA.C.5	Students read about sending and receiving codes. They come up with a code that uses sounds and/or lights in order to investigate this. They answer questions in order to reinforce what they have learned.
Diagram	It's All Zeros and Ones to Me!	4-PS4C, (ELA) RI.4.1, RI.4.3, RI.4.4, RI.4.7, (Math) 4.OA.C.5	Students read about binary numbers. They create a diagram of binary numbers and answer questions in order to reinforce what they have learned.
Read	Space Talk	4-PS4B, (ELA) RI.4.1, RI.4.3, RI.4.4, RI.4.7, RI.4.8, RF.4.4, (Math) 4.OA.C.5	Students read about how satellites are used to help communicate over long distances. They answer questions in order to reinforce what they have learned.
Model	Mr. Morse and His Code	4-PS4C, (ELA) RI.4.1, RI.4.3, RI.4.4, RI.4.7, (Math) 4.OA.C.5	Students read about Morse code and create a model of a Morse code transmitter, sending a message in Morse code. They answer questions in order to reinforce what they have learned.
Explore	Boom! Boom!	4-PS4C, (ELA) RI.4.1, RI.4.3, RI.4.4, (Math) 4.OA.C.5	Students read about drum code messages and create their own drum code in order to explore how drums are used to send codes over long distances. They answer questions in order to reinforce what they have learned.
Sort			


 Talk to Me

Science Stations Overview

This is a general overview of all science stations in each UNIT BUNDLE.

Watch a Video
At this station, students will watch a video relevant to the topic and answer questions. You have the option of using the included worksheet with the questions or using the task cards and having students respond in their science journals.

Read a Passage
Students read a short passage about the topic and answer questions about the information in the passage. You have the option of using the included worksheet with the questions or using the task cards and having students respond in their science journals.

Play a Game
Students play a game and answer questions about the experience. You have the option of using the included worksheet with the questions or using the task cards and having students respond in their science journals.

Investigate
Students use materials to investigate the science topic by following directions and recording results. Students answer questions about the investigation.

Draw a Diagram
Students draw and label a diagram specific to certain requirements. Students then explain how their diagram meets the requirements.

Create a Model
Students use materials to illustrate the science concept and answer questions. You have the option of using the included worksheet with the questions or using the task cards and having students respond in their science journals.

Explore
Students create a sample and manipulate it using the new science concepts they have learned. Students answer questions based on the effects.

Sort
Students sort cards into groups or put them in a specific order. Students record the sort and then describe their reasoning.

Talk to Me Science Stations

In Fourth Grade, students are expected to "generate and compare multiple solutions that use patterns to transfer information" (4-PS4-3). This correlates with the DCI 4-PS4C, which states, "Digitized information can be transmitted over long distances without significant degradation. High-tech devices, such as computers or cell phones, can receive and decode information—convert it from digitized form to voice—and vice versa." All stations in this set meet the DCI, helping students gain an understanding of the different properties of transferring information and how digital delivery systems improve upon more primitive systems. The Investigate station goes into more detail and helps students generate and compare multiple solutions that use patterns to transfer information, as outlined in the Performance Expectation. The Model and Explore stations are easily modified to meet this standard as well.

As in all station sets in this Fourth Grade series, the Investigate station incorporates the specific Engineering Practice that NGSS has included with this standards strand. In 4-PS4, the Engineering Practice is ETS1C, which reads, "Optimizing The Design Solution: Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints." The Teacher Instructions in the Investigate station provide detail as to how this standard is met. Again, this Model and Explore stations are easily modified to meet this standard as well.

In Fourth Grade, the Engineering Standards are incorporated within the Disciplinary Core Ideas (DCI) of these science standards. For this reason, we incorporated the engineering standards within the listed as one of the DCIs. We created the 4-PS3 station set to include, not only the physical science concept of "energy," but also the engineering practice of "defining engineering problems." We will always use the "Investigate" science station in the science station set to meet this engineering DCI, and may use 1 or more other station as well.

These Science Stations have several different ways students can display their understanding. Most of the variations are similar to each other, but differentiated for various classrooms and learning styles. Included are worksheets for both short-answer and fill-in-the-blank and task cards for both short-answer and multiple choice responses. To provide even more support, we give students a word list for the station if needed.

Students are encouraged to use their Science Journals with the task cards, but worksheets are provided as well. Use the checklist to monitor student progress through the stations. The Science Stations are designed to last about 20 minutes each. Students may do one a day for eight days or two a day for four days. The following checklists will help you organize the stations.

Materials Checklist

Use the following checklist to make sure you have all the materials for your stations.

Watch a Video

- ☐ Computer / Device
- ☐ Directions Card
- ☐ Worksheet
- ☐ Task Cards
- ☐ Science Journal

Read a Passage

- ☐ Computer
- ☐ Student Sheets
- ☐ Science Journal
- ☐ Student Direction Card
- ☐ Board Game (die & game pieces)
- ☐ Word Search or Crossword Puzzle

Play a Game

- ☐ Student Directions
- ☐ Student Worksheet
- ☐ Response Sheet
- ☐ Task Cards
- ☐ Science Journal

Investigate

- ☐ Student Directions
- ☐ Student Worksheet
- ☐ Response Sheet
- ☐ Task Cards
- ☐ Science Journal

Draw a Diagram

- ☐ Student Instructions
- ☐ Response Sheet
- ☐ Task Cards
- ☐ Science Journal

Read a Passage

- ☐ Reading Passage
- ☐ Student Response Sheet
- ☐ Task Cards
- ☐ Science Journal

Sort

- ☐ Directions Card
- ☐ Sort Cards
- ☐ Scissors
- ☐ Glue
- ☐ Response Sheet
- ☐ Task Cards
- ☐ Science Journal

Create a Model

- ☐ Directions Card
- ☐ Student Sheet
- ☐ Task Cards
- ☐ Science Journal

- ☐ Assortment of conductors for creating the conductor in the circuit.
- ☐ wires from a set of Christmas lights (ends stripped of insulation to 3/8 inch)
- ☐ wires with alligator clips
- ☐ Assortment of materials to be used as a switch:
- ☐ paper clips
- ☐ alligator clips
- ☐ actual switch
- ☐ Assortment of materials to be used as the Morse code transmitter (light or sound):
- ☐ buzzer and/or bell that is operated electronically
- ☐ light bulb in a socket
- ☐ wire with light from a set of Christmas lights (ends stripped of insulation to 3/8 inch)

Power source:

- ☐ Battery (C always works, but you could use AA)
- ☐ Optional: Battery holder
- ☐ If you are not using a Battery holder, you will need tape to connect the battery to the wires.

Explore

- ☐ Directions Card
- ☐ Worksheet
- ☐ Response Sheet
- ☐ Task Cards
- ☐ Science Journal

- ☐ A variety of objects that can be used to make a drum. Examples might be:
- ☐ Actual drums or tambourines
- ☐ Cans with lids
- ☐ Aluminum foil cans
- ☐ Hollowed out logs
- ☐ Plastic or wooden tubes
- ☐ Drumsticks or wooden dowels to be used as drumsticks
- ☐ Things that can be used to change the pitch on parts of the drum. Examples might be:
- ☐ Tape and/or glue (The tape itself may change the pitch or it may affix something intended to change the pitch.)
- ☐ Cloth
- ☐ Cotton balls
- ☐ Pipe Cleaners
- ☐ Paper towels
- ☐ Aluminum Foil
- ☐ Plastic Wrap
- ☐ Video recorder (on a tablet or camera)

Talk to Me Bundle

Science Station Overview

Materials Checklist

Science Stations

BIG IDEA POSTERS

There are two main modes of communication:
analog and digital.



Digital is indirect communication.

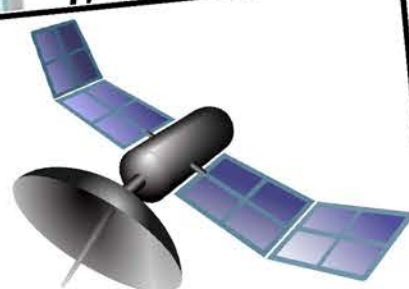
The event is converted into digits as it is being recorded or represented.

Analog is direct communication.

The event is recorded or represented exactly as it is happening.

Satellites

are used for all types of communication. They also measure and observe things on Earth and in space.



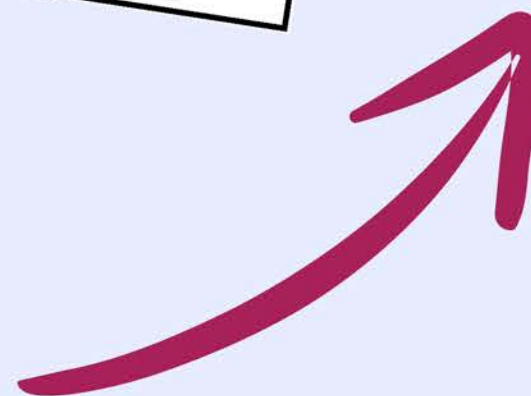
Morse code and the binary number system

are two types of code used for communication.

0101010101
0101011110
0001101010
1011110001
0001111000
1000111111
11000

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

**BIG IDEA POSTERS
THAT EXPLAIN THE
KEY CONCEPTS.**



VOCABULARY CARDS IN TWO FORMATS



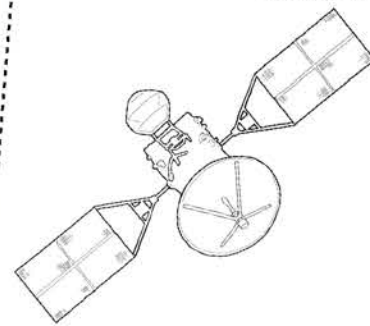
digital

converts
information
into numbers
(digits)

A . -
B - . . .
C - . . . -
D - . . .
E .
F - . . . -

Morse Code

a code that uses
dahs and dits, or
"dashes" and
"dots," to
communicate, using
telegraph, radio,
or flashing lights



satellite

an object
that orbits
around
another
object

```
<!DOCTYPE html>
<html>
<body>
<h1>Javascript</h1>
<p id="demo">Javascript is a code...</p>
<button type="button"
onclick="document.getElementById('dem
o').innerHTML += 'I love JavaScript!'">Click
Me!</button>
</body>
</html>
```

code

a system
used for
sending
information

**WITH
PICTURES**

analog

when something is being
measured or represented
exactly as it is happening

satellite

an object that orbits
around another object

**WITHOUT
PICTURE**

SNEAK PEEK: ONE VIDEO FROM THE WATCH STATION

Watch a Video Name: _____

Computer Coding

1. Computers are boxes that follow _____
quickly and _____.

2. People get computers to do things by writing out
_____, or lists of instructions.

3. Computers (Circle one: can / cannot) think.

4. A computer program is a list of _____.

Each instruction has to be _____ enough
that the computer can understand it.

5. If the _____
_____ are incorrect, the computer won't behave the way you want it to.

The programming language C is a powerful language used for building
_____.
_____ and
_____ are programming languages that are
useful in websites and web pages.

8. Binary code is a basic computer language that uses only _____.

Computer Coding

instructions

accurately

programs

instructions

small

computer program

instructions

computer operating

systems

Ruby

Javascript

ones

zeros

STUDENTS WATCH ONE OF FOUR VIDEOS AND THEN ANSWER QUESTIONS ABOUT THE VIDEOS. VIDEOS INCLUDE: COMPUTER CODING, WHAT IS A COMPUTER PROGRAM, HOW A CELL PHONE WORKS, AND MORSE CODE.

“ I love this resource!!!
- Margaret K. ”



WATCH STATION

SNEAK PEEK: ONE GAME FROM THE PLAY STATION



STUDENTS PLAY A VIDEO GAME, BOARD GAME, A CROSSWORD PUZZLE OR WORD SEARCH TO REINFORCE THEIR LEARNING ABOUT CODES AND COMMUNICATION

“This was a great resource for my STEM classes.”
- Anna B.

PLAY STATION

SNEAK PEEK: PAGES FROM INVESTIGATE STATION

Investigate Crack a Code

Name: _____ Rubric

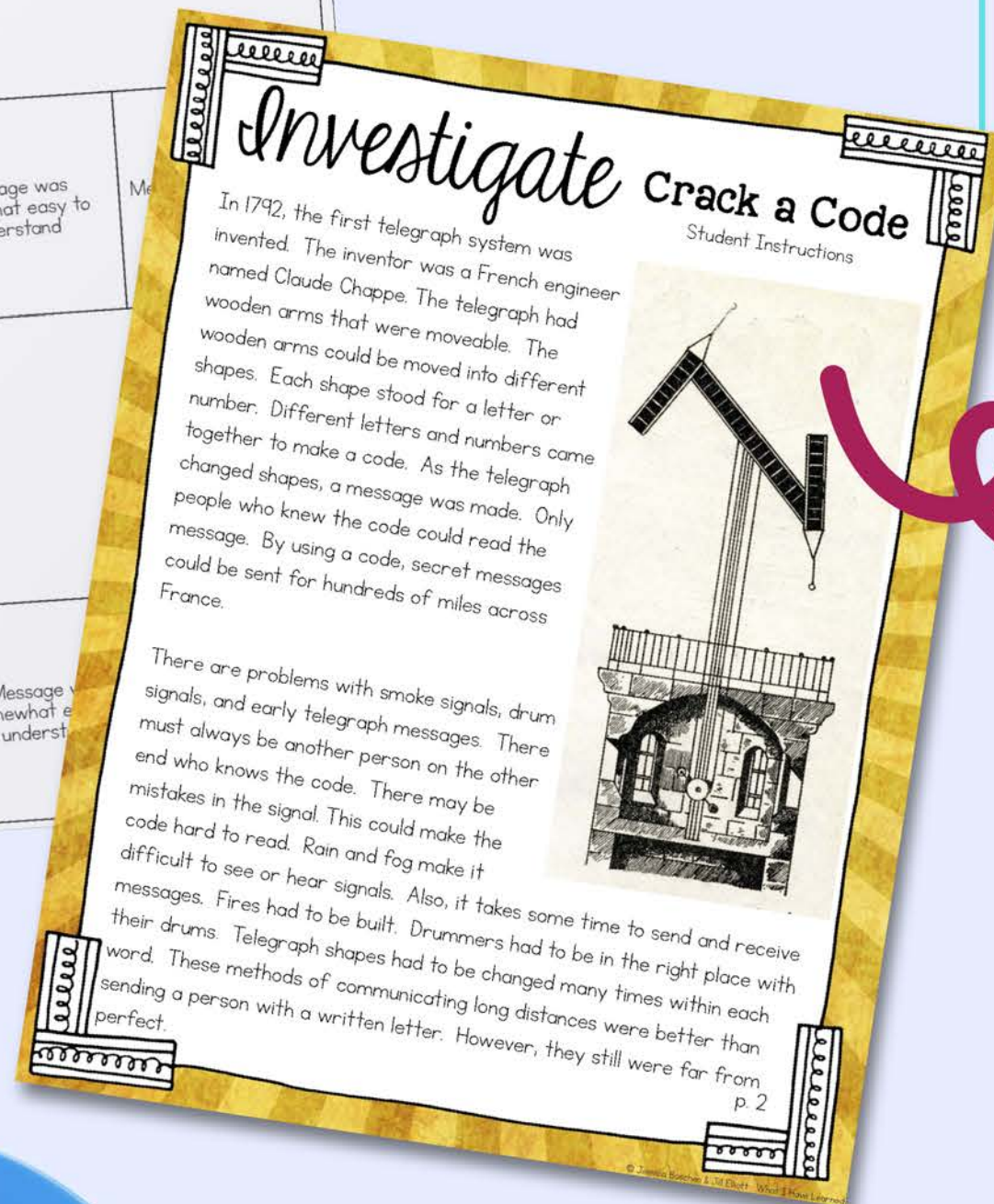
Group: _____

Write Message 1 here:

Circle the statement that is most true:	Message was very easy to understand	Message was somewhat easy to understand
---	-------------------------------------	---

Write Message 2 here:

Circle the statement that is most true:	Message was very easy to understand	Message was somewhat easy to understand
---	-------------------------------------	---



STUDENTS READ ABOUT SENDING AND RECEIVING CODES. THEY COME UP WITH A CODE THAT USES SOUNDS AND/OR LIGHTS IN ORDER TO INVESTIGATE THIS. STUDENTS THEN ANSWER QUESTIONS TO REINFORCE THE CONCEPTS LEARNED.

“Great resource, thank you!”

- Emily F.

INVESTIGATE STATION

SNEAK PEEK: PAGES FROM DIAGRAM STATION

STUDENTS READ ABOUT BINARY NUMBERS. THEY CREATE A DIAGRAM OF BINARY NUMBERS AND ANSWER QUESTIONS IN ORDER TO REINFORCE WHAT THEY HAVE LEARNED.

“ Helped with providing notes.”

- Sandra O.

DIAGRAM STATION

Diagram Activity Sheet Name: _____
It's All Zeroes and Ones to Me!

Continue filling in the diagram with the binary code for all the letters of the alphabet:

A = 100001	F =	K =	P =	U =
B = 100010	G =	L =	Q =	V =
C = 100011	H =	M =	R =	W =
D = 100100	I =	N =	S =	X =
E =	J =	O =	T =	

Diagram #1 **It's All Zeroes and Ones to Me!**

What is the name of the number system we usually use?

- a. Decimal
- b. Power
- c. Binary
- d. Alphabet

Diagram **It's All Zeroes and Ones to Me!**

Describe the number system we usually use.

#|

Diagram **It's All Zeroes and Ones to Me!**

Student Instructions

There are 10 kinds of binary numbers: 1 and 0. This is a funny but true statement. When you understand binary numbers, you will get the joke. But first, we need to review how we use numbers. The number system we usually use is called the decimal number system. This number system is based on ten numerals: zero through nine. Sometimes we need to count more than nine things. In this case, we add a tens place value. Then we keep counting with two-digit numbers. When we get to ninety-nine, we start over with a third place value. We can now count with three-digit numbers. This system continues on and on. Place values are added in the decimal number system. With each place value, the number goes up by a power of ten.

$10^0 = 0$ 0, 1, 2, 3, 4, 5, 6, 7, 8, 9	$10^2 = 100$ 100, 101, 102, 103, 104, 105, 106, 107, 108...999
$10^1 = 10$ 10, 11, 12, 13, 14, 15, 16, 17, 18...98, 99	$10^3 = 1000$ 1000, 1001, 1002, 1003, 1004, 1005...9999

Computers use a number system, as well. However, they do not use the decimal number system. Instead, computers use the **binary number system**. This system uses only two digits: 1 and 0. The reason is that computers run on electrical current. Information is sent through computers as electrical pulses. An electric pulse represents a one, or "on." When there is no electric pulse, it is interpreted as a zero, or "off." These electric pulses can be turned into pulses of light. Pulses of light send information quickly over long distances. This is how we are able to use the internet and phones to communicate with people around the world.

SOME OF THE PAGES IN THE READ STATION



STUDENTS READ ABOUT HOW SATELLITES ARE USED TO HELP COMMUNICATE OVER LONG DISTANCES. THEY ANSWER QUESTIONS IN ORDER TO REINFORCE WHAT THEY HAVE LEARNED.

“Wonderful resource! This made a complicated topic very easy to understand. Thank you!”
-Krejci Creations

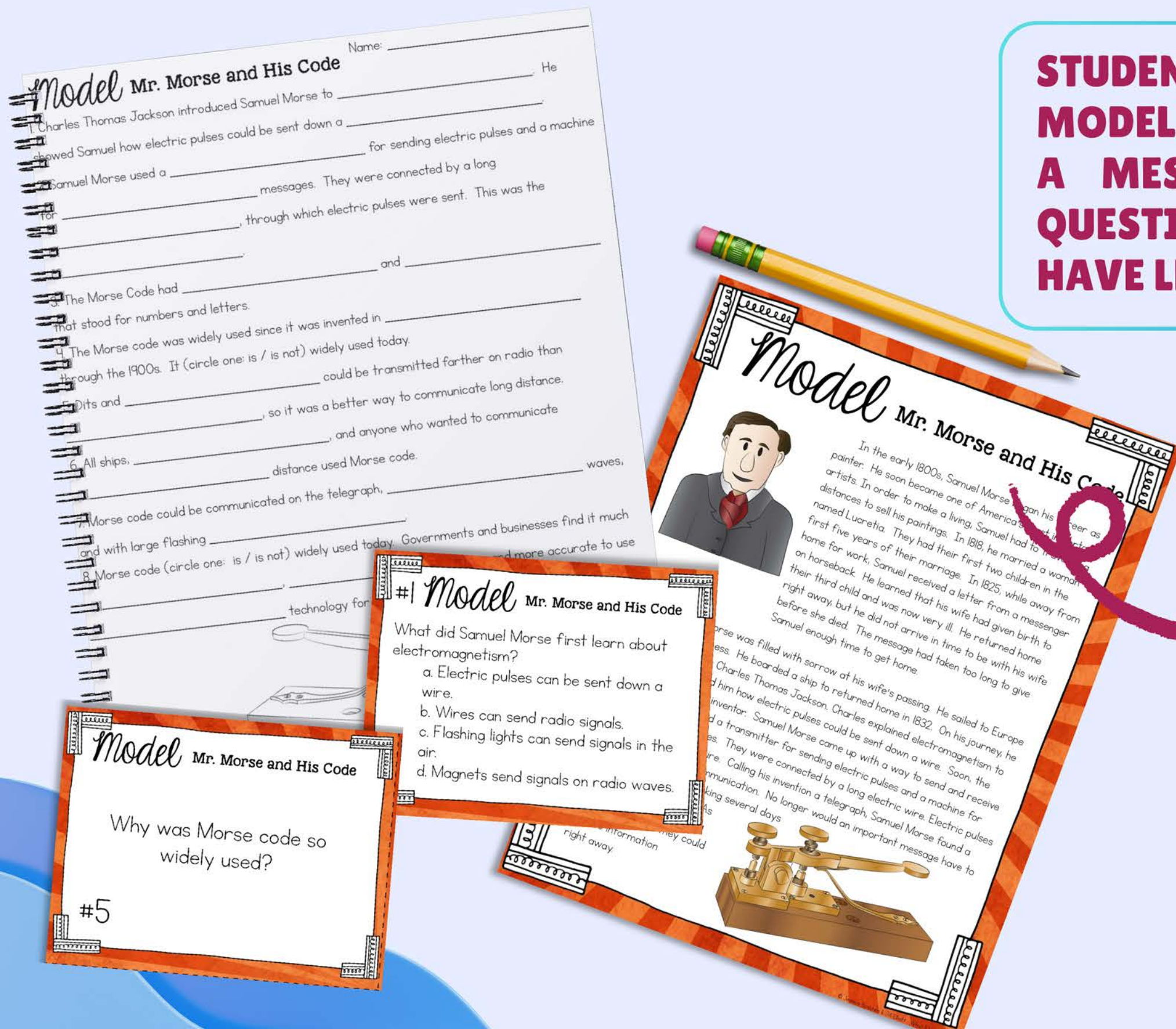
READ STATION

SNEAK PEEK: SOME PAGES IN THE MODEL STATION

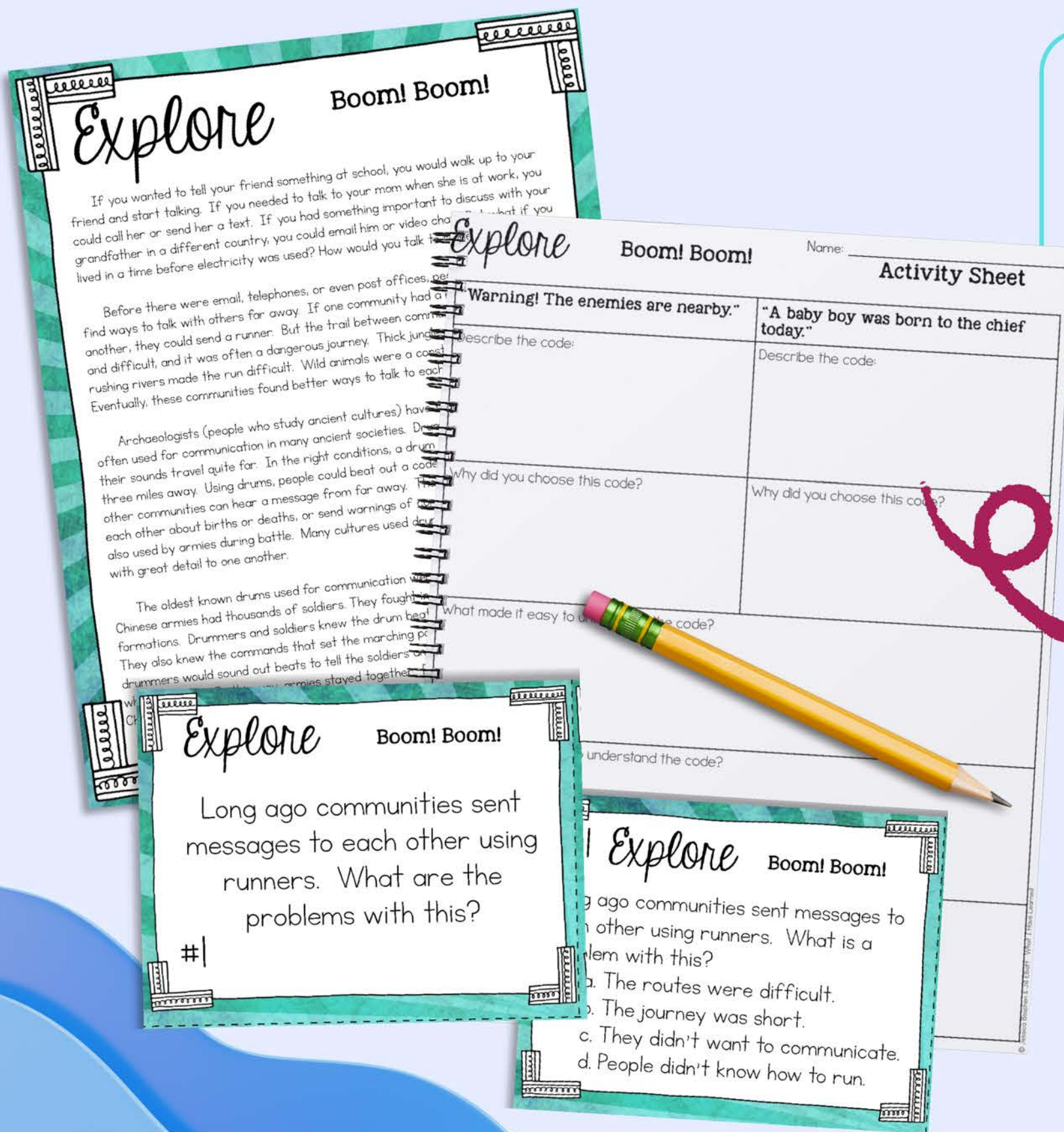
STUDENTS READ ABOUT MORSE CODE AND CREATE A MODEL OF A MORSE CODE TRANSMITTER, SENDING A MESSAGE IN MORSE CODE. THEY ANSWER QUESTIONS IN ORDER TO REINFORCE WHAT THEY HAVE LEARNED.

“Awesome resource!!
I love using this in
my classroom!”
- The Sisters' Snazzy
Schoolhouse

MODEL STATION



SNEAK PEEK: SOME PAGES IN THE EXPLORE STATION



STUDENTS READ ABOUT DRUM CODE MESSAGES AND CREATE THEIR OWN DRUM CODE IN ORDER TO EXPLORE HOW DRUMS ARE USED TO SEND CODES OVER LONG DISTANCES. THEY ANSWER QUESTIONS IN ORDER TO REINFORCE WHAT THEY HAVE LEARNED.

“Looking forward to using this activity to start the year.”

-Nancy H.

EXPLORE STATION

SNEAK PEEK: SOME PAGES IN THE SORT STATION

STUDENTS READ ABOUT DIGITAL AND ANALOG TECHNOLOGY. THEY SORT VARIOUS OBJECTS INTO DIGITAL AND ANALOG CATEGORIES. THEY THEN ANSWER QUESTIONS IN ORDER TO REINFORCE WHAT THEY HAVE LEARNED.

“Perfect for waves
and coding.
Thank you!”
- Diva S.

SORT STATION





All activities have the same basic components:

- Student Directions
- Short Answer Worksheet
- Fill-in-the-Blank Worksheet
- Cut & Paste Worksheet
- Short Answer Task Cards
- Multiple Choice Task Cards

Some activities have more reading to build background knowledge and additional worksheets or activity sheets to help organize the new information.

**NOT ALL VERSIONS OF THE PAGES ARE
DISPLAYED ON THE FOLLOWING PAGES,
BUT ALL ARE IN EACH RESOURCE**

DIGITAL VERSIONS

- ✓ Google Forms and/or
- ✓ Google Slides for every station
- ✓ Videos
- ✓ Video Games
- ✓ Digital Crossword Puzzles & Word Searches

Answer keys provided

CAN BE INDEPENDENT

- Watch
- Play
- Read
- Sort

MAY REQUIRE TEACHER SUPPORT

- Investigate
- Diagram
- Model
- Explore

TEACHER PREP

- Choose a topic and activities
- Choose which type of questions students will answer
- Set up the station using the included materials list
- Have students read the passage to build background knowledge (optional)
- Have students complete the stations using the included student directions

TEACHERS LOVE IT!



This is absolutely amazing!!!!!! This covers so many standards in one place that I couldn't click on yes quick enough. My students are absolutely loving working through this. The videos are amazing and the way you have made the work differentiated to meet all of the kids in my classroom is just what I needed. Thank you!

Jessica C.



Great resource to use in class! My students really liked how creative the activities were. Very well organized. Thank you!

Yazzy Dazzy



My passion is making learning accessible to all students.
I love scaffolding learning, breaking down the concepts and
building them up so that students can see the connections.
I love figuring out the small components that build up to
the big ideas and helping students see it all.



What I have **LEARNED**