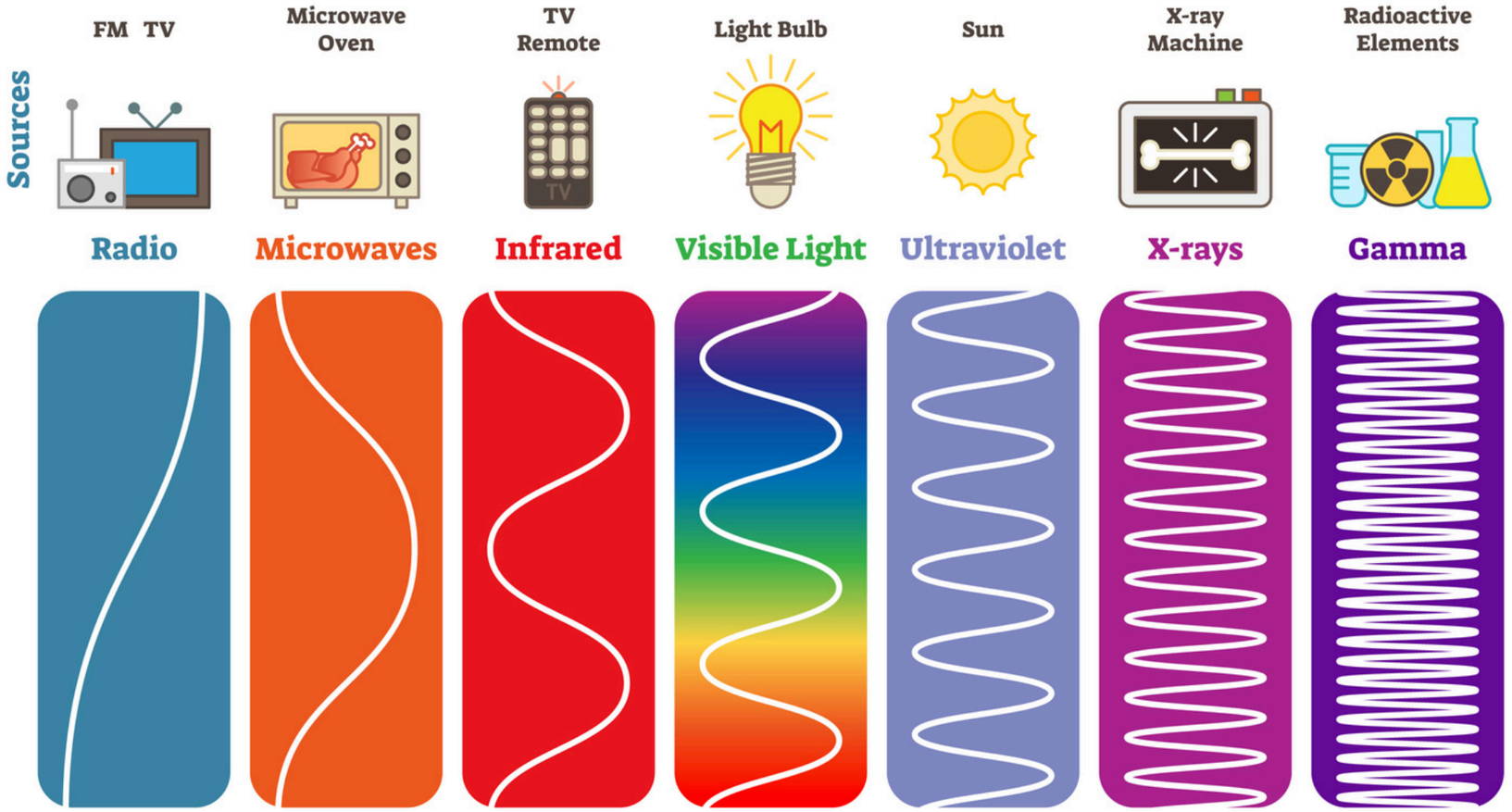
ELECTROMAGNETIC SPECTRUM



For Special Ed

INCLUDES GOOGLE SLIDES

For students who:

- are emerging or non-readers
- take alternate assessments
- are in special education
- short-attention span
- lack pre-requisite skills
- benefit from the use of pictures for support
- middle/high school

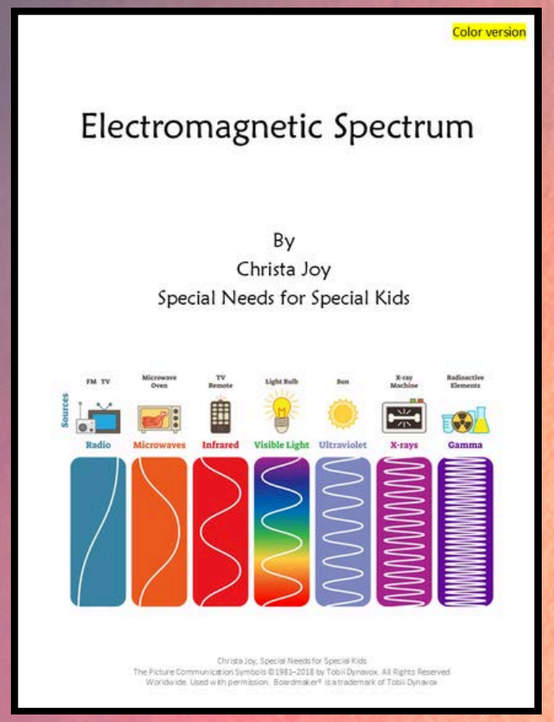


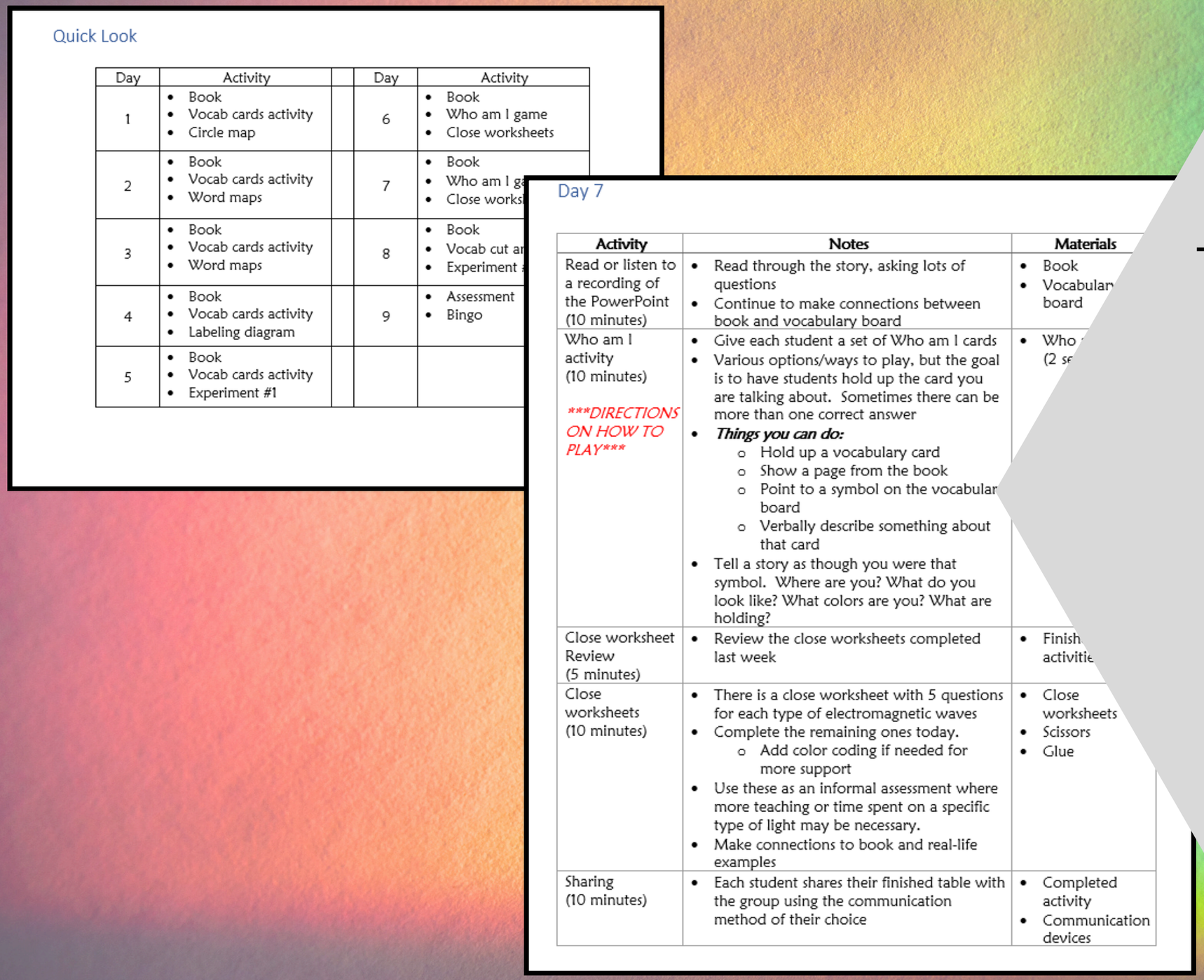
Table of Contents

Also included in this resource as separate files:

- Lesson plans
- Links and directions to digital activities
- PowerPoint (this is the book in the lesson plans)
- Voice recorded PowerPoint
- Activities in black and white

This unit contains 9 days of material in both printable and digital formats. I have included a detailed lesson plan to help you make the most of everything in this unit, including how to add some group activities.

It comes in 2 separate files. One in color and one in black and white.



Quick Look

Day	Activity		Day	Activity
1	• Book • Vocab cards activity • Circle map		6	• Book • Who am I game • Close worksheets
2	• Book • Vocab cards activity • Word maps		7	• Book • Who am I ga • Close works
3	• Book • Vocab cards activity • Word maps		8	• Book • Vocab cut ar • Experiment
4	• Book • Vocab cards activity • Labeling diagram		9	• Assessment • Bingo
5	• Book • Vocab cards activity • Experiment #1			

Day 7

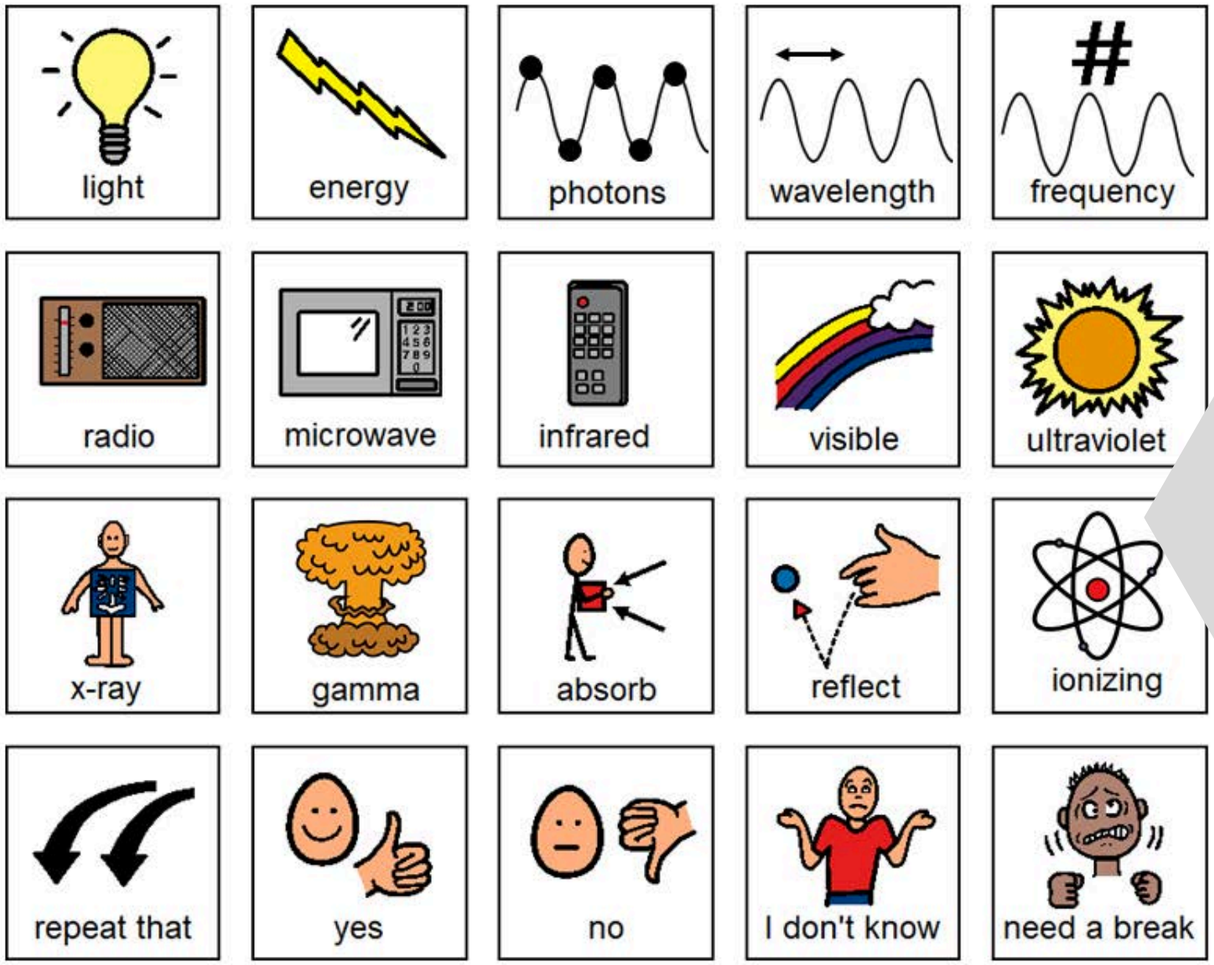
Activity	Notes	Materials
Read or listen to a recording of the PowerPoint (10 minutes)	• Read through the story, asking lots of questions • Continue to make connections between book and vocabulary board	• Book • Vocabular board

Who am I activity (10 minutes)
 	
****DIRECTIONS ON HOW TO PLAY****
	• Give each student a set of Who am I cards
	• Various options/ways to play, but the goal is to have students hold up the card you are talking about. Sometimes there can be more than one correct answer
	• ***Things you can do:***
	  ○ Hold up a vocabulary card
	  ○ Show a page from the book
	  ○ Point to a symbol on the vocabular board
	  ○ Verbally describe something about that card
	• Tell a story as though you were that symbol. Where are you? What do you look like? What colors are you? What are holding?
		• Who (2 se

Close worksheet Review (5 minutes)	• Review the close worksheets completed last week	• Finish activitie
Close worksheets (10 minutes)	• There is a close worksheet with 5 questions for each type of electromagnetic waves • Complete the remaining ones today. ○ Add color coding if needed for more support • Use these as an informal assessment where more teaching or time spent on a specific type of light may be necessary. • Make connections to book and real-life examples	• Close worksheets • Scissors • Glue
Sharing (10 minutes)	• Each student shares their finished table with the group using the communication method of their choice	• Completed activity • Communication devices

The lesson plans contain:

- Overall tips for teaching students with significant needs
- A quick look at what you will do each day
- Detailed instructions on how that day's lesson should run



This unit comes with a vocabulary board.

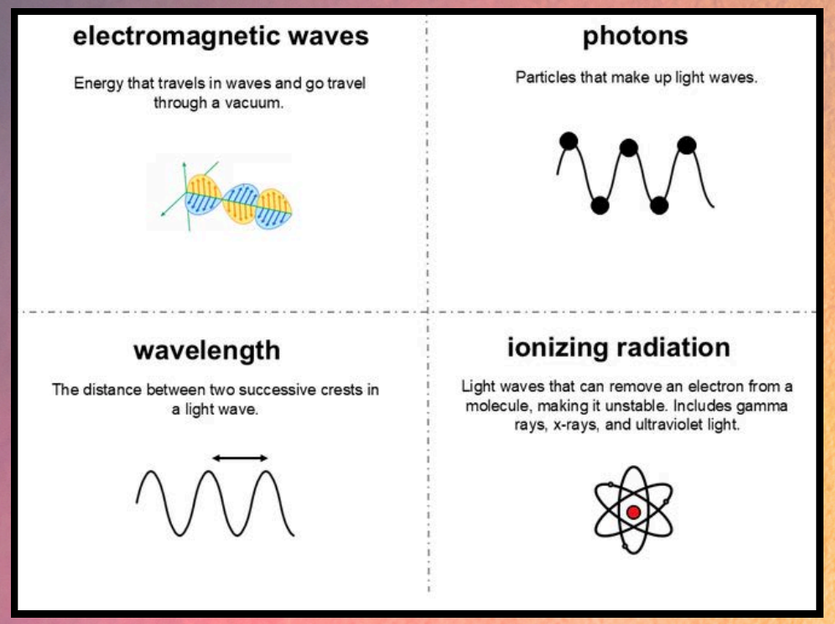
Vocabulary boards are great for ALL students to **assist with participation and engagement** in group discussions.

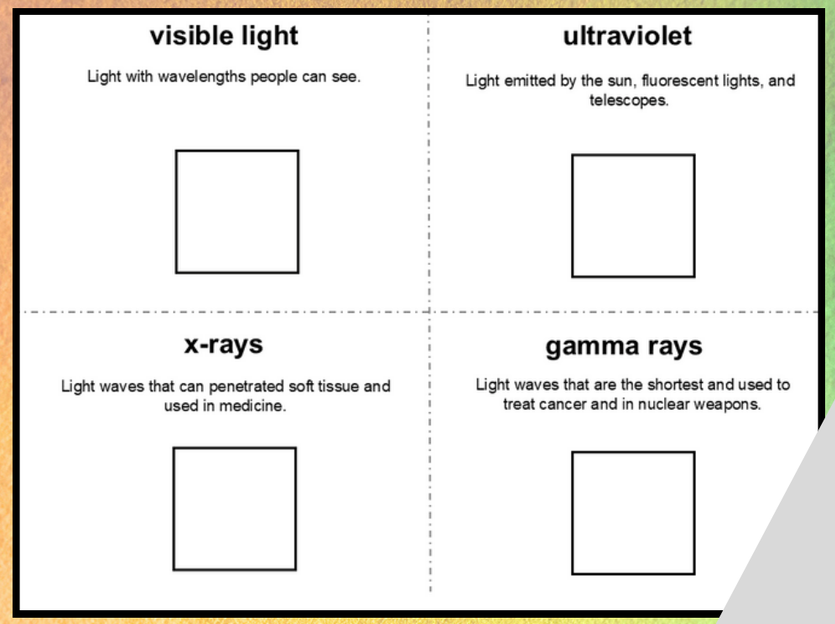
Tips on how to use in the unit!!

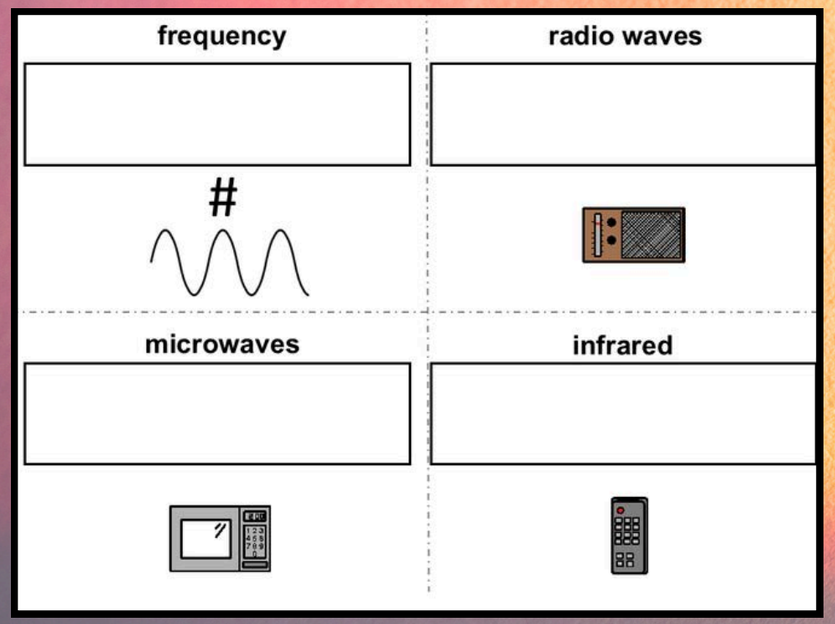
There are two types of infrared light. Near infrared is the closest to the wavelength of visible light. Near infrared light is what allows your remote to turn the channel on the TV or turn up the volume on the radio.

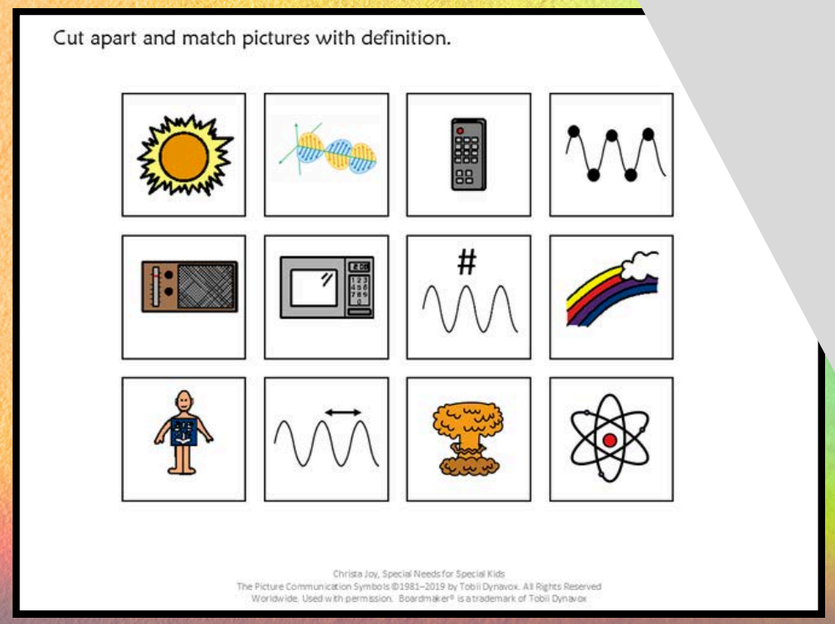
There is a 36 page book with this unit using simple text and photos.

It comes in a PowerPoint as well as an mp4/ movie version (so you don't have to print it out.)



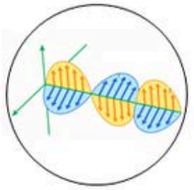






There are vocabulary cards that come in color and black and white.

- Included are suggestions for group activities to do with these each day.
- There is also a cut-and-paste activity.



Errorless version

Cut apart pictures and place in circle map about electromagnetic waves.

photons | wavelength | frequency | ionizing | used in medicine

radio | microwave | infrared | visible | to predict weather

x-ray | gamma | ultraviolet | telescope | sunburn

Cut apart pictures and place in circle map **ONLY IF** they relate to electromagnetic waves.

photons | wavelength | frequency | ionizing | sound

loud | microwave | engine | visible | to predict weather

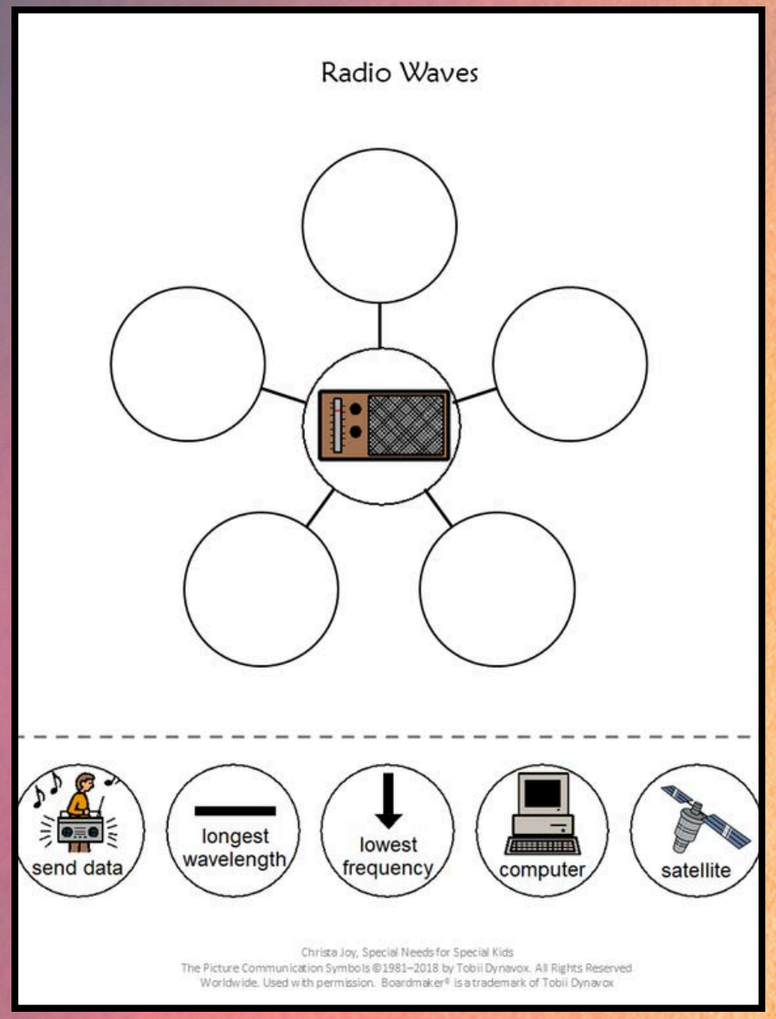
x-ray | gamma | ultraviolet | telescope | sunburn

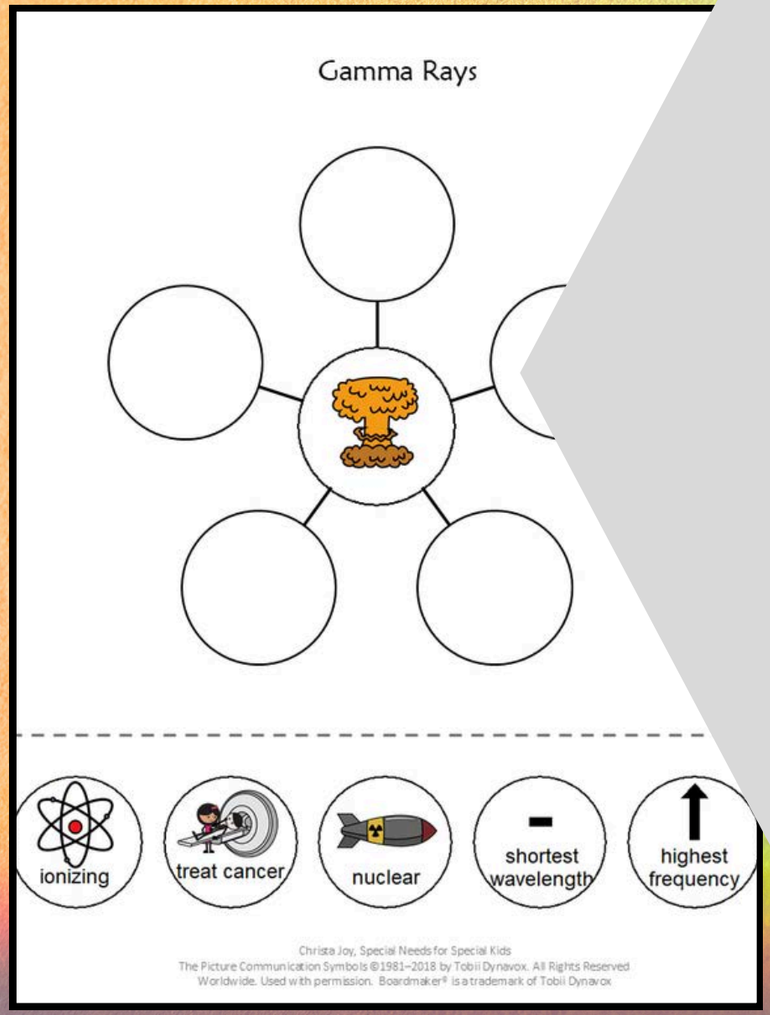
radio | thunder | infrared | typewriter | used in medicine

There is a circle map that reviews the main facts from the book/PowerPoint.

Circle maps are a great way for students to see the concept at a glance. There are 2 versions:

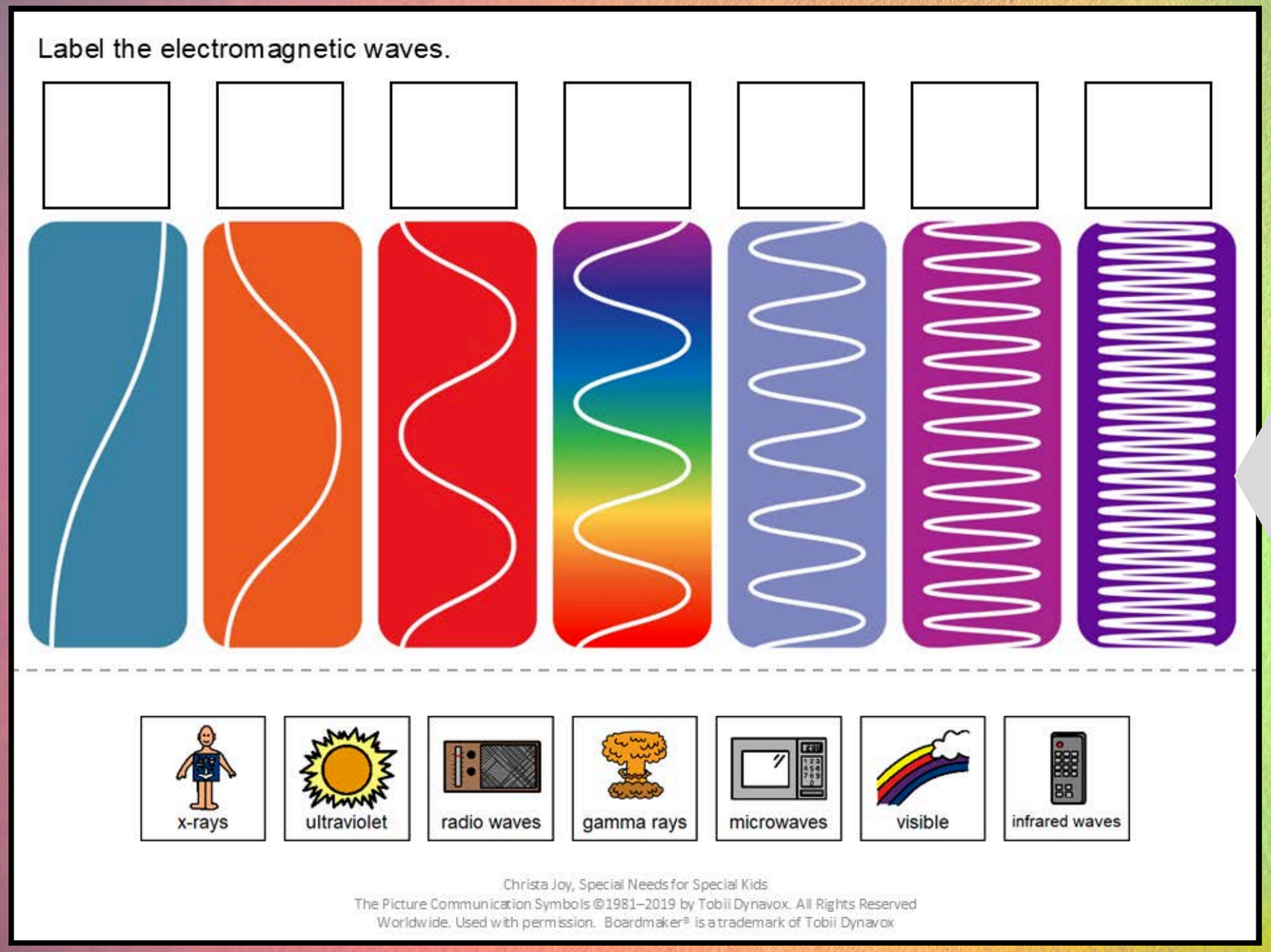
- One is errorless
- One has wrong answers mixed in students will have to set aside.





There are 7 word maps, one for each type of electromagnetic waves.

These are errorless activities and make great review sheets.

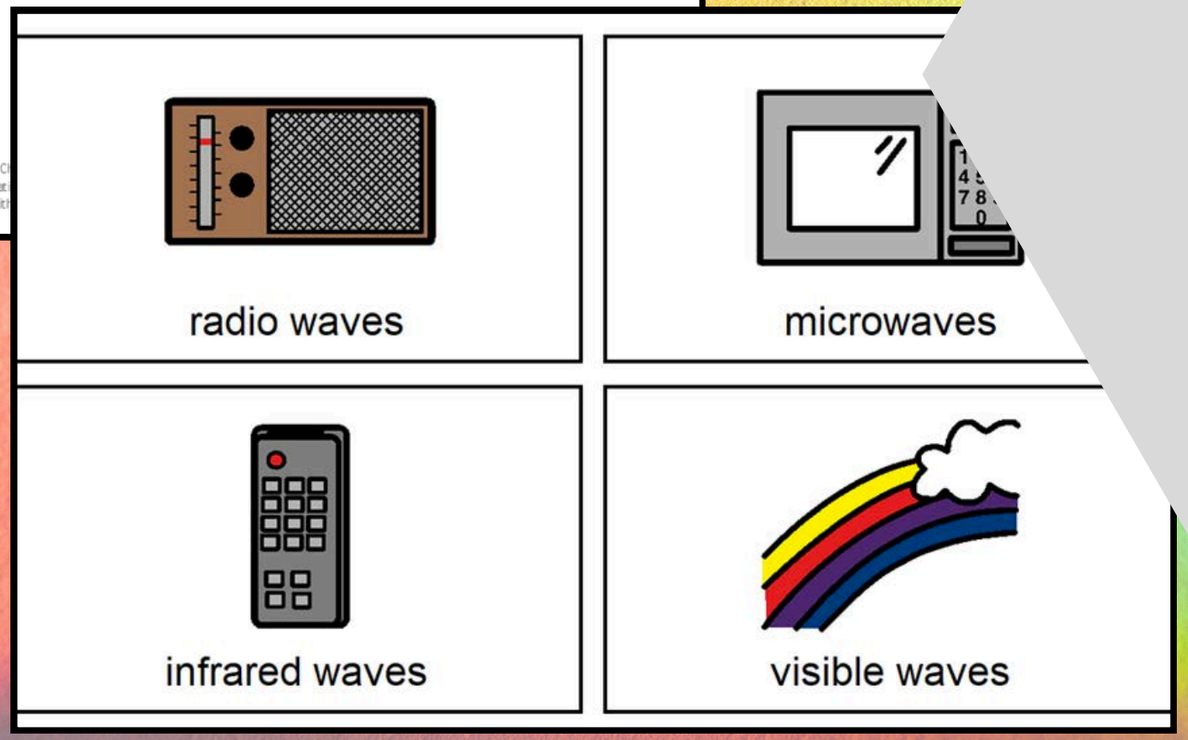


Students will label the electromagnetic spectrum, showing wavelengths from longest to shortest.

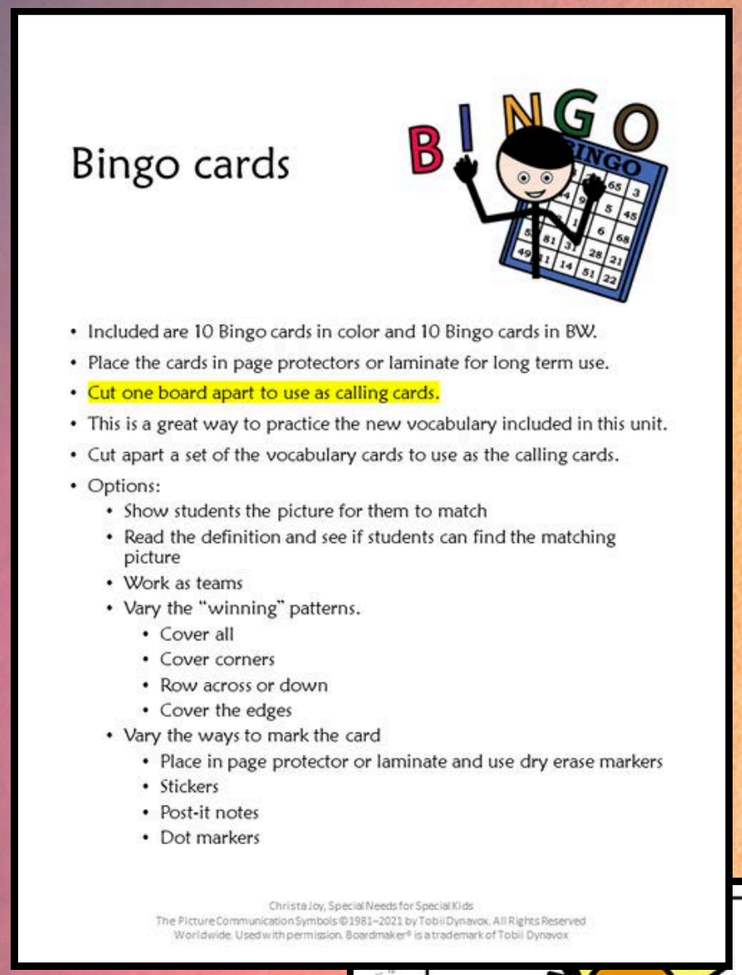
Group activity

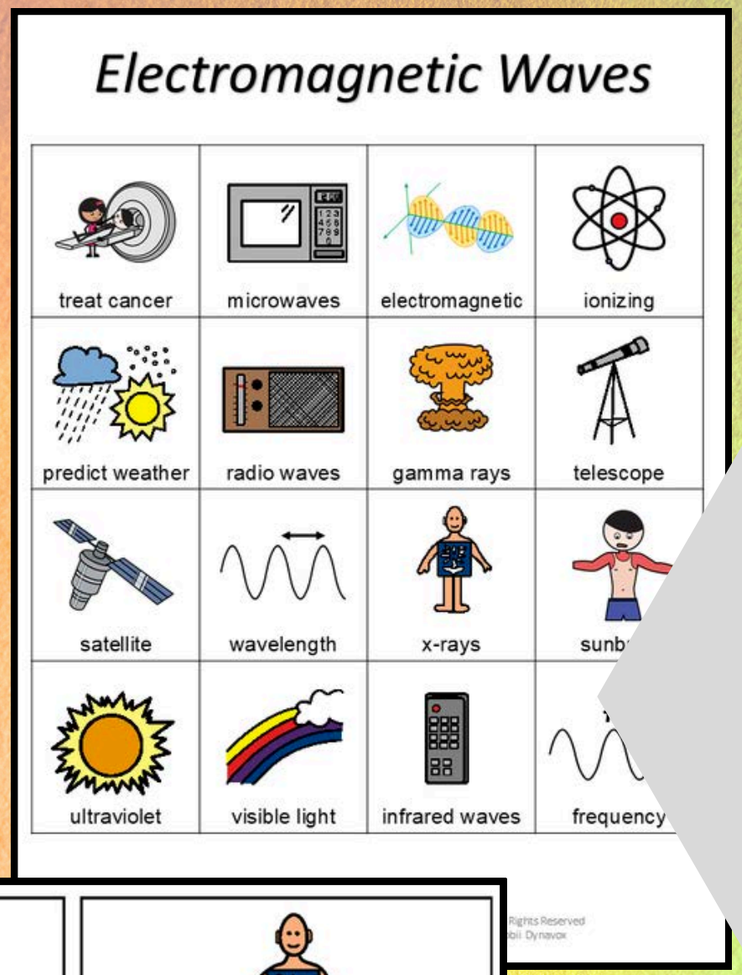
Who am I cards

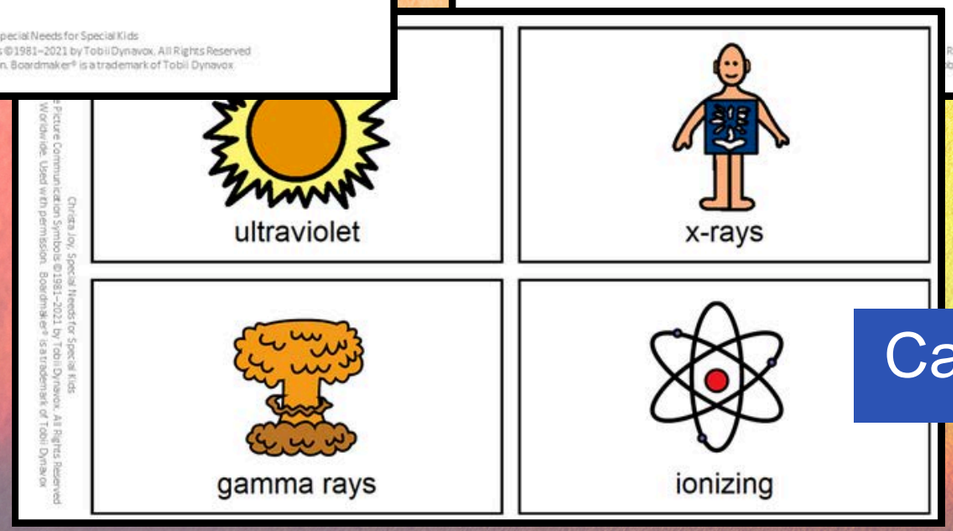
- Give each student a set of Who am I cards
- Various options/ways to play, but the goal is to have students hold up the card you are talking about. Sometimes there can be more than one correct answer
- Things you can do:
  - Hold up a who am I card
  - Show a page from the book
  - Point to a symbol on the vocabulary board
  - Verbally describe something about that electromagnetic wave.
    - Short or long wavelength
    - High or low frequency
    - Where it is used
    - What it is used for
    - Is it visible?
    - Is it ionizing?



There are large cards and directions for playing a "Who am I?" group activity.



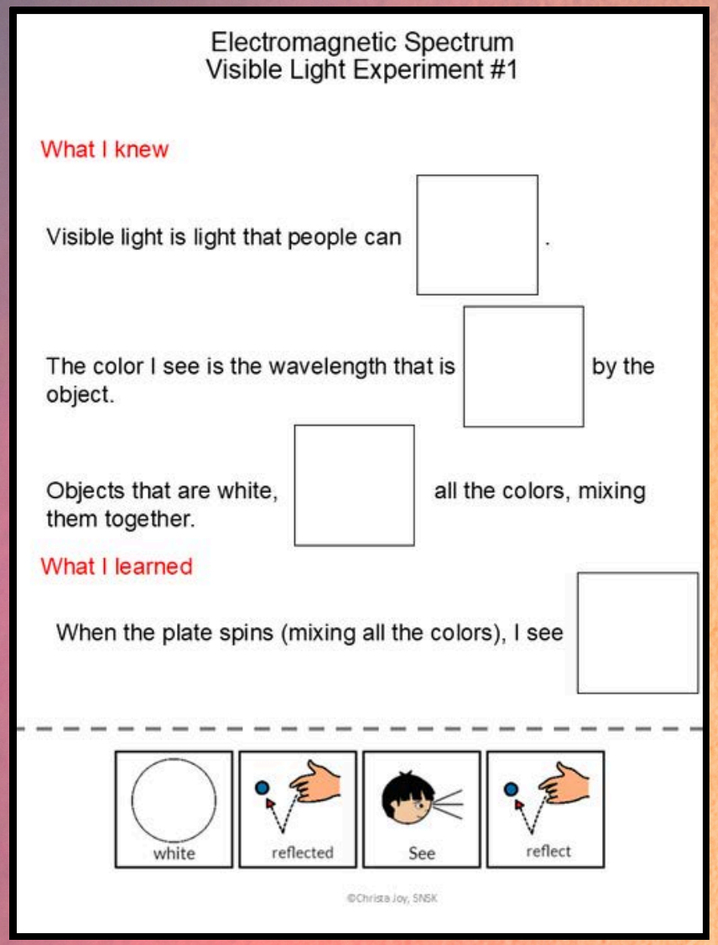




Group activity

There are 10 color and 10 black and white Bingo cards included plus 10 different ways to use them and play Bingo. There are calling cards included. This is a great way to review vocabulary.

Calling cards included



Electromagnetic Spectrum
Visible Light Experiment #1

What I knew

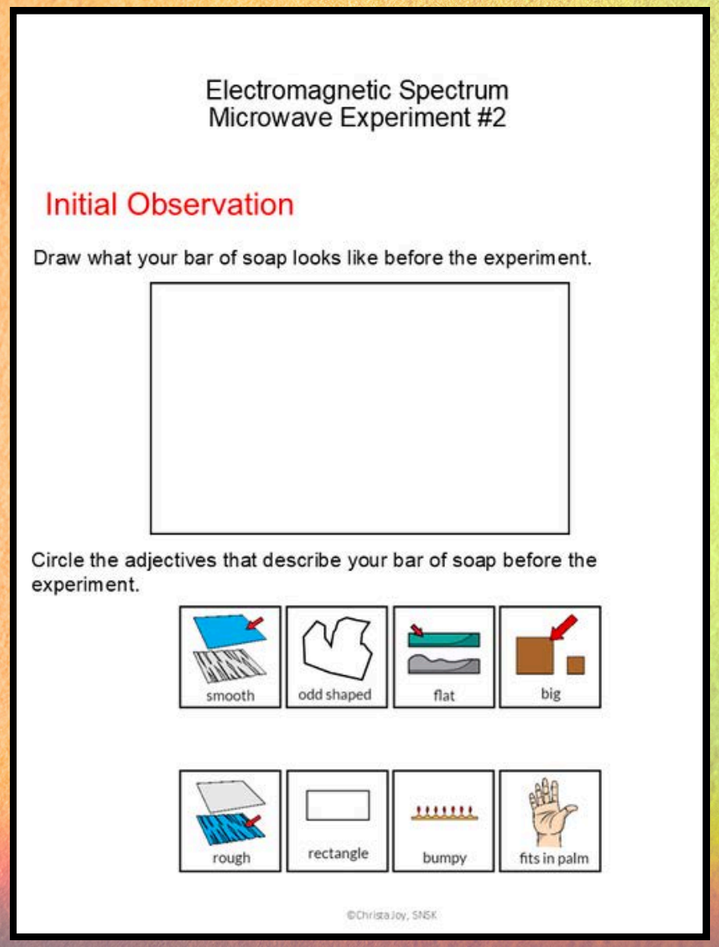
Visible light is light that people can [ ] .

The color I see is the wavelength that is [ ] by the object.

Objects that are white, [ ] all the colors, mixing them together.

What I learned

When the plate spins (mixing all the colors), I see [ ]



Electromagnetic Spectrum
Microwave Experiment #2

Initial Observation

Draw what your bar of soap looks like before the experiment.

Circle the adjectives that describe your bar of soap before the experiment.

This unit includes 2 experiments.

- Explore visible light
- Fun with microwaves

Pictures included to use to fill in the blanks.

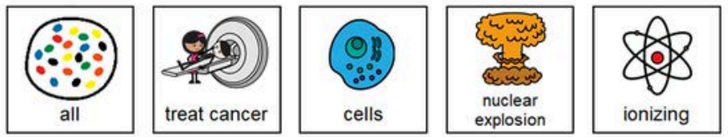
Detailed teacher instructions are included.

Microwaves

1. Microwaves are often measured in ____ .
2. Microwaves cause molecules to ____ .
3. These vibrations cause food to get ____ .
4. Microwaves can penetrate ____ .
5. Microwaves in doppler radar are used to ____ .

Gamma rays

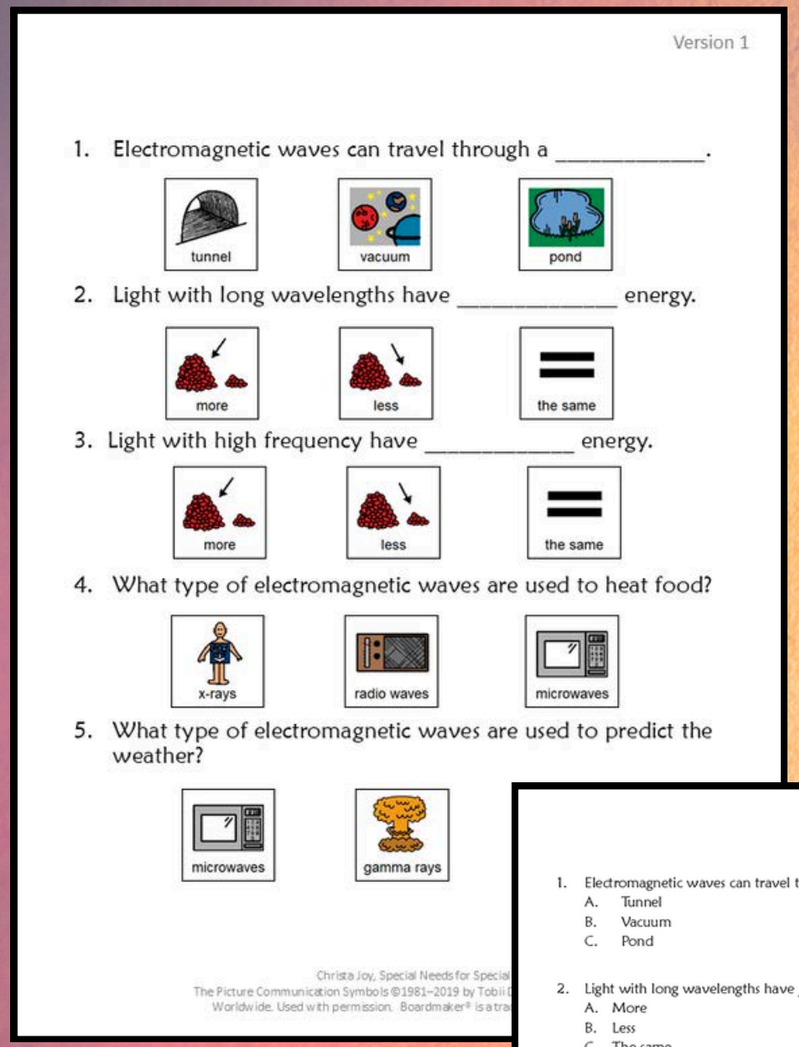
1. Gamma rays are used in medicine to ____ .
2. Gamma rays damage rapidly dividing ____ .
3. Gamma rays are a type of ____ energy.
4. Gamma rays are released in a ____ .
5. Gamma rays can penetrated ____ types of matter.

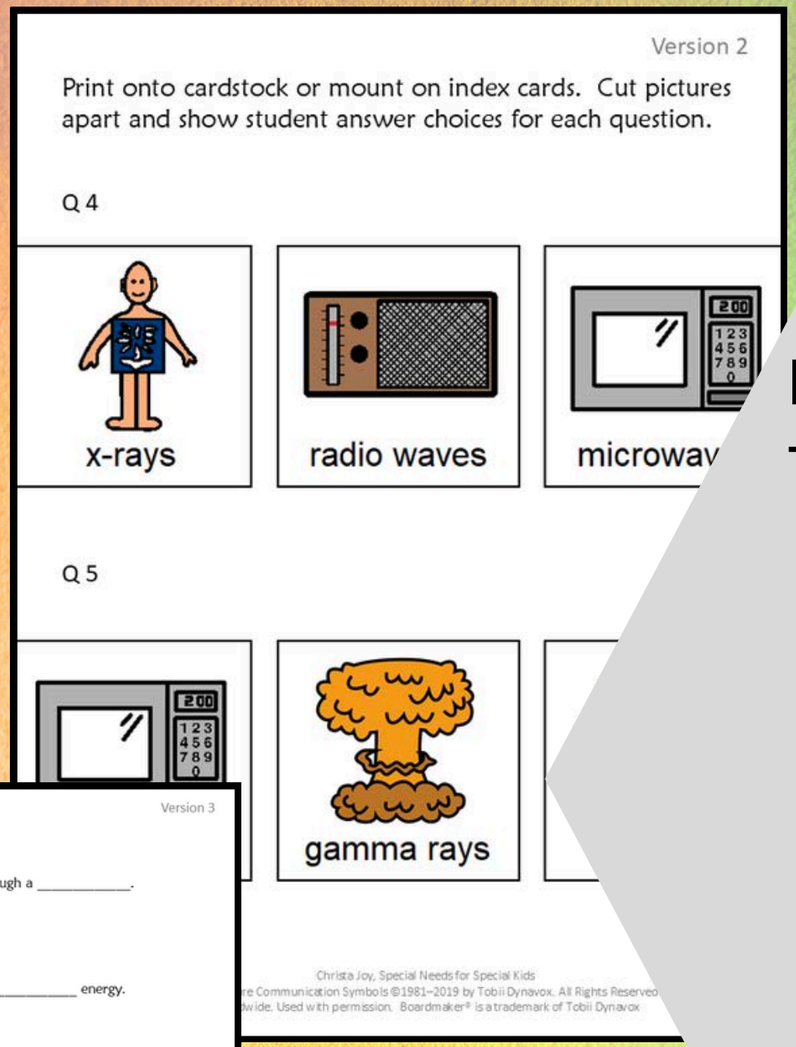


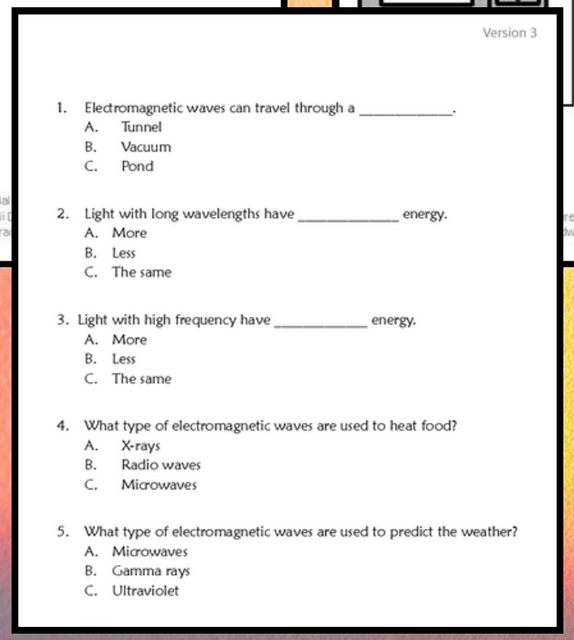
There are 7 close worksheets, one for each type of electromagnetic waves.

Close worksheets are a great informal assessment.

Answer key included.





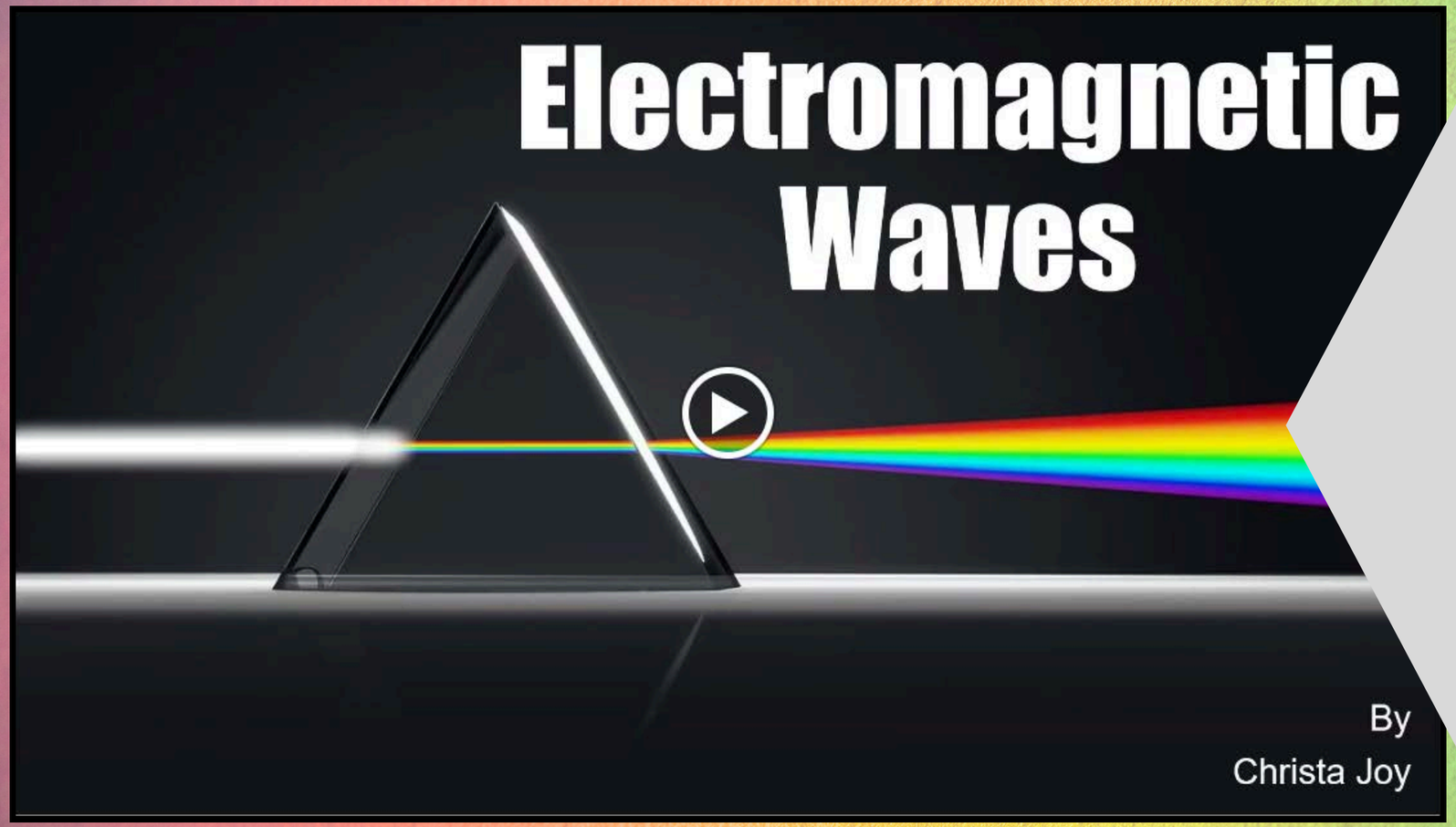


FINALLY the assessment!!

There are 3 versions.

- 10 questions with 3 picture choices for each question
- cut out the answer choices and glue them on index cards
- traditional multiple choice

Answer key included.

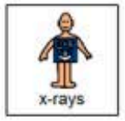


This unit also has digital activities. There is a movie version of the books students can listen to read aloud.

Great for review

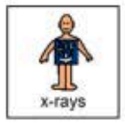
6. Infrared waves emit _____.

7. Circle the types of **ionizing** electromagnetic waves.



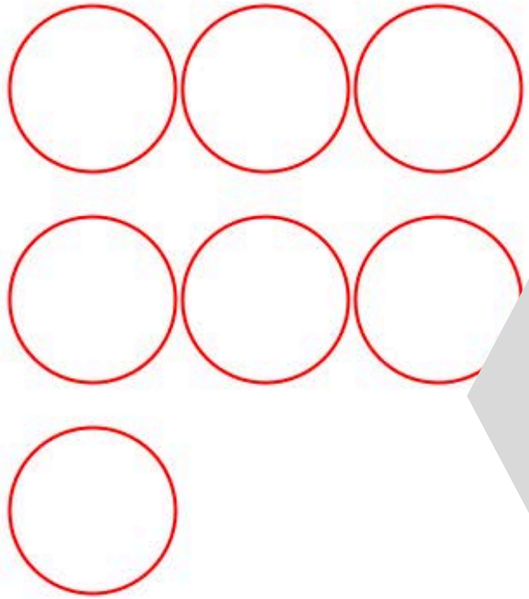
8. What type of electromagnetic waves are used in medicine?

9. What type of electromagnetic waves has the longest wavelength?



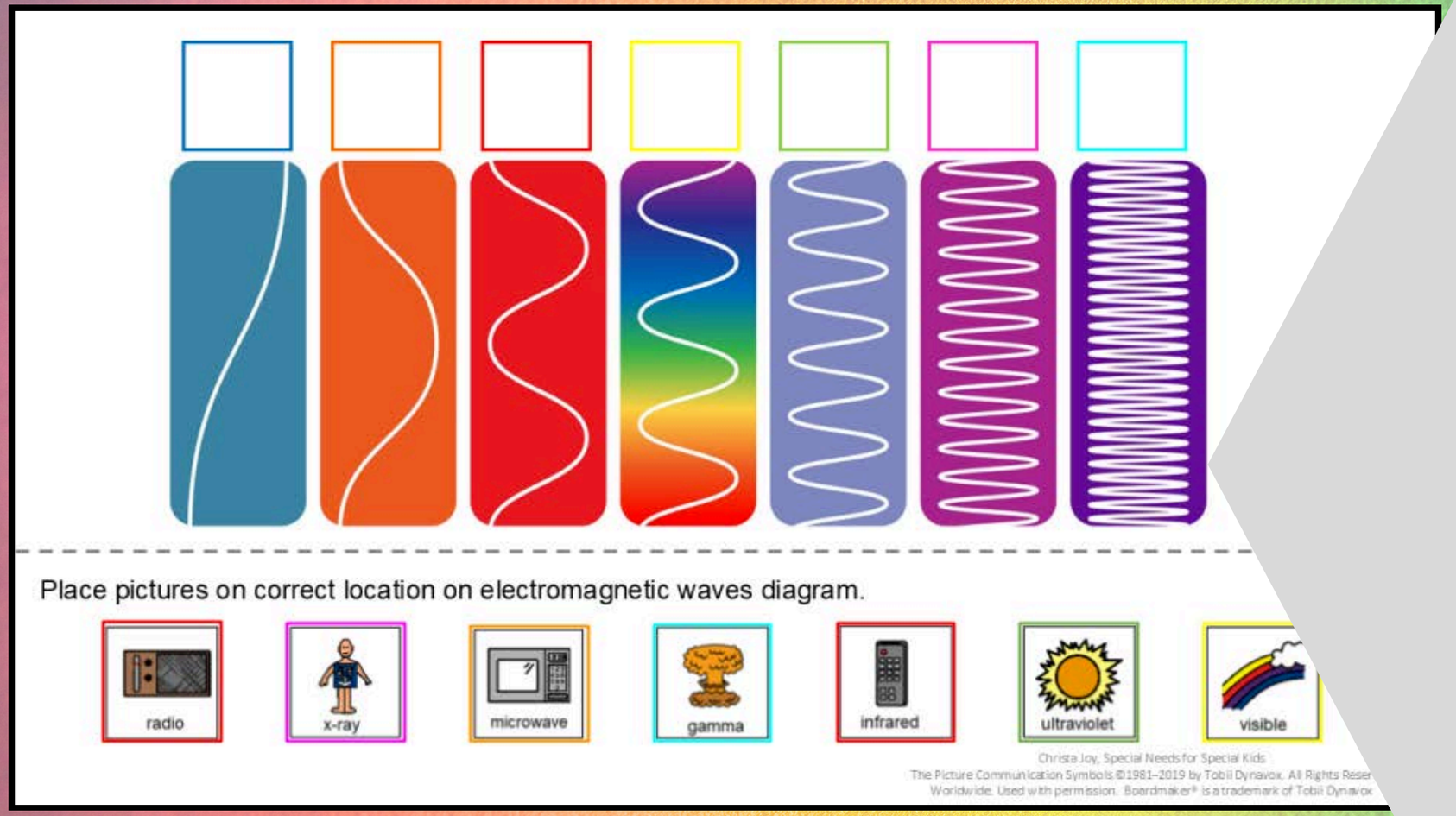
10. True or False. White light is made up of all the colors blended together.

Circle the correct answer.



The digital activities have students click and drag their answers.

Perfect for every learning level



There are 2 sets of slides. One set has color-coding for more support.

This resource comes in a zipped folder. You will need to unzip the folder to access all the contents which include:

- 9 days of lesson plans
- Electromagnetic activities in color
- Electromagnetic activities in black and white
- 2 experiments
- Voice-recorded PowerPoint show
- Electromagnetic Spectrum book (PowerPoint) to use with activities
- Links and directions to digital activities