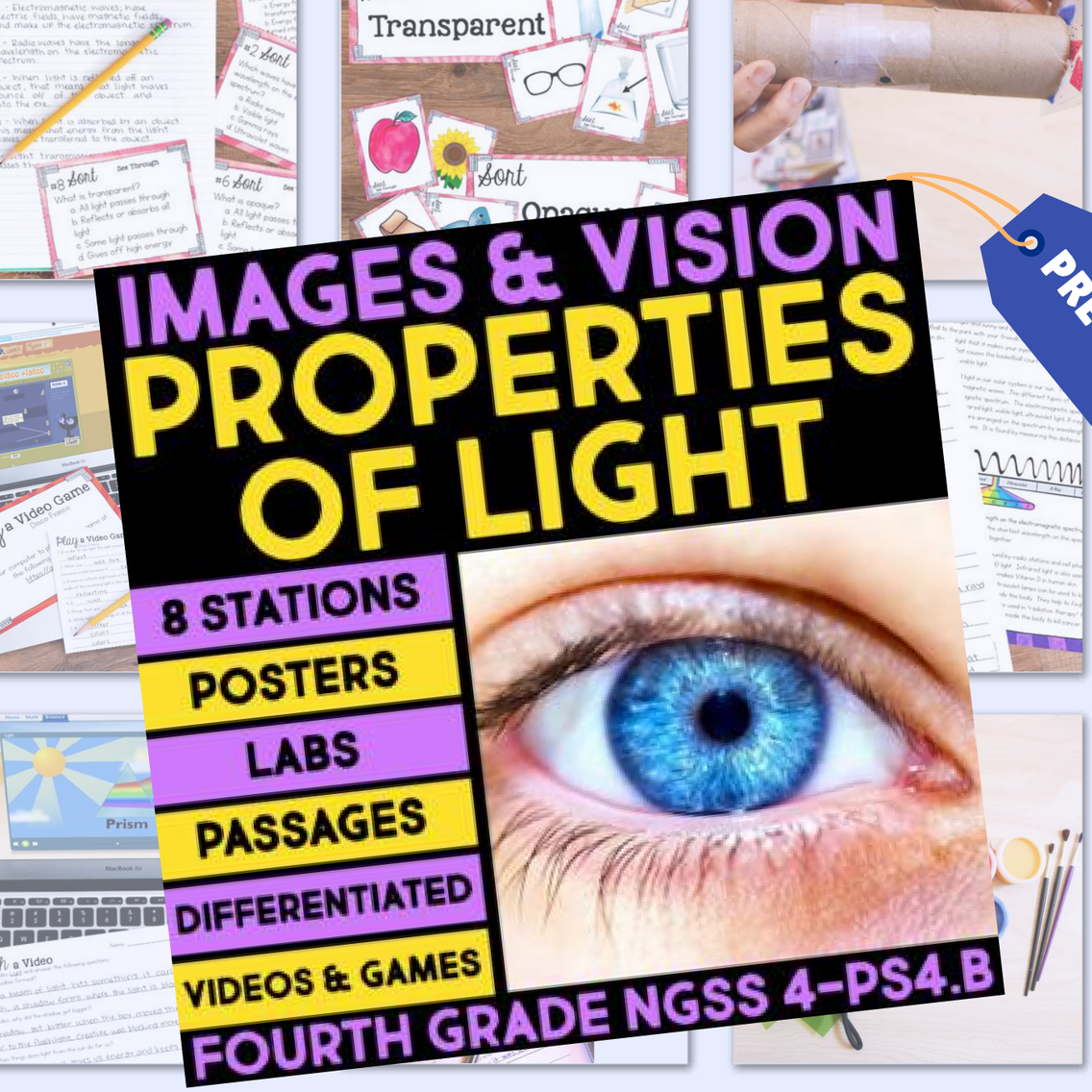




Illuminate Learning with Light Energy!

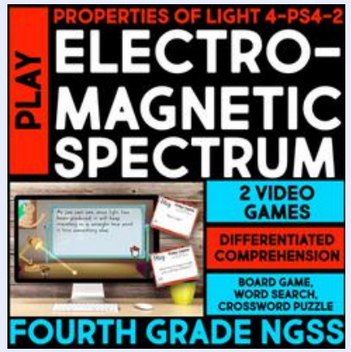
4TH GRADE

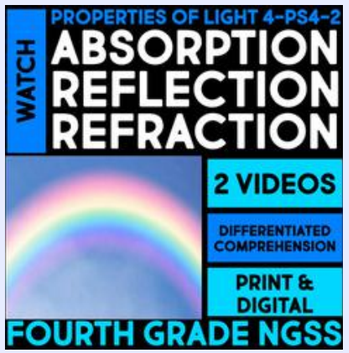
LIGHT ENERGY, REFLECTION, REFRACTION, CONVEX, CONCAVE

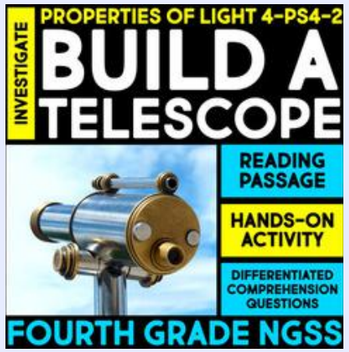
4th Grade NGSS UNIT

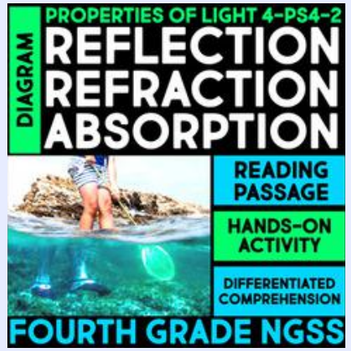
KEEP SCROLLING TO SEE WHAT'S INSIDE!

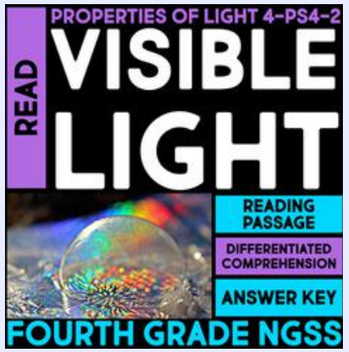
WHAT'S INCLUDED IN THE BUNDLE?

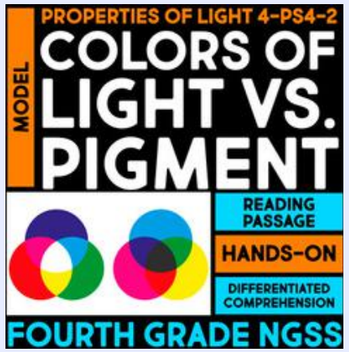


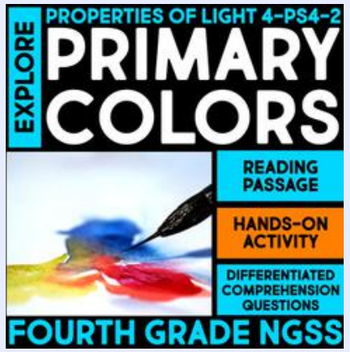








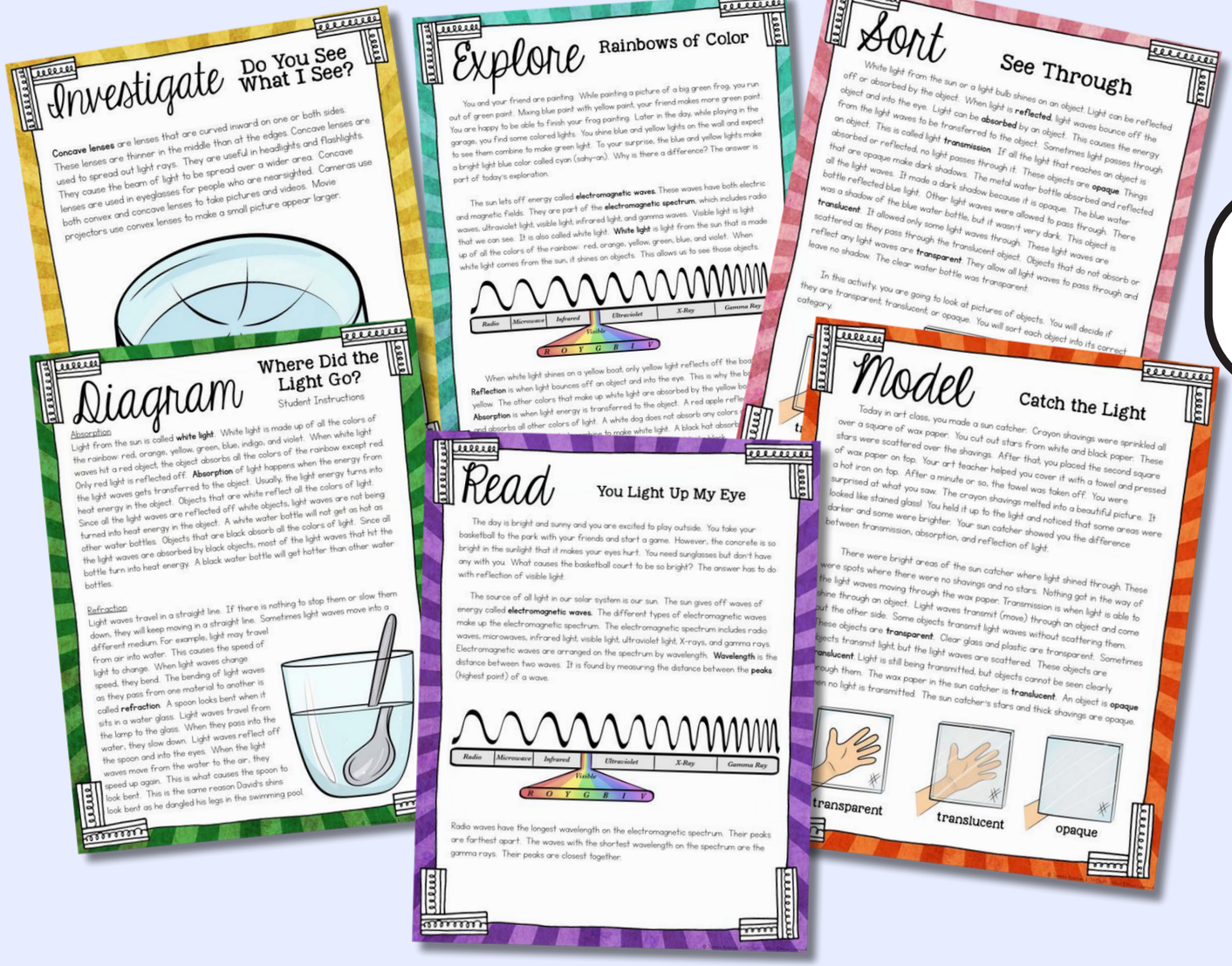






- 8 Science Stations aligned with the NGSS for 2nd grade
- 6 Reading passages
- Hands-on activities
- Differentiated comprehension questions
- Digital Videos & Video Games
- Digital Google Slides & Forms

6 READING PASSAGE

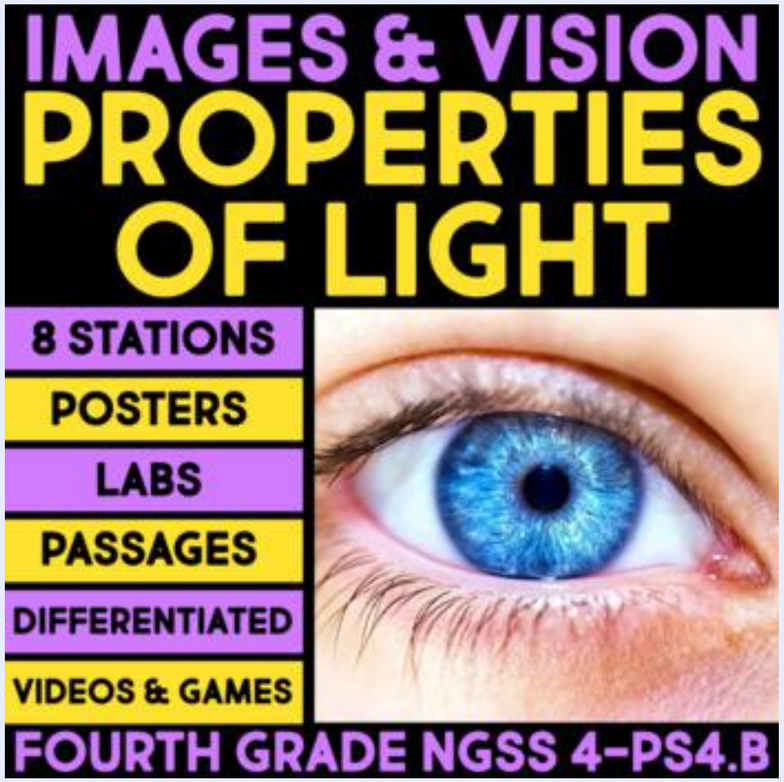


6 Reading Passages that provide all scientific background knowledge for each station

Available in two formats + Digital

Includes pictures and visuals

PAGE OVERVIEW



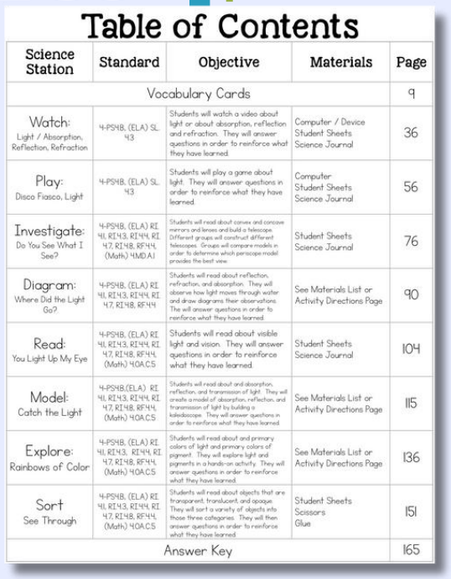
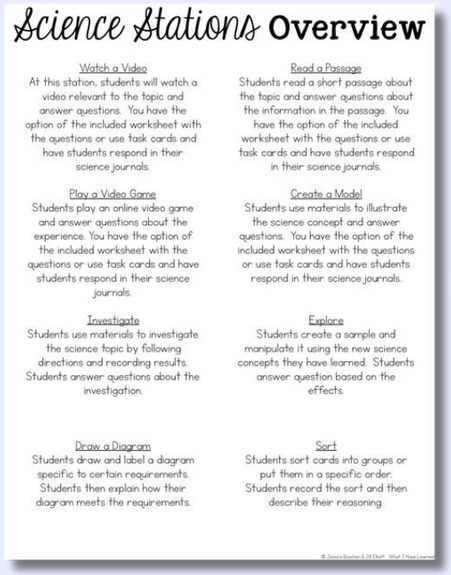


Table of Contents

Science Station	Standard	Objective	Materials	Page
Vocabulary Cards				9
Watch: Light / Absorption, Reflection, Refraction	4-PS4.B, (ELA) SL. 4.3	Students will watch a video about light or about absorption, reflection, and refraction. They will answer questions in order to reinforce what they have learned.	Computer / Device Student Sheets Science Journal	36
Play: Disco Fiasco, Light	4-PS4.B, (ELA) SL. 4.3	Students will play a game about light. They will answer questions in order to reinforce what they have learned.	Computer Student Sheets Science Journal	56
Investigate: Do You See What I See?	4-PS4.B, (ELA) RI. 4.1, RI.4.3, RI.4.4, RI. 4.7, RI.4.8, RF.4.4, (Math.) 4.MD.A.1	Students will read about convex and concave mirrors and lenses and build a telescope. Different groups will construct different telescopes. Groups will compare models in order to determine which periscope model provides the best view.	Student Sheets Science Journal	76
Diagram: Where Did the Light Go?	4-PS4.B, (ELA) RI. 4.1, RI.4.3, RI.4.4, RI. 4.7, RI.4.8, RF.4.4	Students will read about reflection, refraction, and absorption. They will observe how light moves through water and draw diagrams their observations. The will answer questions in order to reinforce what they have learned.	See Materials List or Activity Directions Page	90
Read: You Light Up My Eye	4-PS4.B, (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 will read about visible light and vision. They will answer questions in order to reinforce what they have learned.	Student Sheets Science Journal	104
Model: Catch the Light	4-PS4.B,(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 will read about and absorption, reflection, and transmission of light. They will create a model of absorption, reflection, and transmission of light by building a kaleidoscope. They will answer questions in order to reinforce what they have learned.	See Materials List or Activity Directions Page	115
Explore: Rainbows of Color	4-PS4.B, (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 will read about and primary colors of light and primary colors of pigment. They will explore light and pigments in a hands-on activity. They will answer questions in order to reinforce what they have learned.	See Materials List or Activity Directions Page	136
Sort See Through	4-PS4.B, (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 will read about objects that are transparent, translucent, and opaque. They will sort a variety of objects into those three categories. They will then answer questions in order to reinforce what they have learned.	Student Sheets Scissors Glue	151
Answer Key				165



Science Stations Overview

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

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

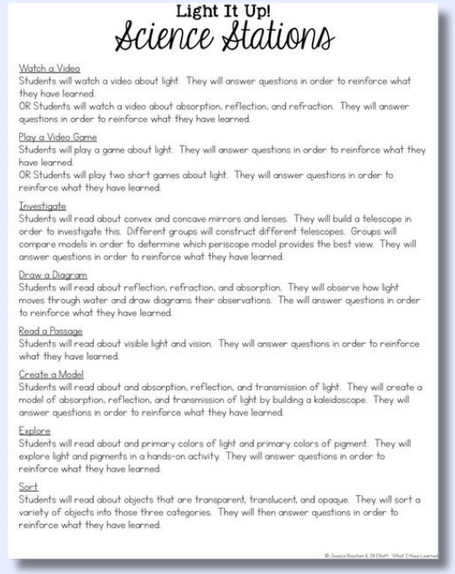
Create a Model
Students use materials to illustrate the science concept and answer questions. You have the option of the included worksheet with the questions or use task cards and have students respond in their science journals.

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

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

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

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



Light It Up!
Science Stations

Watch a Video
Students will watch a video about light. They will answer questions in order to reinforce what they have learned.
OR Students will watch a video about absorption, reflection, and refraction. They will answer questions in order to reinforce what they have learned.

Play a Video Game
Students will play a game about light. They will answer questions in order to reinforce what they have learned.
OR Students will play two short games about light. They will answer questions in order to reinforce what they have learned.

Investigate
Students will read about convex and concave mirrors and lenses. They will build a telescope in order to investigate this. Different groups will construct different telescopes. Groups will compare models in order to determine which periscope model provides the best view. They will answer questions in order to reinforce what they have learned.

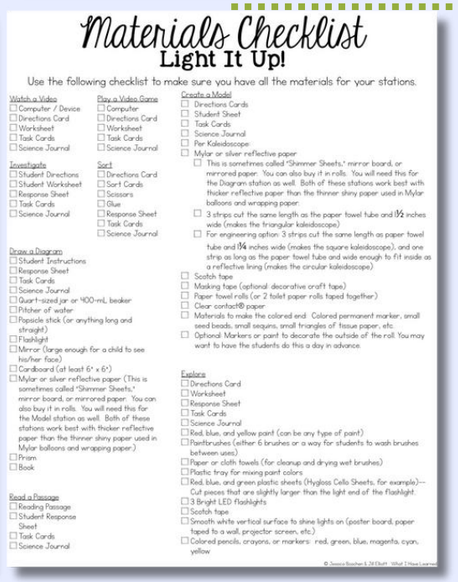
Draw a Diagram
Students will read about reflection, refraction, and absorption. They will observe how light moves through water and draw diagrams their observations. The will answer questions in order to reinforce what they have learned.

Read a Passage
Students will read about visible light and vision. They will answer questions in order to reinforce what they have learned.

Create a Model
Students will read about and absorption, reflection, and transmission of light. They will create a model of absorption, reflection, and transmission of light by building a kaleidoscope. They will answer questions in order to reinforce what they have learned.

Explore
Students will read about and primary colors of light and primary colors of pigment. They will explore light and pigments in a hands-on activity. They will answer questions in order to reinforce what they have learned.

Sort
Students will read about objects that are transparent, translucent, and opaque. They will sort a variety of objects into those three categories. They will then answer questions in order to reinforce what they have learned.



Materials Checklist
Light It Up!

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

Play a Video Game
- ☐ Computer
- ☐ Directions Card
- ☐ Worksheet
- ☐ Task Cards
- ☐ Science Journal

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

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

Draw a Diagram
- ☐ Student Instructions
- ☐ Response Sheet
- ☐ Task Cards
- ☐ Science Journal
- ☐ Quart-sized jar or 400-mL beaker
- ☐ Pitcher of water
- ☐ Popsicle stick (or anything long and straight)
- ☐ Flashlight
- ☐ Mirror (large enough for a child to see his/her face)
- ☐ Cardboard (at least 6" x 6")
- ☐ Mylar or silver reflective paper (This is sometimes called "Shimmer Sheets," mirror board, or mirrored paper. You can also buy it in rolls. You will need this for the Model station as well. Both of these stations work best with thicker reflective paper than the thinner shiny paper used in Mylar balloons and wrapping paper.)
- ☐ Prism
- ☐ Book

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

Create a Model
- ☐ Directions Cards
- ☐ Student Sheet
- ☐ Task Cards
- ☐ Science Journal
- ☐ Per Kaleidoscope
- ☐ Mylar or silver reflective paper
  - ☐ This is sometimes called "Shimmer Sheets," mirror board, or mirrored paper. You can also buy it in rolls. You will need this for the Diagram station as well. Both of these stations work best with thicker reflective paper than the thinner shiny paper used in Mylar balloons and wrapping paper.
  - ☐ 3 strips cut the same length as the paper towel tube and 1½ inches wide (makes the triangular kaleidoscope)
  - ☐ For engineering option: 3 strips cut the same length as paper towel tube and 1¼ inches wide (makes the square kaleidoscope), and one strip as long as the paper towel tube and wide enough to fit inside as a reflective lining (makes the circular kaleidoscope)
- ☐ Scotch tape
- ☐ Masking tape (optional: decorative craft tape)
- ☐ Paper towel rolls (or 2 toilet paper rolls taped together)
- ☐ Clear contact® paper
- ☐ Materials to make the colored end: Colored permanent marker, small seed beads, small sequins, small triangles of tissue paper, etc.
- ☐ Optional: Markers or paint to decorate the outside of the roll. You may want to have the students do this a day in advance.

Explore
- ☐ Directions Card
- ☐ Worksheet
- ☐ Response Sheet
- ☐ Task Cards
- ☐ Science Journal
- ☐ Red, blue, and yellow paint (can be any type of paint)
- ☐ Paintbrushes (either 6 brushes or a way for students to wash brushes between uses)
- ☐ Paper or cloth towels (for cleanup and drying wet brushes)
- ☐ Plastic tray for mixing paint colors
- ☐ Red, blue, and green plastic sheets (Hygloss Cello Sheets, for example)—Cut pieces that are slightly larger than the light end of the flashlight.
- ☐ 3 Bright LED Flashlights
- ☐ Scotch tape
- ☐ Smooth white vertical surface to shine lights on (poster board, paper taped to a wall, projector screen, etc.)
- ☐ Colored pencils, crayons, or markers: red, green, blue, magenta, cyan, yellow

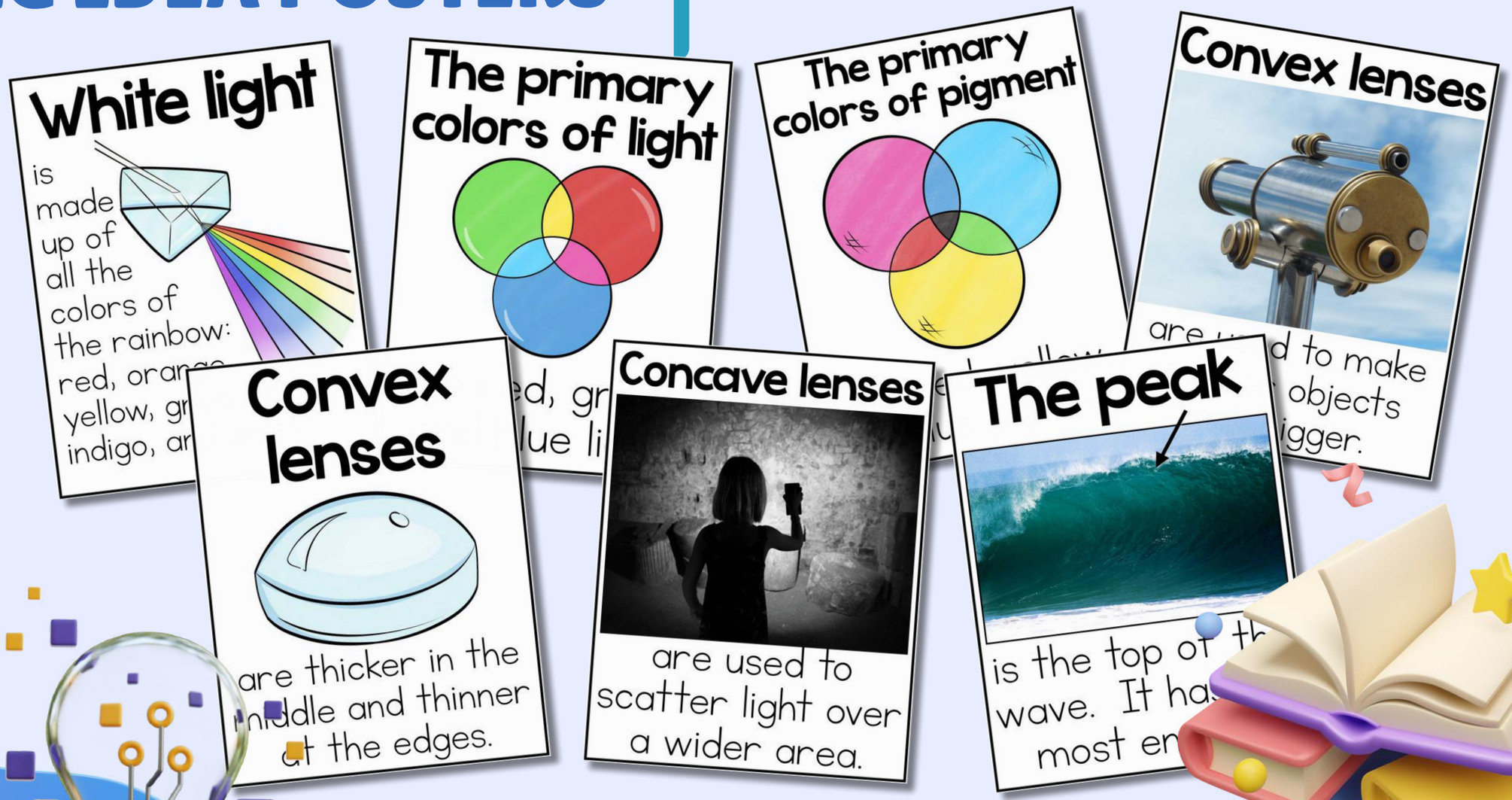
Table of Contents

Science Station Overview

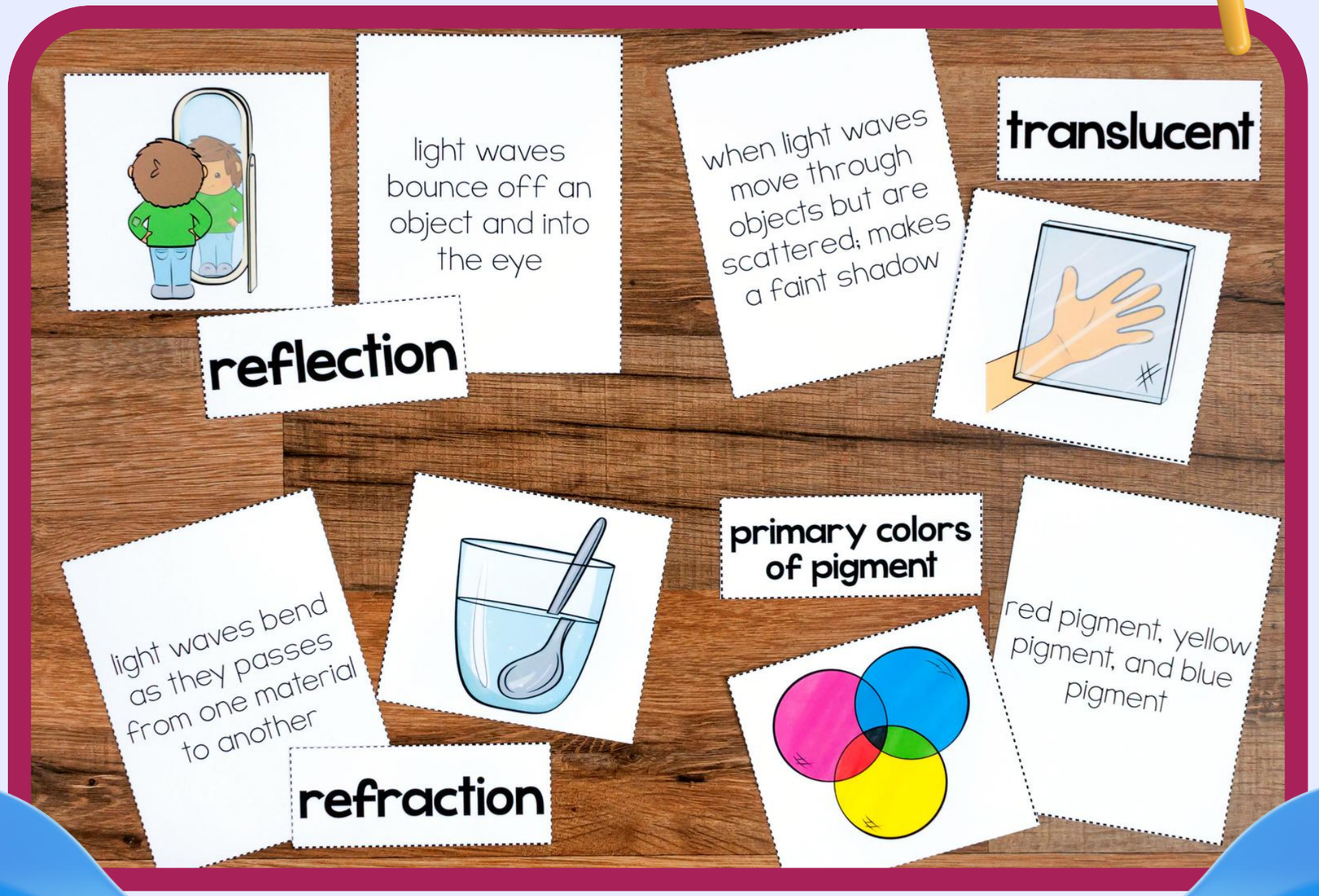
Materials Checklist

Teacher Notes

BIG IDEA POSTERS



VOCABULARY CARDS IN TWO FORMATS



WATCH A VIDEO OR PLAY A GAME

WATCH A VIDEO



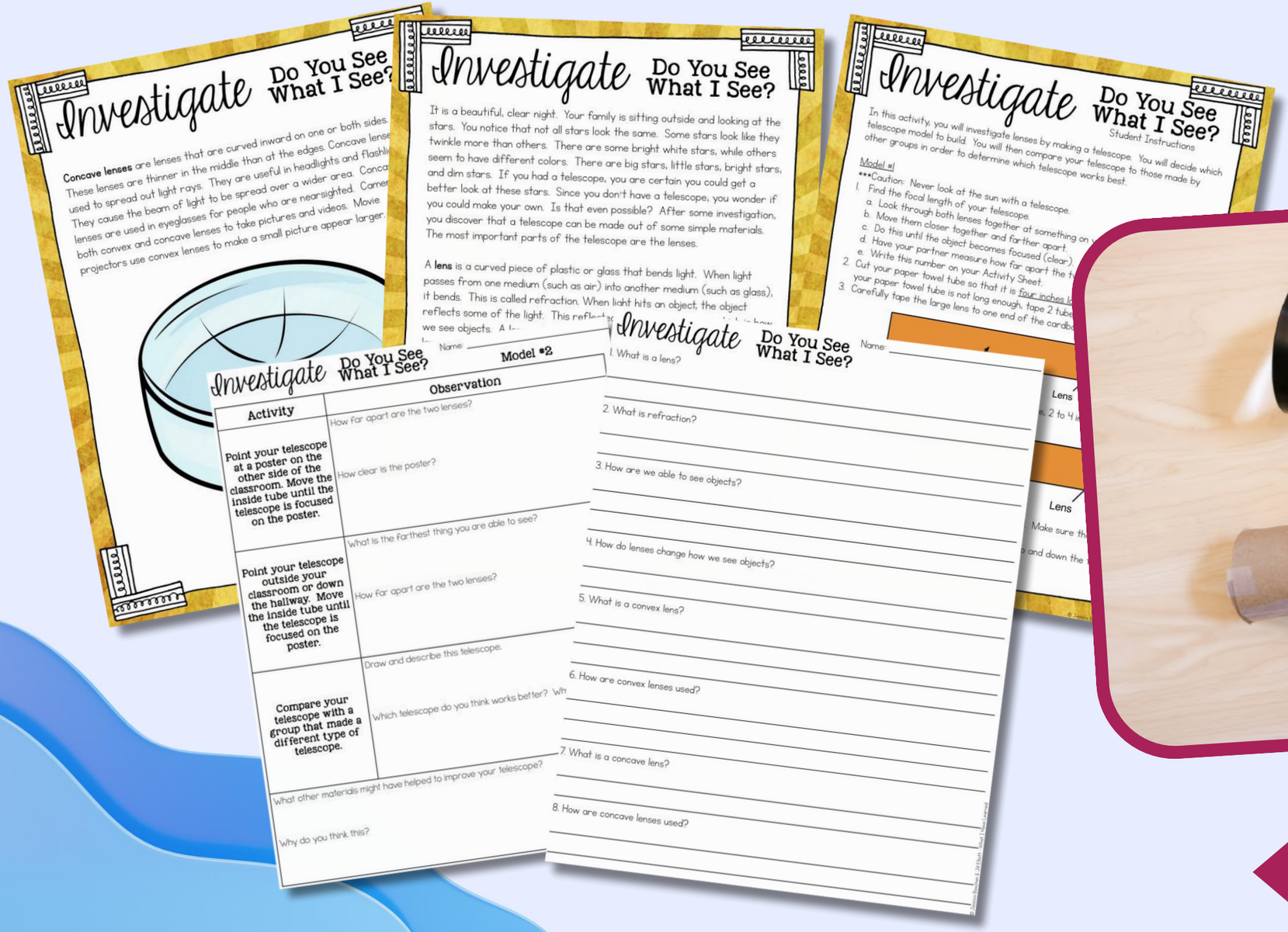
PLAY A GAME





WATCH & PLAY STATION

INVESTIGATE TELESCOPES





INVESTIGATE STATION

LEARN ABOUT REFRACTION

Diagram — Where Did the Light Go?

Student Instructions

Rainbows

The sun sends out white light. When it travels into a different material, such as raindrops, its speed changes. The change in speed causes light to bend, whic called refraction. White light is made of seven different colors of light. Ea seven colors has a different wavelength (distance between each wave in th Red light waves have the longest wavelength. Violet light waves have the sh wavelength. When they pass through raindrops, different colors of light r different amounts. Violet light refracts more than red light. More refrac the light waves bend more. All the colors of white light split apart when t through water droplets. They make a rainbow as they split apart. Color more, such as blue and violet, are on the inside of the bow. Colors that b such as red and orange, are on the outside of the bow. Prisms are piece with several flat surfaces. When light moves through a prism, it bends. wavelengths bend at different angles. This causes white light shining thr to separate into the different colors.

Diagram — Where Did the Light Go? Name: _____

1. Why does the eye need light in order to see?

The eye needs light in order to see because it needs reflections to come into the eye. Light reflects off objects and into the eye. If there is no light, then there are no light waves to bounce off objects and into the eye. Nothing can be seen.

2. Why can a person see his or her reflection in a mirror?

A person can see his or her reflection in a mirror because the mirror is very flat. This causes all light waves to reflect off the mirror at the same angle. This allows an image to be seen at the surface of the mirror.

3. What is white light?

White light is light fro the sun. It is made up of all the colors of the rainbow.

4. What makes a leaf loo

When white light hits

Green light is reflect

5. How do things that

that are wh

to

7. How do

As white

#1 Diagram — Where Did the Light Go?

Why does the eye need light in order to see?

a. Light turns a switch on inside the eye.
b. It needs absorptions of light to come into the eye.
c. It needs reflections of light to come into the eye.
d. The eye does not need light in order to see.

#3 Diagram — Where Did the Light Go?

What is white light?

a. Light from the moon
b. Made up of all the colors of the rainbow
c. Made up of ultraviolet and infrared light
d. Light that has no red or blue in it.

Diagram — Where Did the Light Go?

person see his or her reflection in a

at surfaces cause all light waves to at the same angle.

fract light at many different

rb light waves and save them

be seen.

ut of glass cause nice

#4 Diagram — Where Did the Light Go?

What makes a leaf look green?

a. Green light is absorbed into the leaf
b. Green light is reflected off the leaf
c. Green leaf cells send out green light through
d. Green leaf cells pass green light

Diagram — Where Did the Light Go?

Student Instructions

Today is the first day that it has been warm enough to go swimming. You and your ds meet at the pool with sunscreen and goggles. You are excited to jump in. He sits at the side of the p en are in the water. You stand next to you can see his feet and legs in the w place where the water and air meet ater, but only in those places where . She takes a sip from her black wa e is surprised the water is so warm l. You begin to wonder, what is caus When you get home from your a n that you observed reflection, abs

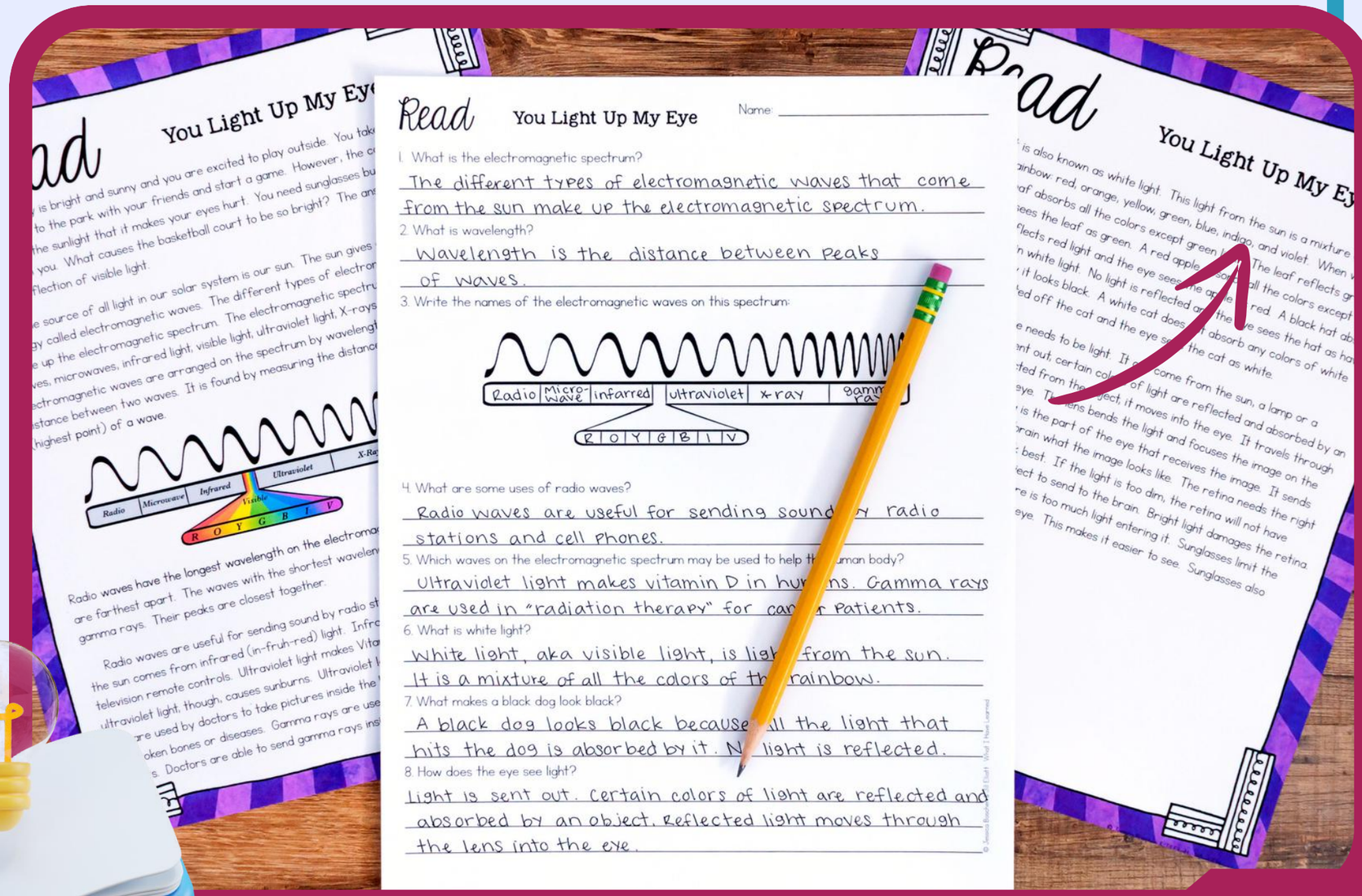
n

is no light in a room, nothing in the ce the light is turned on, the thing This is because the light waves co ce off the object and into the ey As light travels from its source objects ll has t nce off t ctions fr objects, waves b ons allow see himself f the mirro th water can re allows an image to be seen



DIAGRAM STATION

READ ABOUT ELECTROMAGNETIC SPECTRUM





READ STATION

BUILD A KALEIDOSCOPE

Model

Catch the Light

Today in art class, you made a sun catcher. Crayon shavings were sprinkled o
over a square of wax paper. You cut out stars from white and black paper. Thes
stars were scattered over the shavings. After that, you placed the second squa
of wax paper on top. Your art teacher helped you cover it with a towel and pre
a hot iron on top. After a minute or so, the towel was taken off. You were
surprised at what you saw. The crayon shavings melted into a beautiful pictur
looked like stained glass! You held it up to the light and noticed that some are
darker and some were brighter. Your sun catcher showed you the differenc
between transmission, absorption, and reflection of light.

There were bright areas of the sun catcher where light shined throu
were spots where there were no shavings and no stars. Nothing got in th
the light waves moving through the wax paper. Transmission is when light
shine through an object. Light waves transmit (move) through an objec
out the other side. Some objects transmit light waves without scatter
These objects are **transparent**. Clear glass and plastic are transpare
objects transmit light, but the light waves are scattered. These objec
translucent. Light is still being transmitted, but objects cannot be se
through them. The wax paper in the sun catcher is **translucent**.
when no light is transmitted. The sun cat

ransparent

Model

Catch the Light

What is white light?

#5

Model

Catch the Light

What happens when light is reflected?

#7

Model

Catch the Light

What happens when light is absorbed?

#6

Model

Catch the Light

#8

Model

Catch the Light

Light waves from the sun are a type of light
all the colors of the rainbow: red, orange, yellow,
When all the colors of light combine together, they
light travels at different wavelengths. **Wavelength** mea
waves. Red light has the longest wavelength. There is
wave of red light waves. Violet light has the shortest wa
distance between each wave of violet light.

Radio | Microwave | Infrared | Visible | Ultraviolet | X-Ray

R O Y G B I V

When white light shines on an object, some or all of the colors
absorbed. Light may be absorbed by an object. When this happens,
transferred to the object. Some colors of light are not absorbed by
These colors are reflected off the object. **Reflected** light bounces off

Model

Catch t

In this activity, you are going to "catch" the light wit

For the Circular Kaleidoscope

Make the Color Wheel:

1. Cut out two circles from the Contact® paper
   size as each other and slightly bigger than the
   tube.
2. Decide how you are going to decorate your
3. If you want to use markers, color on the r
   circles.
4. You may decide to use some of the mate
   the sticky side of one of the circles.
5. After the first circle is decorated, rem
6. Stick the two circles together so that

Make the Tube:

1. Take the silver paper and curl it in
2. Place this tube inside the paper tc
   tape.

Put it together:

1. Carefully use masking tape tc
   the tape only on the outerm
2. Point your kaleidoscope tow

Model

Catch the Light

Name: _____

Circular Kaleidoscope Activity Sheet

What did your color wheel look like? Draw it:

What did it look like inside the kaleidoscope? Draw it:

How were the patterns on the color wheel similar to the patterns in the kaleidoscope?

How were the patterns on the color wh

he kaleidoscope?

Which part of the kaleidoscope transmit

Which part of the kaleidoscope absorbed light?

Which part of the kaleidoscop

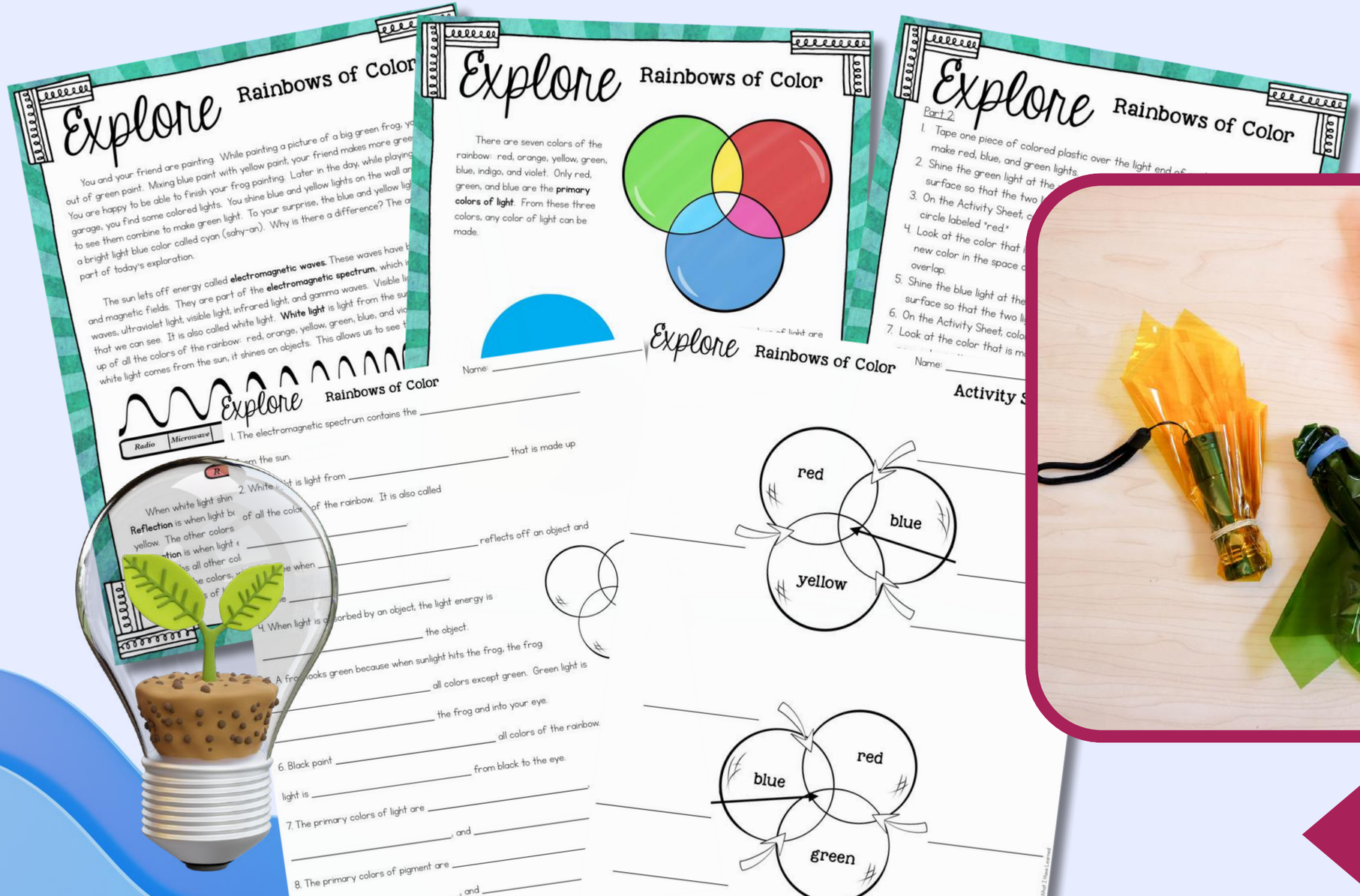
Where did the light that wa

What happens to the light on it



MODEL STATION

EXPLORE COLOR

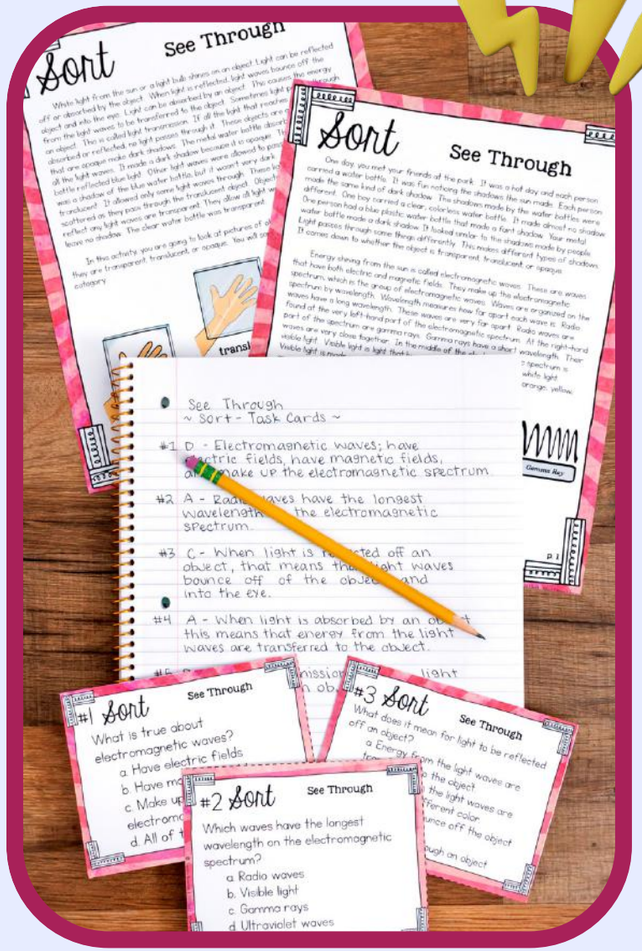




EXPLORE STATION

A SAMPLE OF SOME OF THE PAGES IN EACH SECTION





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.

DIGITAL VERSIONS

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

Answer keys provided

YOU WILL LOVE THIS BECAUSE



Concept Mastery

Each stations deepen students' understanding of light properties, including absorption, reflection, and refraction. Teachers can reinforce classroom lessons with engaging activities.



Aligned with NGSS

These lesson plans aren't just random; they're laser-focused on Next Generation Science Standards. No more curriculum guesswork!



Student Engagement

Videos, games, and interactive tasks keep students captivated. Teachers witness enthusiasm and curiosity in action!

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

LIGHT SCIENCE 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.

TEACHERS LOVE IT!

This was such a great resource! This caught and kept my students' attention, thanks so much! There is so much to use in this resource, it addresses all learning types.

Shannon K.



This was such a great resource! This caught and kept my students' attention, thanks so much! There is so much to use in this resource, it addresses all learning types.

Will Teach for Cupcakes



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.



teach MATH | teach SCIENCE | teach READING | teach WRITING

What I have LEARNED