

FREE SAMPLE PACK

IPROJECT INTERNATIONAL · GRADE 8 · 10 WEEKS

Color

The Science, Psychology & Meaning of the World We See

A look inside one iProject: the program overview, a selection of real Week 1 workbook pages, the mentor's guide and the student portfolio.

Is your green the same as my green?

Studio Solo · 1:1

Kingdom Integration

A 10-week investigation into color

Color looks simple. Underneath it sit physics, biology, genetics, chemistry, engineering, neuroscience, psychology, history, art and theology. Over ten weeks the student follows color from a beam of light into the eye and brain, out into the living world, into DNA, into advertising and flags, back through the history of pigment, and into Scripture.

DRIVING QUESTION

Is color something that exists in the world, or something our brains create?

Each week adds one layer to the answer: Light → Objects → Eyes → Brains → Living things → Genetics → Emotion → Technology → Culture → Meaning.

WHO IT IS FOR

Grade 8 students who are curious, like unusual facts and want more STEM, real evidence and sophisticated vocabulary.

HOW IT RUNS

Studio Solo, 1:1 with a mentor. Live 60-minute sessions every week, covering Investigate, Make and defend, and a Math Lab. More 1:1 time is available on request, subject to availability.

WORLDVIEW

Kingdom Integration. Scripture is woven through the weeks where it connects to light, creation, beauty and truth, with a full Week 9 study.

HOW IT ENDS

The Color Lab: an exhibition the student designs, and an experiment the student runs and reports with real data.

Every week includes

- **Discover and STEM Lab**
Explanations, experiments and diagrams.
 - **Reading Room**
A cited text with graded comprehension.
 - **Math Pit Lane**
Math connected to the week's topic.
- **Claim Check**
Testing a popular claim against the evidence.
 - **Word Lab and Writer's Garage**
Grammar and scaffolded writing.
 - **Scripture, Think and Color Lab**
Worldview, reflection and exhibit work.

The full program has a Student Workbook (394 pages), a Companion Guide with weekly answer packs, an Educator Session Deck, a Student Portfolio and a Homeschool Registration Pack.

YOUR 10 WEEKS *The journey*

Six stages, ten weeks, one exhibition. Each week adds one exhibit to The Color Lab.

WK	STAGE	TOPIC	DRIVING QUESTION	COLOR LAB
1	☆ Wonder	What Is Color?	Does color actually exist?	Exhibit 1
2	☆ Wonder	The "Impossible" Blue	Why was blue light so hard to create?	Exhibit 2
3	🔍 Seek	Nature's Color Laboratory	Why are living things so colorful?	Exhibit 3
4	🔍 Seek	Seeing Different Worlds	Does every creature experience the same world?	Exhibit 4
5	🔗 Discover	Color Written in DNA	How do genes influence color?	Exhibit 5
6	🔗 Discover	The Psychology of Color	Can color change how we feel?	Experiment question
7	🤝 Connect	Color, Power & Persuasion	Can color influence our decisions without us noticing?	Exhibit 7
8	🤝 Connect	Humans Invent Color	How did humans learn to capture color?	Exhibit 8
9	🗣️ Share	Color, Creation & Meaning	Why would God create color?	Exhibit 9
10	🌱 Grow	The Color Experiment	Do colors produce predictable emotional responses?	Exhibit 10 + showcase

● THE COLOR LAB · YOUR FINAL PRODUCT

An interactive exhibition (physical, digital, a website, or a mix) with ten exhibits. You build one each week, so by Week 10 the exhibition is nearly finished. It ends with your own color experiment, using real data you collect.

● YOUR CREATIVE WRITING PIECE

A drafted and revised story about color. Choose from: **The Last Color I Remember** · **A World Without _____** (never name the color) · **Two people watch the same sunset**. You start drafting in Week 3 and publish in Week 10.

● THREE FOCUSES FOR YOUR WEEKLY LIVE SESSIONS

- Focus A · Investigate**
Discover, Vocabulary Lab, STEM Lab, Claim Check.
- Focus B · Make & defend**
Reading Room, Word Lab, Writer's Garage, Color Lab checkpoint.
- Focus C · Math Lab**
Math Pit Lane: learn it, try it, apply it to color.

☆ STAGE · WONDER

WEEK 01

What Is Color?

Is color out there... or in here?

Driving question: does color actually exist?



DISCOVER

Light, the spectrum, and the journey from the world to your brain.

STEM LAB

Split white light. Mix light with filters. Trick your eyes with an afterimage.

READING ROOM

Newton's darkened room: the experiment that showed white light is a mixture.

MATH PIT LANE

Nanometers, scientific notation and ratios on the spectrum.

WRITER'S GARAGE

A scientific explanation: is color out there or in here?

COLOR LAB

Plan Exhibit 1: the opening experience of your exhibition.

KINGDOM LENS · LIGHT COMES FIRST

In Genesis, the first thing God speaks into being is light, before the sun, moon and stars. Every color you will study this week depends on light. Keep asking what it means that light was made, named and called good.

"Then God said, 'Let there be light'; and there was light." Genesis 1:3

Opener image: generated conceptual visual.

Light is a wave you can't see coming

Read this before you research anything. It gives you the foundations for the whole week.

Light is a form of electromagnetic radiation: energy traveling as waves of electric and magnetic fields. Radio waves, microwaves, X-rays and the ultraviolet that causes sunburn are all the same kind of radiation. They differ only in their **wavelength**, the distance from one wave peak to the next.^[1]

Human eyes respond to only a narrow band of these waves, from roughly 380 to 700 nanometers. A nanometer (nm) is one billionth of a meter. This band is called **visible light**. Shorter wavelengths in the band are seen as violet and blue; longer wavelengths are seen as orange and red.^[1]

When light reaches an object, three things can happen. It can be **reflected** (bounce off), **absorbed** (taken in), or **transmitted** (pass through). It can also be **refracted**, bent as it moves from one material into another. A ripe tomato looks red because its surface absorbs most of the shorter wavelengths and reflects mostly longer ones back to your eyes.

Notice the wording. The tomato reflects certain *wavelengths*. Whether those wavelengths become the experience of "red" depends on what happens next: in your eye and in your brain.

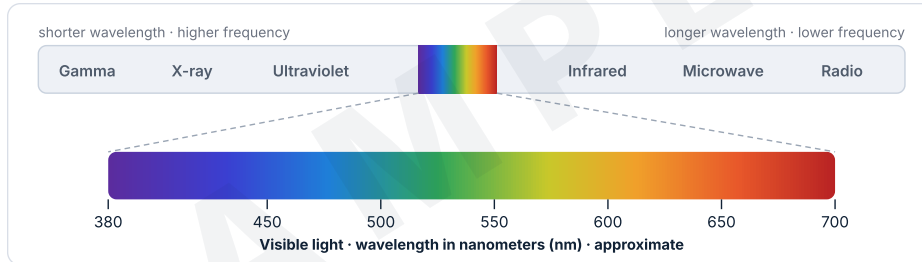


Diagram drawn for this workbook from NASA Science, "Visible Light"^[1]. Band widths are not to scale; the full spectrum spans many powers of ten.

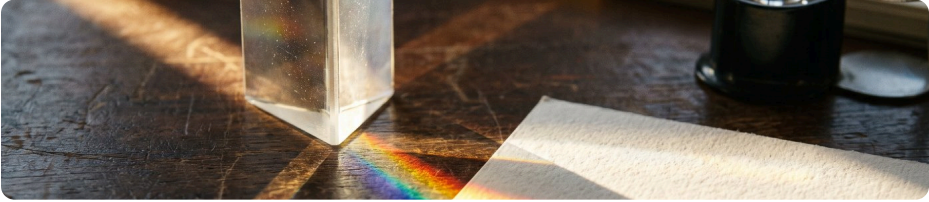
● CHECK YOUR UNDERSTANDING

In your own words, what is the difference between light and color?

● THINK

Why do you think a leaf looks green? Use the words absorb and reflect.

Isaac Newton did this in a darkened room. You can do it with a torch.



● QUESTION

Is white light one color, or many colors mixed together?

My prediction, and why:

● MATERIALS & SAFETY

A clear glass prism, an old CD or DVD, or a glass of water on a sunny windowsill. A torch or bright sunlight. White paper.

Safety: Never look directly at the sun, or shine a torch into anyone's eyes.

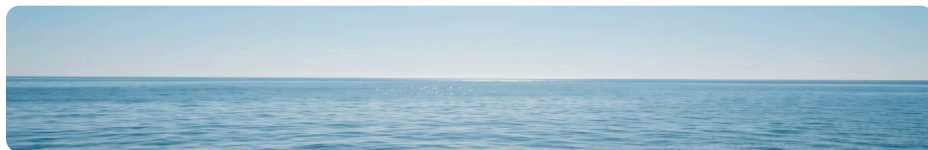
● METHOD

- 1
- Darken the room as much as you can.
- 2
- Shine a narrow beam of light through the prism (or at the CD) at an angle.
- 3
- Move the white paper until a band of colors appears on it.
- 4
- Record the order of the colors from one end to the other.
- 5
- Tilt the prism slightly. Record what changes.

Top image: generated conceptual visual.

"The sky is blue because it reflects the ocean."

You have probably heard this. Decide whether it holds up.



CLAIM CHECK

● 1 · WHAT DO YOU PREDICT?

Before researching: true, false, or partly true? Why?

● 2 · WHAT WOULD COUNT AS EVIDENCE?

What observation would show the ocean is **NOT** the cause?

● 3 · WHAT THE EVIDENCE SAYS

Sunlight contains all visible wavelengths. As it passes through the atmosphere, it collides with gas molecules much smaller than the light's wavelength. Shorter wavelengths, blue and violet, are scattered in all directions far more strongly than longer red wavelengths. This is called **Rayleigh scattering**. Scattered blue light reaches your eyes from every part of the sky.^[5]

The ocean, meanwhile, looks blue largely because water absorbs longer (red) wavelengths more than shorter ones. It can also reflect the color of the sky above it.^[8]

Evidence check: the sky is still blue over deserts far from any ocean. What does that tell you?

Top image: generated conceptual visual.



The hole in the shutter

Read the passage twice: once for the story, once with a pencil. Underline two sentences that explain an idea, and circle one word you want to look up.

In the 1660s, a young Cambridge scholar named Isaac Newton made a small round hole in the window shutter of a darkened room. A narrow beam of sunlight came through and fell on a glass prism. On the far wall, the beam did not make a round white spot. It made a long strip of colors, red at one end and violet at the other.^[4]

People had seen prisms make colors long before Newton. The usual explanation was that glass somehow *added* color to light, or changed pure white light into something else. Newton noticed a problem with that idea. The strip on his wall was about five times longer than it was wide. If the prism were simply tinting the light, why would it stretch it?

So he tried what he later called his *experimentum crucis*, his "crucial experiment". He let the strip of color fall on a board with a second small hole, so that only one color, say red, passed through. He sent that single color through a second prism. If prisms create color, the second prism should change the red into something else. It did not. The red light bent, but it stayed red.^[4]

Newton concluded that white light is not pure at all. It is a mixture of many kinds of light, each bent by a different amount when it passes through glass. The prism does not make the colors; it separates what was already there. He published his "new theory about light and colors" in 1672, and it caused fierce arguments with other scientists for years.^[4]

Newton later divided the spectrum into seven named colors. The light itself changes smoothly from one end to the other, with no sharp borders. The number seven was a human choice, which Newton linked to the seven notes of a musical scale.^[9] Even in the history of science, the way we *name* colors is partly something people decide.

Background image: generated conceptual visual, not a historical record.

Answer in full sentences. The level tag tells you what kind of thinking each question needs.

FINDING

What did Newton see on the wall that did not fit the usual explanation?

VOCABULARY

Newton called his test the experimentum crucis. What does "crucial" mean here, and why was this test crucial?

INFERENCE

Why did Newton choose to send only one color through the second prism? What would have been the problem with sending all of them?



Very small numbers, written well

Wavelengths of light are tiny. Scientific notation makes them easy to write and compare.

The idea

1 nanometer = 0.000 000 001 m = 1×10^{-9} m. In **scientific notation**, a number is written as $a \times 10^n$, where a is between 1 and 10. A negative power of ten means a small number: 10^{-3} means one thousandth.

WATCH ME FIRST · A HUMAN HAIR

A human hair is about 0.00007 m wide.

Step 1 Move the decimal point until one digit is in front: 7.

Step 2 Count the places moved: 5 to the right.

Step 3 Moving right means a negative power: 7×10^{-5} m.

Step 4 In nm: $7 \times 10^{-5} \div 10^{-9} = 7 \times 10^4 = 70\,000$ nm.

THE STEPS

- 1 Place the decimal after the first non-zero digit.
- 2 Count how many places it moved.
- 3 Right → negative power. Left → positive power.
- 4 Check: is the size sensible?

Common error: writing 70×10^{-6} . It equals the right value, but it is not scientific notation because 70 is not between 1 and 10.

TRY IT WITH ME · FILL THE GAPS

WAVELENGTH	IN METERS (DECIMAL)	SCIENTIFIC NOTATION
500 nm (green-blue)	0.000 000 5 m	5×10^{-7} m
700 nm (deep red)		
380 nm (violet)		

WORKING SPACE

Plan the opening experience of your exhibition. Visitors should leave asking "is color out there, or in here?"

● THE BIG IDEA OF THIS EXHIBIT

One sentence a visitor should remember:

● FORMAT

- ☐ Poster ☐ Model ☐ Digital page
☐ Interactive station ☐ Video ☐ Mix

● THREE THINGS VISITORS WILL DO**SEE**

TRY

THINK

● SKETCH YOUR EXHIBIT

--

● MATERIALS I NEED

● DESIGN CHOICE

Which colors will you use on this exhibit, and why?



What Is Color?

The student follows color from light to eye to brain, and meets the question that runs through the unit: is your green the same as my green?

Driving question	Does color actually exist?
STEM Lab	Split white light · mix light with filters · afterimages
Reading Room	Newton's darkened room
Math Pit Lane	Scientific notation, nm ↔ m, ratios, $c = f\lambda$
Word Lab	Cause-and-effect connectives · color-word roots
Color Lab	Exhibit 1: What Is Color?

● PREPARE

- A prism or a glass of water and a torch
- Red, green and blue cellophane or filters
- A phone or screen with a magnifier

● WATCH FOR

- Saying objects "have" color rather than reflecting wavelengths
- Mixing up additive (light) and subtractive (paint) mixing
- Writing 70×10^{-6} instead of 7×10^{-5}

● QUESTIONS TO ASK

- Where does color happen: in the light, the object, the eye or the brain?
- Could two people ever find out if they see red differently?
- What would count as evidence?

FAMILY EMAIL

This week your child is investigating what color really is. Ask them to show you the afterimage experiment and explain why it works.

WEEK 1 · ANSWER PACK 1 **Vocabulary, Reading Room and Claim Check**

Model answers for every task are in the full Companion Guide. They are hidden in this sample.

Match it

Question	What a strong answer includes
Finding	
Vocabulary	
Inference	
Inference	
Your view	
Go deeper	

Claim Check

Answers hidden in the sample

The portfolio: one page per week

A 16:9 portfolio template for Canva or Google Slides. Each week the student adds their best evidence, then presents it at The Color Lab.

☆ 03 · WEEK 2 · WONDER

The "Impossible" Blue

WHY BLUE LEDS WERE SO HARD

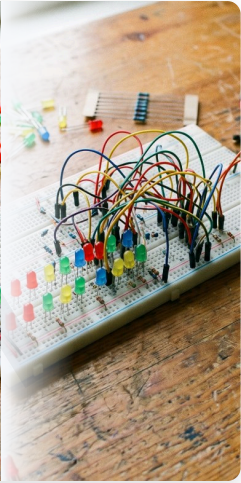
THE BREAKTHROUGH · GALLIUM NITRIDE

HOW IT CHANGED THE WORLD

WHAT THEIR PERSEVERANCE TEACHES ME

KTA+

Color · Student Portfolio



□ 06 · WEEK 5 · DISCOVER

Predict the foal



COLOR · SAMPLE PACK

STUDENT PORTFOLIO

14

What is in the full iProject

Each iProject is personalized to the learner, so the topic, level and pace are planned with your family before anything is built.

PLANNING BLUEPRINT

Learner profile, driving question, scope and sequence, rubric and showcase plan, approved by you first.

STUDENT WORKBOOK

The full print-ready Studio Edition: around 35–40 pages a week, with scaffolds, sentence starters and generous writing space.

COMPANION GUIDE

Session structure, weekly teaching notes, answer packs, assessment rubric and portfolio checklist.

EDUCATOR SESSION DECK

Slides for every live session, with full speaker notes.

STUDENT PORTFOLIO

A 16:9 template for collecting and presenting evidence each week.

HOMESCHOOL REGISTRATION PACK

Curriculum mapping, timetable, records and a coverage statement for registration.

IPROJECT INTERNATIONAL

Build an iProject around your learner



Tell us what your learner loves. We will design a 10-week project around it, with a mentor, a workbook and a guide for you.

[Inquire at ktaplus.io](https://ktaplus.io)