

NGSS MS-PS4

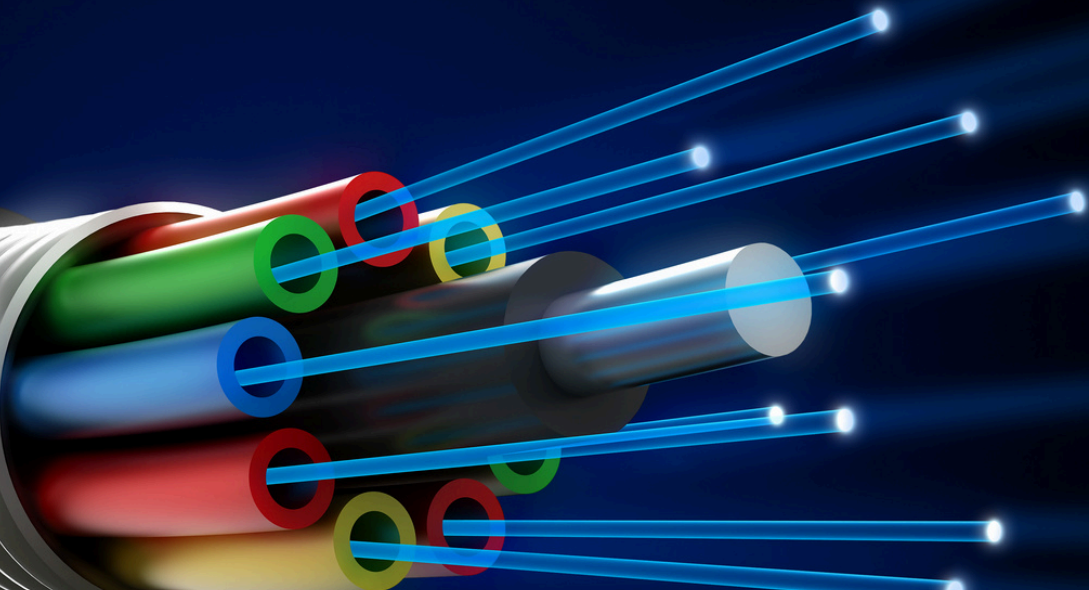
Waves and their Applications in Technologies for Information Transfer

Full Standard BUNDLE

- ✓ Everything You Need to Teach NGSS MS-PS4
- ✓ Lessons, Activities, Labs, and more
- ✓ MS-PS4-1, PS4-2, PS4-3



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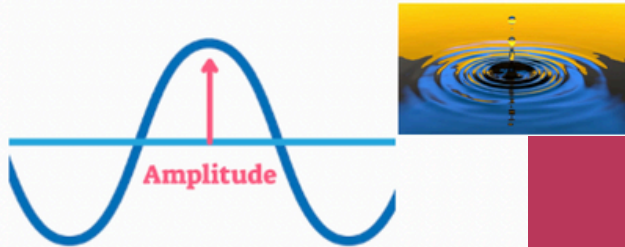


Bundles Included

NGSS MS-PS4-1 Curriculum Bundle

Waves Introduction: Energy,
Amplitude, and Modeling

- ✓ 1 Lesson, 4 Activities
- ✓ Everything You Need to Teach NGSS MS-PS4-1



NGSS MS-PS4-3 Curriculum Bundle

Digital vs Analog Signals - Wave
Communication Data & Transmission

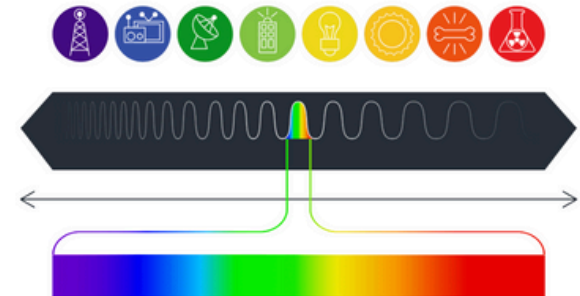
- ✓ 1 Lesson and 1 Activity
- ✓ Everything You Need to Teach NGSS MS-PS4-3



NGSS MS-PS4-2 Curriculum Bundle

Light Wave Behavior - Reflection,
Absorption & Transmission

- ✓ 2 Lessons, 4 Activities
- ✓ Everything You Need to Teach NGSS MS-PS4-2



Everything You Need to Completely Cover NGSS MS-PS4

Complete Lessons

Activities

Labs

Digital vs Analog Signals for Communication
6th, 7th, 8th Grade Lesson

- ✓ Comprehensive Content Overview – Covers what a signal is and how digital and analog signals are different. It also talks about how signals are transmitted as well as which signal is preferred.
- ✓ Student-Friendly Format – Clear visuals and comparisons support understanding of complex concepts.



Teacher: Mr. [Name]

Reading Comprehension Passage & Questions
Earthquakes
6th, 7th, and 8th Grade Science

- ✓ No Prep, Ready-to-Use Resource in Google and Office Format
- ✓ Includes Comprehension and Extension Questions

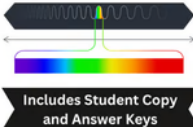


Teacher: Mr. [Name]

Crash Course Astronomy #24
Light

- ✓ Classroom Ready - Just Print and Go!
- ✓ Active Engagement - Keep Students' Attention
- ✓ Direct Video Link Included

WATCH VIDEO



Includes Student Copy and Answer Keys

Teacher: Mr. [Name]

Waves Introduction

- What Waves Are
- Types of Waves
- Transverse vs. Longitudinal Waves
- Frequency, Hertz, Period
- Amplitude
- Crests, Troughs, and Wavelength
- Universal Wave Equation

$f = \frac{1}{T}$ $v = f\lambda$

This digital presentation includes both Google and Office resources and is Google Classroom Ready

Crash Course Physics #18
Sound

- ✓ Classroom Ready - Just Print and Go!
- ✓ Active Engagement - Keep Students' Attention
- ✓ Direct Video Link Included

WATCH VIDEO



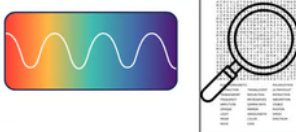
Includes Student Copy and Answer Keys

Teacher: Mr. [Name]

Light and Waves
Word Search and Scramble

THREE Activities in One!

1. Basic 25-Term Word Search
2. Scrambled Words Word Search
3. Word Scramble and Define Activity



Teacher: Mr. [Name]

Absorption, Reflection and Transmission of Light

- Light Rays
- Geometric Optics
- Reflection
- Transmission and Refraction
- Absorption

This presentation includes both Google and Office resources and is Google Classroom Ready

Light

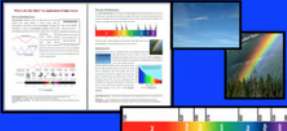
- Overview of light
- Properties of light
- Luminous and non-luminous objects
- History of light
- The electromagnetic spectrum



Teacher: Mr. [Name]

Why is the Sky Blue? An application of light waves
Scientific Reading Comprehension Article

Improve your students Scientific Literacy and Analysis Skills, use as an Emergency Substitute Plan or create Applicability in your classroom



Teacher: Mr. [Name]

Experimenting with Waves

You will be submitting this package to make sure you are being tested.

Procedure: You will be using springs to conduct 3 different experiments. Follow the procedures provided, making sure to record all collected data.

Materials: Long spring, Coiled spring, Meter stick

Part A: Relationship Between Speed and Amplitude

1. Stretch the spring out on the floor so that it is straight, with one person holding one end and another person holding the other end. Record the length of the spring. (This is the length of the spring when it is not stretched.)

2. Give the spring one pulse along the floor. The size of one pulse (how many times it goes up and down) is the amplitude of the pulse. Record the time it takes the pulse to travel the length of the spring. (This is the time it takes the pulse to travel the length of the spring.)

3. Repeat step 2 again, first using a pulse that is 2 dots, and then using a pulse that is 3 dots.

Amplitude (dots)	Time (s)	Distance Pulse Traveled (m)
1 Dot		
2 Dots		
3 Dots		

Analysis: Calculate the speed for each pulse, and compare your three values.

1 Dot: _____ 2 Dots: _____ 3 Dots: _____

Conclusion: _____

Reading Comprehension Passage & Questions
How Waves Are Used for Communication

- ✓ No Prep, Ready-to-Use Resource in Google and Office Format
- ✓ Includes Comprehension and Extension Questions



8th Grade and Up Science

Teacher: Mr. [Name]

The Standard is Explained and the Resources it Incorporates are Outlined

MS PS4 Waves and their Applications in Technologies for Information Transfer

Note: There are resources that overlap between the standards. Simply choose the order that best fits your classroom. Also, there are more resources here than you will most likely decide to use. I have provided extra so you can make the best decision for your students on what is best to include.

MS PS4-1: Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.

Emphasis is on describing waves with both qualitative and quantitative thinking. *Assessment Boundary:* Assessment does not include electromagnetic waves and is limited to standard repeating waves.

- Waves An Introduction – Lesson
- Experimenting with Waves – Activity
- Crash Course Traveling Waves - Video Worksheet
- Crash Course Sound - Video Worksheet
- Earthquakes - Reading

MS PS4-2: Develop a model to describe that waves are reflected, absorbed, or transmitted through various materials.

Emphasis is on both light and mechanical waves. Examples of models could include drawings, simulations, and written descriptions. *Assessment Boundary:* Assessment is limited to qualitative applications pertaining to light and mechanical waves.

Resources:

- Light – Lesson
- Lasers, Absorption and Transmission – Lesson
- Why is the Sky Blue - Reading
- Crash Course Light - Video Worksheet
- Light and Optics Word Search and Scramble
- Bill Nye Light and Color - Video Worksheet

MS PS4-3: Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.

Emphasis is on a basic understanding that waves can be used for communication purposes. Examples could include using fiber optic cable to transmit light pulses, radio wave pulses in wifi devices, and conversion of stored binary patterns to make sound or text on a computer screen. *Assessment Boundary:* Assessment does not include binary counting. Assessment does not include the specific mechanism of any given device.

Resources:

- Digital vs Analog Signals for Communication – Lesson
- How Waves Are Used for Communication - Reading

Who is this Bundle for?

- **Teachers who teach Middle School Science and use the NGSS**
- **Teachers who want multiple resources at their fingertips including lessons and a variety of activities, in order to meet the standard**
- **Teachers who don't have time to develop their own resources or organize what to teach and when**