© Core Learning Ltd.

Introduction

Core Physical Science II is one of the three courses in the Core Science II Collection. It is an introductory course that teaches about the properties, organization, and states of matter, types and properties of motions and forces, energy and electricity, the nature and properties of waves, the properties of sound waves, and the properties of light waves. The Course has 29 lessons organized in 5 Units with 29 lesson assessments and 5 unit assessments. The Course's learning objectives align with Common Core Science objectives for grades 3 to 5. There are 484 audio-supported instruction pages, 75 printable activity sheet pages, 169 defined vocabulary words, and a set of 435 Quiz and Unit Test questions.

Unit 1: Matter, States, & Interactions

Lesson 1: Properties of Matter

Common Core Standards
- PS1.A Structure and Properties of Matter

Learning Objectives
- to learn about the nature of matter
- to learn about the concepts of mass, volume, and density

Defined Vocabulary Words
- matter, volume, mass, weight, density

Activity Type
- Write the letter of the definition on the line that matches the word.

Lesson Components
Total Learning Objects – 34
Instruction Pages - 17
Activity Pages - 2
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 2: States of Matter

Common Core Standards
- PS1.A Structure and Properties of Matter

Learning Objectives
- to learn about the properties of matter in solid, liquid, and gas states

Defined Vocabulary Words
- matter, volume, mass, density, solid, liquid, gas

© Core Learning Ltd.

Activity Type
- Write the word solid, liquid, or gas in the blank to indicate which state of matter the phrase is describing.

Lesson Components
Total Learning Objects – 35
Instruction Pages - 18
Activity Pages - 2
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 3: Matter Particles

Common Core Standards
- PS1.A Structure and Properties of Matter

Learning Objectives
- to understand that matter is made of particles
- to learn how our understanding of particles in matter helps us to explain the things we see happening around us
- to learn that mass stays the same when matter changes state

Defined Vocabulary Words
- balance scale, density, mass, liquid, gas, solid, matter, microscope

Activity Type
- Draw what happens to make a balloon get larger as we blow into it.
- Draw what happens when a plane flies high in the sky.
- Interactive Activity - Hanging Balloons

Lesson Components
Total Learning Objects – 33
Instruction Pages - 15
Activity Pages - 3
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 4: Organization of Matter

Common Core Standards
- PS1.A Structure and Properties of Matter

Learning Objectives
- to learn how matter is organized into atoms, molecules, elements, and compounds
- to learn how heat affects the motion of molecules and the changing states of matter

Defined Vocabulary Words
- atom, molecule, element, compound

© Core Learning Ltd.

Activity Type
- Draw a molecule of the element oxygen.
- Draw a molecule of the compound water.

Lesson Components
Total Learning Objects – 30
Instruction Pages - 13
Activity Pages - 2
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 5: Mixtures & Solutions

Common Core Standards
- PS1.B Chemical Reactions

Learning Objectives
- to learn about the properties of pure substances, mixtures, and solutions
- to learn how to separate mixtures and solutions

Defined Vocabulary Words
- pure substance, mixture, solution, dissolve, solute, solvent

Activity Type
- Explain what each word is and give an example. (pure substance, mixture, solution)
- How would you separate the sugar out of sugar water?

Lesson Components
Total Learning Objects – 34
Instruction Pages - 17
Activity Pages - 2
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 6: Effect of Heat

Common Core Standards
- PS1.B Chemical Reactions

Learning Objectives
- to learn how heat affects the states of matter
- to learn about the concepts of melting, evaporation, condensation, solidification, and freezing

Defined Vocabulary Words
- solid, liquid, gas, melting, melting point, solidification, freezing, freezing point, heat energy, evaporation, condensation, boiling point, expand, contract

© Core Learning Ltd.

Activity Type
- Write the correct word from the word bank to indicate the phrase it is describing. (solid, liquid, gases, expand, contract, evaporation, condensation, melting, freezing, solidification)

Lesson Components
Total Learning Objects – 35
Instruction Pages - 18
Activity Pages - 2
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

---

Unit 2: Motions, Forces, & Stabilities

Lesson 1: Forces & Motions

Common Core Standards
- PS2.A Forces and Motions

Learning Objectives
- to learn about the nature of motion
- to learn about the common forces that cause motion

Defined Vocabulary Words
- force, motion, gravity, magnetic force, electric force, at rest, position, speed, massive

Activity Type
- Fill in the blanks with correct word from the word box.
- Interactive Activity: Tug of War

Lesson Components
Total Learning Objects – 34
Instruction Pages - 16
Activity Pages - 3
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 2: Gravity

Common Core Standards
- PS2.B Types of Interactions

Learning Objectives
- to learn what gravity is and how it affects objects
- to learn about the nature of gravity

Defined Vocabulary Words
- gravity, gravitational force, mass, speed, acceleration

© Core Learning Ltd.

Activity Type
- What causes tides? Draw a picture to show how they happen. Then write a few sentences to explain your drawing.
- Interactive Activity: Water Pressure

Lesson Components
Total Learning Objects – 31
Instruction Pages – 13
Activity Pages - 3
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 3: Magnetic Force

Common Core Standards
- PS2.B Types of Interactions

Learning Objectives
- to learn what magnetic force is and how it affects objects
- to learn about the nature of magnetic forces

Defined Vocabulary Words
- magnetic force, magnetic field, pole, repel, attract

Activity Type
- The size of a magnetic force depends on several things. Draw an example of each thing listed and explain how it affects the magnetic force.
- Interactive Activity: Magical Attraction.

Lesson Components
Total Learning Objects – 33
Instruction Pages - 15
Activity Pages - 3
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 4: Electric Forces

Common Core Standards
- PS2.B Types of Interactions

Learning Objectives
- to learn what electric force is and how it affects objects
- to learn about the nature of electric force

Defined Vocabulary Words
- electric force, electric charges, electron, repel, attract, force field

© Core Learning Ltd.

Activity Type
- Compare and contrast electric and magnetic forces by placing the words from the word box in the appropriate spot on the Venn diagram.
- Interactive Activity: Charged Balloons

Lesson Components
Total Learning Objects – 31
Instruction Pages - 13
Activity Pages - 3
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 5: Friction

Common Core Standards
- PS2.B Types of Interactions

Learning Objectives
- to learn what friction is and how it affects objects
- to understand what affects how much friction there is

Defined Vocabulary Words
- motion, force, frictional force, gravity

Activity Type
- Use words you have used in this lesson to answer the following questions.
  - The propeller of your toy airplane goes around only once when you spin it, and then it stops. Why does this happen?
  - Is there anything you could do to make the propeller spin longer?
  - Why do you need to be careful when you see a sign in the hallway that says “caution wet floor?”
  - How can you stop yourself from rolling down the hill on your rollerblades?
- Interactive Activity: Rolling Cars

Lesson Components
Total Learning Objects – 36
Instruction Pages - 16
Activity Pages - 5
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 6: Changes in Physical Systems

Common Core Standards
- PS2.C Stability and Instability in Physical Systems

Learning Objectives
- to learn what is a physical system
- to learn about the changes that can occur in physical systems

© Core Learning Ltd.

- to learn about equilibrium or stable states in physical systems

Defined Vocabulary Words
- physical systems, cyclical pattern, properties, equilibrium, internal forces, prediction

Activity Type
- Draw an example of each concept.
- Interactive Activity: Pendulums

Lesson Components
Total Learning Objects – 39
Instruction Pages - 19
Activity Pages - 5
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

---

Unit 3: Energy

Lesson 1: Understanding Energy

Common Core Standards
- PS3.A Definitions of Energy

Learning Objectives
- to learn about the nature of energy
- to learn how energy can be transferred from one object to another

Defined Vocabulary Words
- energy, energy of motion, stored energy, transfer of energy, electric current, electricity, electrons

Activity Type
- Draw the following concepts and explain what they are. (Energy of Motion, Stored Energy, Transfer of Energy)
- Interactive Activity: The Battle of the Balls

Lesson Components
Total Learning Objects – 35
Instruction Pages - 17
Activity Pages - 3
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 2: Electricity

Common Core Standards
- PS3.A Definitions of Energy

© Core Learning Ltd.

Learning Objectives
- to learn about the nature of electricity
- to learn about concepts related to the flow of electricity

Defined Vocabulary Words
- electricity, electron, conductor, electric current, ampere, voltage, resistance, insulator

Activity Type
- Match the words with the definitions.
- Interactive Activity: Flow or No?

Lesson Components
Total Learning Objects – 38
Instruction Pages - 19
Activity Pages - 4
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 3: Basic Circuits

Common Core Standards
- PS3.B Conservation of Energy and Energy of Transfer

Learning Objectives
- to learn about circuits
- to learn how a battery works
- to learn the difference between open and closed circuits, and parallel and series circuits

Defined Vocabulary Words
- electric current, electron, conductor, voltage, circuit, battery, power plant, open circuit, closed circuit, parallel circuit, series circuit

Activity Type
- Draw the circuit indicated. Be sure to show the flow of electrons and if the bulb is glowing or not.

Lesson Components
Total Learning Objects – 36
Instruction Pages – 19
Activity Pages - 2
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 4: Static Electricity

Common Core Standards
- PS3.B Conservation of Energy and Energy of Transfer

Learning Objectives
- to learn about the nature of static electricity including lightning

© Core Learning Ltd.

- to learn what materials and conditions impact the generation of static electricity
- to learn about an instrument to measure static electricity

Defined Vocabulary Words
- static electricity, humidity, static cling, electroscope, lightning

Activity Type
- Draw a picture of how lightning forms, then write an explanation below.

Lesson Components
Total Learning Objects – 35
Instruction Pages – 18
Activity Pages - 2
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 5: Transformation of Energy

Common Core Standards
- PS3.D Energy in Chemical Processes and Everyday Life

Learning Objectives
- to understand how a power plant converts energy from one form to another
- to learn that electrical energy is converted into various forms of energy in our home
- to learn that food is converted from stored energy into other energy

Defined Vocabulary Words
- power plant, thermal energy, turbine, mechanical energy, electrical generator, hydroelectric energy, solar energy, solar cell, solar panel, fission, nuclear energy, wind energy

Activity Type
- Draw the source of each kind of energy.

Lesson Components
Total Learning Objects – 36
Instruction Pages - 19
Activity Pages - 2
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 6: Electromagnets and Magnetism

Common Core Standards
- PS3.C Relationship Between Energy and Forces

Learning Objectives
- to learn about the nature of magnetism
- to learn what a magnet and electromagnet are
- to learn how the Earth is a magnet

© Core Learning Ltd.

Defined Vocabulary Words
- magnet, magnetism, magnetic field, poles, attract, repel, electromagnet, compass

Activity Type
- Explain what each picture is demonstrating.

Lesson Components
Total Learning Objects – 35
Instruction Pages – 18
Activity Pages - 2
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 7: Historical Contributions

Common Core Standards
- PS3.D Energy in Chemical Processes and Everyday Life

Learning Objectives
- to learn about inventors who played a major role in the use of electricity
- to learn about contributions by Benjamin Franklin, David Farady, and Thomas Edison

Defined Vocabulary Words
- electrocute, electromagnetism, incandescent light bulb, kinetoscope, lightning rod, phonograph

Activity Type
- Draw a picture of one invention associated with electricity. Then explain in words how it is important and who invented it.

Lesson Components
Total Learning Objects – 32
Instruction Pages – 15
Activity Pages - 2
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

---

Unit 4: Waves & Sound

Lesson 1: Waves

Common Core Standards
- PS4.A Wave Properties

Learning Objectives
- to learn about the basic features and properties of waves
- to learn how waves transfer energy

© Core Learning Ltd.

- to learn what happens when waves cross

Defined Vocabulary Words
- waves, sound waves, light waves, seismic waves, wave peak, wave crest, wave trough, amplitude, wavelength, wave frequency

Activity Type
- Complete the table.
- Interactive Activity: Marble Magic?

Lesson Components
Total Learning Objects – 37
Instruction Pages - 19
Activity Pages - 3
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 2: Sound Waves

Common Core Standards
- PS4.A Wave Properties

Learning Objectives
- to learn about the basic features and properties of sound waves
- to learn how sound travels

Defined Vocabulary Words
- sound, vibrate, wave crest, wave peak, wave trough, wavelength, frequency, pitch, amplitude, decibel, hertz, sound volume, speech

Activity Type
- Draw sound waves to show the following. If it is one second from one line to the next line, write the frequency of the sound waves you drew.

Lesson Components
Total Learning Objects – 32
Instruction Pages - 15
Activity Pages - 2
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 3: Traveling Sound

Common Core Standards
- PS4.A Wave Properties

Learning Objectives
- to learn about mechanical waves
- to learn how sound travels in different media

© Core Learning Ltd.

- to about what affects the speed of sound waves

Defined Vocabulary Words
- density, mechanical waves, sound, vacuum, vibrate

Activity Type
- Explain with words and a picture why someone two feet away from a sound can hear it better than someone a block away.
- Explain with words and a picture why we see lightning before we hear thunder.

Lesson Components
Total Learning Objects – 32
Instruction Pages - 15
Activity Pages - 2
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 4: Sound and Music

Common Core Standards
- PS4.C Information Technologies and Instrumentation

Learning Objectives
- to learn about the four main categories of musical instruments: strings, percussion, woodwinds, and brass
- to learn how sound is made on musical instruments, depending on their category

Defined Vocabulary Words
- pitch, vibrate, strings, percussion, woodwinds, brass

Activity Type
- Draw four bottles with water in them. Label which bottle has the lowest pitch and which has the highest pitch.
- Draw four strings on a guitar with different thickness. Label which string has the lowest pitch and which has the highest pitch.
- Interactive Activity: Kazoo

Lesson Components
Total Learning Objects – 35
Instruction Pages - 17
Activity Pages - 3
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 5: Uses of Sound

Common Core Standards
- PS4.C Information Technologies and Instrumentation

© Core Learning Ltd.

Learning Objectives
- to learn about echoes and echolocation
- to learn about SONAR and RADAR
- to learn about radio transmission

Defined Vocabulary Words
- echo, echolocation, insulator, RADAR, SONAR

Activity Type
- Write the letter for the matching definition on the line after each word.
- Use words and a picture to explain how bats use echolocation.

Lesson Components
Total Learning Objects – 31
Instruction Pages - 13
Activity Pages - 3
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

---

Unit 5: Waves & Light

Lesson 1: Light Waves

Common Core Standards
- PS4.B Electromagnetic Radiation

Learning Objectives
- to learn about the basic features and properties of light waves
- to learn how light travels

Defined Vocabulary Words
- light, light waves, wave crest, wave trough, amplitude, wavelength, wave frequency, visible spectrum

Activity Type
- Match the word with the definition.

Lesson Components
Total Learning Objects – 33
Instruction Pages - 16
Activity Pages - 2
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

© Core Learning Ltd.

Lesson 2: The Electromagnetic Spectrum

Common Core Standards

- PS4.B Electromagnetic Radiation

Learning Objectives

- to learn about the concepts of reflection and refraction
- to learn the difference between transparent, translucent, and opaque objects

Defined Vocabulary Words

- disinfect, electromagnetic spectrum, gamma rays, infrared energy, microwaves, radiation, radio waves, sterilize, ultraviolet radiation, visible light

Activity Type

- Arrange the types of radiation in the correct order from least energy to most energy. Then, number the type of radiation to the correct description.

Lesson Components

Total Learning Objects – 34
Instruction Pages - 17
Activity Pages - 2
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 3: Transmission and Refraction

Common Core Standards

- PS4.B Electromagnetic Radiation

Learning Objectives

- to learn about transparent, translucent, and opaque materials
- to learn about how light refracts
- to learn about white light and the visible spectrum
- to learn about the effect of refraction on eyesight

Defined Vocabulary Words

- lens, opaque, prism, rainbow, rays, refraction, translucent, transmission, transparent, visible spectrum, white light

Activity Type

- Draw and then explain what happens when light from the sun hits a prism. Be sure to label your picture and use science words we have learned.

Lesson Components

Total Learning Objects – 37
Instruction Pages - 20
Activity Pages - 2
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

© Core Learning Ltd.

Lesson 4: Reflection and Absorption

Common Core Standards
- PS4.C Information Technologies and Instrumentation

Learning Objectives
- to learn how our knowledge about waves can be used to understand communication
- to learn about the concepts of insulators, light absorption, and reflected waves

Defined Vocabulary Words
- angle of reflection, absorption, plane mirror, rays, reflection

Activity Type
- Draw what happens to the sunbeam as it hits the plane mirror at the angles shown.

Lesson Components
Total Learning Objects – 33
Instruction Pages - 16
Activity Pages - 2
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

Lesson 5: Optical Instruments

Common Core Standards
- PS4.C Information Technologies and Instrumentation

Learning Objectives
- to learn about various tools that have been invented utilizing optical principles or properties
- to learn the use for various optical tools and inventions

Defined Vocabulary Words
- optical, light box, translucent, transmit, kaleidoscope, camera, mirror, plane mirror, concave, convex, transparent, transmit lens, refract, reflect, telescope, binoculars, microscope, spectroscope, prism

Activity Type
- Match the names of optical instruments with the correct description.

Lesson Components
Total Learning Objects – 38
Instruction Pages - 21
Activity Pages - 2
Quiz Questions – 10 total questions; 5 randomly selected to populate quiz
Test Questions – 50 total questions; 10 total per Lesson of which 3 are randomly selected to populate test

© Core Learning Ltd.