

**NOEO
SCIENCE
PHYSICS 3
LAB MANUAL**

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LAB MANUAL**

Created by Dr. Randy Pritchard

noeo science
MOSCOW, IDAHO

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unit 1:
**AN OVERVIEW
OF PHYSICS**

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Week 1: Main Branches and Major Scientists

Day 1 Worksheet

SCHEDULE

	DAY 1	DAY 2	DAY 3	DAY 4
<i>The Science of Physics</i>	pp. 6–9	pp. 10–16	pp. 17–23	pp. 24–35

OVERVIEW

This is the final year of Noeo. If you have made it this far, congratulations! This is the most advanced year of our curriculum, and Physics is one of the hardest and most rewarding of the sciences. Physics is the study of motion and force in the real world. This week begins with an introduction to physics, including its history.

Do not let your young physicist get lost in the details, especially in this year when there is more than ever. Focus on the big picture. Most of the important terms and concepts are going to be noted in the reading instructions for each day.

Remember that *science* can refer to two things: 1) science is the process we use to answer questions about the physical world

we see around us (testing with experiments), and 2) science is the body of knowledge other people (scientists) have collected by using the scientific process (or scientific method). As you're doing the second kind of science (reading what other scientists have learned), you won't have many experiments you can do in your home about, say, quantum mechanics. Don't worry about that – experiments are coming soon!

READING QUESTIONS

1. Write a paragraph summarizing what you know about physics.



Week 1: Main Branches and Major Scientists

Day 2 Worksheet

READING QUESTIONS

1. What are some things the major branches of physics deal with?



Week 1: Main Branches and Major Scientists

Day 3 Worksheet

READING QUESTIONS

1. How did Egyptians use physics?

2. How were the Greeks different from the people around them?

3. What was different about scientists in Galileo's time?



Week 1: Main Branches and Major Scientists

Day 4 Worksheet

READING QUESTIONS

1. Define Mechanics:

2. Define Force:

3. What was Galileo's contribution to mechanics?

4. What was Newton's contribution to mechanics?



Week 2: Relativity, Electromagnetism, & Quantum Mechanics

Day 1 Worksheet

SCHEDULE

	DAY 1	DAY 2	DAY 3	DAY 4
<i>The Science of Physics</i>	pp. 36-44	pp. 45-51	pp. 52-59	pp. 60-71
<i>Physics: Why Matter Matters!</i>	pp. 4-7			
<i>Isaac Newton</i>	Chapter 1 (pp. 1-15)	Chapter 2 (pp. 16-25)	Chapters 3-4 (pp. 26-40)	Chapter 5 (pp. 41-54)

OVERVIEW

This week should be a fun one: relativity, electromagnetism, and quantum mechanics are all things your young physicist may not have heard about before, so try to make sure they understand the basic concepts. Also, do not worry about perfectly comprehending everything in the biography of Isaac Newton. Your young physicist should be excited by the story. After all, every scientist started out as a kid asking questions.



Week 2: Relativity, Electromagnetism, & Quantum Mechanics

Day 2 Worksheet

READING QUESTIONS

1. According to *The Study of Physics*, what is Kinetic molecular theory?

2. What were some previous theories of heat?

3. What did Planck think about radiant heat energy?

4. What ranks with relativity as one of the cornerstones of modern physics?



Week 2: Relativity, Electromagnetism, & Quantum Mechanics

Day 3 Worksheet

READING QUESTIONS

1. According to *The Science of Physics*, what is light the result of?

2. What is the difference between positive and negative charges of electricity?



Week 2: Relativity, Electromagnetism, & Quantum Mechanics

Day 4 Worksheet

READING QUESTIONS

1. According to *The Study of Physics*, how do the particle and wave theories of light each try to explain why light bends in water?

2. What charges do neutrons, protons, and electrons in an atom have?

3. Define quantum mechanics.

4. What did Heisenberg say was impossible to measure and why?
