Ch. 8 Special Relativity – Outline

BC Science Physics 11

Read through p. 259. This will give you an overview of what this chapter is all about. Look at the picture of one of the most famous men in Physics, Albert Einstein. Look at the image above of a young Albert. Although quite old fashion by today’s standard, his outfit was very revolutionary for his time. Einstein revolutionized the way scientist thought about space, time and motion. His work ultimately lead towards the modern view of our universe, and in its creation in what is now called the BIG BANG THEORY (no not the sit-com!). Some of the ideas do not make initially make sense, but let me assure you that Physics accept them to be true. There will be lots of class discussion during this unit.

8.1 Einstein’s Theory of Special Relativity?

a) Do “Warm Up” p. 260
b) Albert Einstein - Read p. 260
c) Frames of Reference – Read through p. 260
   i) Do Quick Check questions #1 – 5 on p. 261
d) Read Relative Motion p. 262
e) Read The First Postulate of Relativity on p. 262 - 263
f) Read Comparing Frames of Reference on p. 263
g) Do Quick Check #1 – 2 on p. 263
h) Read p. 264 – 267
   i) The Speed of Light is a Constant
   ii) The Michelson-Morley Experiment
   iii) Second Postulate of Relativity
   iv) Time Dilation
   v) If you need further explanation view the PowerPoint Presentation up to slide #23.
i) Read through Sample Problem 8.1.1 p. 267– Time Dilation
j) Do Practice Problems 8.1.1 #1 – 4 p. 268 – Time Dilation (Maybe incorrectly Named)
k) Read p. 268 – 269
   i) Experimental Evidence for Time Dilation
   ii) A Thought Experiment
l) Read Length Contraction p. 269
   i) Read through Sample Problem 8.1.2 p. 270– Length Contraction
   ii) Do Practice Problems 8.1.2 #1 – 3 p. 270 – Length Contraction
   iii) If you need further explanation view the PowerPoint Presentation
m) Read p. 271 – 273
   i) Relativity and Mass
ii) Mass-Energy Equivalence (This is an important idea!)
iii) Relativistic Momentum
iv) Speed Limit for the Universe: The Speed of Light
v) If you need further explanation view the PowerPoint Presentation up to slide #33 - 41.

n) Addition of Velocities: Not in your work book
   i) Use the PowerPoint Presentation Slides #29 – 32
o) Complete Special Relativity Worksheet

Test on Chapter 8 Special Relativity