Review Sheet for
Why the Sky is Blue

1. Powers of 10

2. Methodology of Physics
   What kind of questions we ask
   How we answer them — observation & experiment
   Theories & Models

3. Motion and Forces
   Position, speed, velocity and acceleration and graphs
   Forces cause motion — Newton's Three Laws
   Relations between electricity and magnetism — Faraday & Amperes' Laws
   The Field concept

4. The Character of Natural Laws
   Symmetry
   Conservation Laws (momentum, angular momentum, energy, charge, Lepton, etc.)
   The "Prime Directive" — if anything can happen it will

5. The atom & the nucleus
   Facts — size, what made of, what holds them together
   Radioactive Decays: α, β, γ
   Half-life
   The Beta Decay story
   Carbon Dating

6. Relativity:
   Michelson Morley experiment: results and possible explanations
   Simultaneity
   Time Dilation
   Length contraction
   Meaning and Computation of γ
   Other effects: \( m = \gamma m_0, E = \gamma E_0, E = mc^2 \)
   Twin Paradox
   General Relativity
   Velocity addition: \( v = \frac{\gamma' + u}{1 + \frac{uv'}{c^2}} \)
7. The Nature of Light
   Waves and their properties
   Evidence for light being a wave and what is "waving"
   Why the sky is blue
8. Beginnings of Quantum Theory
   Black-body radiation
   Photo-electric effect