

1. Math

1. Dimensional Analysis
2. Approximations (small angle, Taylor series)
3. Units
4. Maybe Trig n Vectors???

2. Mechanics

1. Kinematics

1. formulas (big five)
2. 1D 2D UCM
3. Maybe add reference frame? like moving and stationary (for more advanced)

2. Energy

1. Energy conservation (when to use it & how to use it)
 1. 1D + 2D i guess
2. potential and kinetic energy
3. conservative and non-conservative force
4. Work-Energy Theorem

3. Momentum

1. Conservation of momentum (when to use it & how to use it)
2. loss of momentum

4. Energy + momentum

1. Elastic Collision (some interesting applications) (有些题就两个一起套可以有一些 equations)
2. Using Center of Mass Techniques
3. probably just explain some questions

5. Newton's laws + Forces

1. self explanatory
2. **Free body diagrams!**
3. Friction, Tension, Normal Force and such

6. Circular Motion + Gravity

1. Uniform circular motion
2. Kepler's laws
3. universal gravitation

7. Rotational Kinematics

1. Angular Quantities
2. Relationships with linear quantities

8. Rotational Dynamics

1. Torque
2. Moment of Inertia
3. Equilibrium problems (We can separate Statics but let's keep this here for now)
4. Combined rotational and translational motion

- 9. Angular Momentum
 - 1. Basic Definitions
 - 2. Conservation of Angular Momentum
 - 3. parallel axis theorem and perpendicular axis theorem
 - 10. Fluid
 - 1. Basic Definitions for fluid pressure and such
 - 2. Statics: Pascal's Principle and Archimede's Principle
 - 3. Dynamics: Bernoulli
 - 11. Oscillation
 - 1. The definition of SHM (4 formulas)
 - 2. Springs and Pendulums
 - 3. Other SHM (buoyancy and other weird stuff)
 - 4. Damped Motion
 - 12. Waves
 - 1. Types of Waves
 - 2. Standing Waves
 - 3. Traveling waves on a stretched string ($v = \sqrt{F/\mu}$ and such)
 - 4. Superposition and interference
 - 5. Sound Waves and Doppler
 - 13. Non-inertial reference frames and Fictitious forces
3. Electromagnetism