THE VIDEO ENCYCLOPEDIA OF PHYSICS DEMONSTRATIONS

LIST OF 600 DEMONSTATIONS

The Education Group PO Box 1667-90069 Los Angeles, CA 90069 Telephone (310) 276-1122 Fax (310) 276-7330

Email: physics@edgroup.org http://www.physicsdemos.com

DISC ONE

Chapter 1 Units and Vectors

Demo 01-01 Basic Units

Demo 01-02 Vector Addition (Parallelogram

Demo 01-03 Vector Addition (Head to Tail)

Demo 01-04 Vector Components

Demo 01-05 Vector Dot Product

Demo 01-06 Vector Cross Product

Demo 01-07 3-D Vector Components

Chapter 2 Linear Kinematics

Demo 01-08 Constant Velocity

Demo 01-09 Bulldozer on Moving Sheet

Demo 01-10 Rolling Ball Incline

Demo 01-11 Constant Acceleration

Demo 01-12 String and Weights Drop

Demo 01-13 Reaction Time Falling Meter Stick

Demo 01-14 Guinea and Feather

Chapter 3 Linear Dynamics

Demo 01-15 String and Weight Acceleration

Demo 01-16 Atwood's Machine

Demo 01-17 Acceleration with Spring

Demo 01-18 Dropped Slinky

Demo 01-19 Candle in Dropped Jar

DISC TWO

Chapter 4 Motion in a Plane

Demo 02-01 Shooter/Dropper

Demo 02-02 Monkey Gun

Demo 02-03 Vertical Gun on Car

Demo 02-04 Vertical Gun on Accelerated Car

Demo 02-05 Air Table Parabolas

Demo 02-06 Range Gun

Demo 02-07 Velocity Vector Addition

Demo 02-08 Bulldozer on Moving Sheet (2D)

Demo 02-09 Sliding Weights with Triangle

Demo 02-10 Sailing Upwind

Demo 02-11 Local Vertical with Acceleration

Chapter 5 Inertia

Demo 02-12 Shifted Air T rack Inertia

Demo 02-13 Inertia Ball

Demo 02-14 Foam Rock

Demo 02-15 Tablecloth Jerk

Demo 02-16 Eggs and Pizza Pan

Demo 02-17 Pencil and Plywood

Chapter 6 Action and Reaction

Demo 02-18 Reaction Gliders

Demo 02-19 Reaction Gliders Momentum Conservation

Demo 02-20 Car on Rolling Board

Demo 02-21 Fan Car with Sail

Demo 02-22 CO2 Rocket

Demo 02-23 Water Rocket

Demo 02-24 Fire Extinguisher Wagon

Demo 02-25 Helicopter Rotor

Demo 02-26 See-Saw Reaction Carts

DISC THREE

Chapter 7 Friction

Demo 03-01 Air Track Friction

Demo 03-02 Static vs. Sliding F riction

Demo 03-03 Area Dependence of Friction

Demo 03-04 Weight Dependence of Friction

Demo 03-05 Surface Dependence of Friction

Demo 03-06 Stability of Rolling Car

Chapter 8 Work, Energy, and Power

Demo 03-07 Pile Driver

Demo 03-08 Spring Pong Gun

Demo 03-09 Spring Jumper

Demo 03-10 X-Squared Spring Energy Dependence

Demo 03-11 High Bounce Paradox

Demo 03-12 Energy Well Track

Demo 03-13 Galileo's Pendulum

Demo 03-14 Bowling Ball Pendulum

Demo 03-15 Triple Track

Demo 03-16 Hand Cranked Generator

Demo 03-17 Generator Driven by Falling Weight

Demo 03-18 Prony Brake

Chapter 9 Center of Mass

Demo 03-19 Stability

Demo 03-20 Irregular Object Center of Mass

Demo 03-21 Center of Mass Disc

Demo 03-22 Chair on Pedestal

Demo 03-23 Clown on Rope

Demo 03-24 Double Cone on Incline

Demo 03-25 Loaded Disc

Demo 03-26 Toppling Cylinders

Demo 03-27 Air Table Center of Mass

DISC FOUR

Chapter 10 Statics

Demo 04-01 Force Board

Demo 04-02 Clothesline

Demo 04-03 Load on Removable Incline

Demo 04-04 Pulley Advantage

Demo 04-05 Pulley and Scales

Demo 04-06 Simple Machines

Demo 04-07 Levers

Demo 04-08 Horizontal Boom

Demo 04-09 Arm Model

Demo 04-10 Torque Bar

Demo 04-11 Hinge Board

Demo 04-12 Torque Wrench

Demo 04-13 Torque Wheel

Demo 04-14 Balancing Meter Stick

Demo 04-15 Meter Stick on Fingers

Demo 04-16 Bridge and Truck

Demo 04-17 Roberval Balance

Demo 04-18 Ladder Forces Demo 04-19 Broom Stand

Demo 04-19 Broom Stand

Demo 04-21 Egg Crusher

DISC FIVE

Chapter 11 Collisions

Demo 05-01 Colliding Balls

Demo 05-02 Equal and Unequal Mass Collisions

Demo 05-03 Elastic and Inelastic Collisions

Demo 05-04 Coefficient of Restitution

Demo 05-05 High Bounce

Demo 05-06 Air Table Collisions (Equal Mass)

Demo 05-07 Air Table Collisions (Unequal Mass)

Demo 05-08 Air Table Collisions (Inelastic)

Demo 05-09 Egg in Sheet

Demo 05-10 Pile Driver with Foam Rubber

Demo 05-11 Ballistic Pendulum

Chapter 12 Rotational Kinematics

Demo 05-12 Radian Disc

Demo 05-13 Cycloid Generator

Demo 05-14 Circle with Gap

Demo 05-15 Rotating Disc with Erasers

Demo 05-16 Spinning Disc with Water

Demo 05-17 Ball on Cord

Demo 05-18 Coin on a Coat Hanger

Demo 05-19 Plane on String

Demo 05-20 Roundup

Demo 05-21 Whirling Bucket of Water

Demo 05-22 Centrifuge Hoops

Demo 05-23 Water and Mercury Centrifuge

Demo 05-24 Spinning Chain

Demo 05-25 Rotating Rubber Wheel

Demo 05-26 Centrifugal Governor

DISC SIX

Chapter 13 Rotational Acceleration and Energy

Demo 06-01 Angular Acceleration Machine

Demo 06-02 Bike Wheel Angular Acceler ation

Demo 06-03 Air Rotator With Deflectors

Demo 06-04 Rolling Bodies on Incline

Demo 06-05 Spool on Incline

Demo 06-06 Bike Wheel on Incline

Demo 06-07 Spool with Wrapped Ribbon

Demo 06-08 Maxwell's Yoyo

Demo 06-09 Loop the Loop

Demo 06-10 Penny Drop Stick

Demo 06-11 Hinged Stick and Ball

Demo 06-12 Center of Percussion

Demo 06-13 Foucault Pendulum

Demo 06-14 Coriolis Effect

DISC SEVEN

Chapter 14 Conservation of Angular Momentum

Demo 07-01 Marbles and Funnel

Demo 07-02 Train on a Circular Track

Demo 07-03 Tail Wags Dog

Demo 07-04 Rotating Stool with Weights

Demo 07-05 Rotating Stool and Long Bar

Demo 07-06 Rotating Stool and Bicycle Wheel

Demo 07-07 Gyroscopic Stability

Demo 07-08 Wheel and Brake

Demo 07-09 Satellite Derotator

Chapter 15 Precession

Demo 07-10 Bike Wheel Precession

Demo 07-11 Gyroscope with Adjustable Weights

Demo 07-12 Bike Wheel on Gimbals

Demo 07-13 Double Bike Wheel

Demo 07-14 Motorized Gyroscope

Chapter 16 Rotational Phenomena

Demo 07-15 Static/Dynamic Balance

Demo 07-16 Football Spin

Demo 07-17 Tippy Top

Demo 07-18 Ship Stabilizer

Demo 07-19 Spinning Rod and Hoop on Wire

Demo 07-20 Stable and Unstable Axes of Rotation

Chapter 17 Gravitation

Demo 07-21 Sections of a Cone

Demo 07-22 Ellipse Drawing Board

Demo 07-23 Cavendish Balance

DISC EIGHT

Chapter 18 Elasticity

Demo 08-01 Hooke's Law

Demo 08-02 Spring in Series and Parallel

Demo 08-03 Torsion Rod

Demo 08-04 Elastic Limits

Demo 08-05 Young's Modulus

Demo 08-06 Bending Beams

Demo 08-07 2:1 Scaling

Demo 08-08 Bologna Bottle

Demo 08-09 Elasticity at Low Temperatures

Chapter 19 Oscillations

Demo 08-10 Tuning Fork with Light

Demo 08-11 Mass on Spring

Demo 08-12 Air Track Simple Harmonic Motion

Demo 08-13 Torsion Pendulum

Demo 08-14 Different Mass Pendula

Demo 08-15 4:1 Pendula

Demo 08-16 Hoops and Arcs

Demo 08-17 Pendulum with Large Amplitude

Demo 08-18 Physical Pendulum

Demo 08-19 Variable Angle Pendulum

Demo 08-20 Circular Motion vs. Spring and Weight

Demo 08-21 Circular Motion vs. Pendulum

Demo 08-22 Phase Shift

Demo 08-23 Periodic Non-Simple Harmonic Motion

Demo 08-24 Inertia Balance

Demo 08-25 Pendulum Waves

Demo 08-26 Lissajous Figures

DISC NINE

Chapter 20 Resonance

Demo 09-01 Bowling Ball Pendulum Resonance

Demo 09-02 Resonant Driven Pendula

Demo 09-03 Driven Spring and Weight

Demo 09-04 Pump Pendulum

Demo 09-05 Reed Tachometer

Demo 09-06 Glass Breaking with Sound

Demo 09-07 Coupled Pendula

Demo 09-08 Wilberforce Pendulum

Chapter 21 Mechanical Waves

Demo 09-09 Wave on Rope

Demo 09-10 Pulse on Moving Chain

Demo 09-11 Tension Dependence of Wave Speed

Demo 09-12 Torsional Waves

Demo 09-13 Wave Speed

Demo 09-14 Longitudinal Wave Model

Demo 09-15 Longitudinal Slinky Waves

Demo 09-16 Wave Superposition

Demo 09-17 Reflection of Waves

Demo 09-18 Spring Wave Reflection

Demo 09-19 Wave Coupling

Demo 09-20 Refraction of Water Waves

Demo 09-21 Single Slit Diffraction of Water Waves

Demo 09-22 Double Slit Interference of Water Waves

Demo 09-23 Moire Pattern

Chapter 22 Standing Waves

Demo 09-24 Longitudinal Standing Waves

Demo 09-25 Slinky Standing Waves

Demo 09-26 Standing Waves

Demo 09-27 Three Tensions Standing Waves

Demo 09-28 Rubber Tube Standing Waves

Demo 09-29 Drumhead

Demo 09-30 Chladni Plates

DISC TEN

Chapter 23 Sound Production

Demo 10-01 Guitar and Scope

Demo 10-02 Sonometer

Demo 10-03 Tuning Forks

Demo 10-04 Adjustable Tuning Fork

Demo 10-05 Rectangular Bar Oscillations

Demo 10-06 High Frequency Metal Bars

Demo 10-07 Xylophone Bars

Demo 10-08 Singing Rods

Chapter 24 Properties of Sound

Demo 10-09 Siren in Vacuum

Demo 10-10 Siren Disc

Demo 10-11 Gear and Card

Demo 10-12 Cutaway Speaker

Demo 10-13 Sound Velocity at Different Temperatures

Demo 10-14 Sound in Helium

Demo 10-15 Fourier Synthesizer

Demo 10-16 Vocal Formants

Demo 10-17 Acoustic Coupling

Demo 10-18 Tuning Fork Beats

Demo 10-19 Beats with Speaker and Oscilloscope

Demo 10-20 Two Speaker Interference

Demo 10-21 Doppler Effect

DISC ELEVEN

Chapter 25 Standing Sound Waves

Demo 11-01 Resonance Tube with Piston

Demo 11-02 Resonance Tubes (Three Lengths)

Demo 11-03 Kundt's Tube

Demo 11-04 Resonance Tube

Demo 11-05 Open and Closed End Pipes

Demo 11-06 Slide Whistle

Demo 11-07 Singing Pipes

Demo 11-08 Tuning Forks on Resonant Boxes

Demo 11-09 Helmholtz Resonators

Chapter 26 Gas Pressure

Demo 11-10 Mercury Barometer in Vacuum

Demo 11-11 Aneroid Barometer in Vacuum

Demo 11-12 Magdeburg Hemispheres

Demo 11-13 Adhesion Plates

Demo 11-14 Crush Can

Demo 11-15 Vacuum Bazooka

Demo 11-16 Barrel Crush

Demo 11-17 Air Pressure Lift

Demo 11-18 Inertia Shingles

Demo 11-19 Rubber Sheet Lifting Chair

DISC TWELVE

Chapter 27 Fluid Pressure

Demo 12-01 Same Level Tubes

Demo 12-02 Pressure vs. Depth

Demo 12-03 Pressure vs. Depth in Water and Alcohol

Demo 12-04 Pressure Independent of Direction

Demo 12-05 Water/Air Compression

Demo 12-06 Water and Mercury U-tube

Demo 12-07 Hydraulic Press

Demo 12-08 Hydrostatic Paradox

Chapter 28 Buoyancy

Demo 12-09 Hydrometer

Demo 12-10 Weight of Air

Demo 12-11 Buoyant Force

Demo 12-12 Archimedes' Principle

Demo 12-13 Board and Weights Float

Demo 12-14 Different Density Wood

Demo 12-15 Density Ball

Demo 12-16 Density Balls in Beans

Demo 12-17 Battleship in Bathtub

Demo 12-18 Buoyancy in Various Liquids

Demo 12-19 Floating Square Bar

Demo 12-20 Helium Balloon in Glass Jar

Demo 12-21 Helium Balloon in Liquid Nitrogen

Demo 12-22 Cartesian Diver

DISC THIRTEEN

Chapter 29 Fluid Dynamics

Demo 13-01 Pitot Tube

Demo 13-02 Flettner Rotor

Demo 13-03 Curve Balls

Demo 13-04 Floating Ball in Air Jet

Demo 13-05 Suspended Plate in Air Jet

Demo 13-06 Suspended Parallel Cards

Demo 13-07 Vortex Cannon

Demo 13-08 Un-mixing

Demo 13-09 Tornado Tube

Demo 13-10 Siphon

Demo 13-11 Syringe Water Velocity

Demo 13-12 Uniform Pressure Drop

Demo 13-13 Bernoulli's Principle

Demo 13-14 Water Hammer

Demo 13-15 Toricelli's Tank

Demo 13-16 Accelerometers

Demo 13-17 Paraboloid of Revolution

Demo 13-18 Rotating Water Troughs

Chapter 30 Surface Tension

Demo 13-19 Surface Tension Disc

Demo 13-20 Floating Metal Sheet

Demo 13-21 Soap Film Pull-up

Demo 13-22 Soap Film Shapes

Demo 13-23 Two Soap Bubbles

Demo 13-24 Minimum Energy Thread

Demo 13-25 Capillary Action

Demo 13-26 Capillary Tubes

DISC FOURTEEN

Chapter 31 Viscosity

Demo 14-01 Air Friction

Demo 14-02 Viscous Drag

Demo 14-03 Ball Drop

Demo 14-04 Gas Viscosity Change with Temperature

Demo 14-05 Viscosity of Alcohol at Low Temperatures

Demo 14-06 Oil Viscosity

Chapter 32 Thermal Phenomena

Demo 14-07 Thermal Expansion of Wire

Demo 14-08 Bimetallic Strip

Demo 14-09 Thermostat Model

Demo 14-10 Pin Breaker

Demo 14-11 Thermal Expansion

Demo 14-12 Thermal Expansion of Air

Demo 14-13 Thermal Expansion of Water

Demo 14-14 Negative Expansion Coefficient of Water

Demo 14-15 Dust Explosion

Demo 14-16 Scaling Cube

Demo 14-17 Specific Heat

Demo 14-18 Specific Heat with Rods and Wax

Demo 14-19 Boiling Water in a Paper Cup

Demo 14-20 Water Balloon Heat Capacity

Chapter 33 Heat Transfer

Demo 14-21 Thermal Conductivity

Demo 14-22 Leidenfrost Phenomenon

Demo 14-23 Radiometer

Demo 14-24 Two Can Radiation

Demo 14-25 Radiation Cube

Demo 14-26 Insulation (Dewar Flasks)

Demo 14-27 Convection Currents

DISC FIFTEEN

Chapter 34 Laws of Thermodynamics

Demo 15-01 Drill and Dowel

Demo 15-02 Mechanical Equivalent of Heat

Demo 15-03 CO₂ Expansion Cooling

Demo 15-04 Adiabatic Expansion

Demo 15-05 Fire Syringe

Demo 15-06 Stirling Engine

Demo 15-07 Hero's Engine

Demo 15-08 Cork Popper

Chapter 35 Phase Changes

Demo 15-09 Liquid Nitrogen in Balloon

Demo 15-10 Boil Water Under Reduced Pressure

Demo 15-11 CO₂ Critical Point

Demo 15-12 Drinking Bird

Demo 15-13 Freezing by Boiling

Demo 15-14 Cryophorus

Demo 15-15 Ice Bomb

Demo 15-16 Regelation

Demo 15-17 Helium and CO₂ Balloons in Liquid

Nitrogen

Demo 15-18 Sublimation of CO₂

Demo 15-19 Slime Ball

DISC SIXTEEN

Chapter 36 Kinetic Theory

Demo 16-01 Pressure vs. Volume

Demo 16-02 Pressure vs. Temperature

Demo 16-03 Temperature Increase Simulation

Demo 16-04 Pressure vs. Volume Simulation

Demo 16-05 Equipartition of Energy Simulation

Demo 16-06 Mercury Kinetic Theory

Demo 16-07 Brownian Motion

Demo 16-08 Brownian Motion Simulation

Demo 16-09 Diffusion

Demo 16-10 Diffusion Simulation

Demo 16-11 Bromine Diffusion

Demo 16-12 Gaussian Curve

Demo 16-13 Free Expansion Simulation

Chapter 37 Crystals and Low Temperatures

Demo 16-14 Superconductors

Demo 16-15 Crystal Models

Demo 16-16 Faults in Crystal

Chapter 38 Thermoelectricity

Demo 16-17 Thermistor

Demo 16-18 Thermoelectric Magnet

Demo 16-19 Thermoelectric Heat Pump

Demo 16-20 Thermocouple

Chapter 39 Electric Charges

Demo 16-21 Electrostatic Rods

Demo 16-22 Electrostatic Rod and Cloth

Demo 16-23 Electrostatic Ping-Pong Deflection

Demo 16-24 Electrostatic Ping-Pong Balls

Demo 16-25 Conductors and Insulators

Demo 16-26 Piezoelectric Sparker

DISC SEVENTEEN

Chapter 40 Electrostatic Induction

Demo 17-01 Electrostatic Induction

Demo 17-02 Metal Rod Attraction

Demo 17-03 Electrophorus

Demo 17-04 Induction Generator

Demo 17-05 Kelvin Water Dropper

Demo 17-06 Wooden Needle

Chapter 41 Electric Fields

Demo 17-07 Van de Graaff Generator

Demo 17-08 Van de Graaff with Streamers

Demo 17-09 Van de Graaff and Wand

Demo 17-10 Electric Field

Demo 17-11 Lightning Rod

Demo 17-12 Pinwheel

Demo 17-13 Point and Candle

Demo 17-14 Faraday Cage

Demo 17-15 Faraday Ice Pail

Demo 17-16 Smoke Precipitation
Demo 17-17 Electron Discharge Tube with Wheel

Chapter 42 Resistance and DC Circuits

Demo 17-18 Resistance Wires

Demo 17-19 Ohm's Law

Demo 17-20 Heated Wire

Demo 17-21 Cooled Wire

Demo 17-22 Electron Motion Model

Demo 17-23 Series/Parallel Resistors

Demo 17-24 Series/Parallel Light Bulbs

Demo 17-25 Wheatstone Bridge

Demo 17-26 Galvanometer as Voltmeter and Ammeter

Demo 17-27 Conservation of Current

DISC EIGHTEEN

Chapter 43 Voltage Drops and 1 2 R Losses

Demo 18-01 Voltage Drop Along Wire

Demo 18-02 Sum of IR Drops

Demo 18-03 Internal Resistance of Batteries

Demo 18-04 Loading by a Voltmeter

Demo 18-05 Voltage Drops in House Wires

Demo 18-06 I²R Losses

Demo 18-07 Hot Dog Frying

Chapter 44 Non-Ohmic Resistance

Demo 18-08 Neon Bulb Resistivity

Demo 18-09 Carbon and Tungsten Lamps

Demo 18-10 Diode

Demo 18-11 Rectifier Circuit

Demo 18-12 Transistor Amplifier

Chapter 45 Electrochemical Effects

Demo 18-13 Conductivity of Solutions

Demo 18-14 Battery Effect

Demo 18-15 Pickle Frying

Demo 18-16 Electrolysis

Demo 18-17 Electroplating

Chapter 46 Capacitance and RC Circuits

Demo 18-18 Leyden Jars on Toepler Holtz

Demo 18-19 Parallel Plate Capacitor

Demo 18-20 Parallel Plate Capacitor Dielectrics

Demo 18-21 Rotary Capacitor

Demo 18-22 Battery and Separable Capacitor

Demo 18-23 Exploding Capacitor

Demo 18-24 Force on a Dielectric

Demo 18-25 Dissectible Capacitor

Demo 18-26 Grounded Leyden Jar

Demo 18-27 Series/Parallel Capacitors

Demo 18-28 RC Charging Curve

Demo 18-29 Relaxation Oscillator

DISC NINETEEN

Chapter 47 Magnetism and Magnetic Fields

Demo 19-01 Magnetic Attraction/Repulsion

Demo 19-02 Lodestone

Demo 19-03 Dip Needle

Demo 19-04 Magnetic Fields Around Bar Magnets

Demo 19-05 Broken Magnet

Demo 19-06 Lowest Energy Configuration

Chapter 48 Magnetic Fields From Currents

Demo 19-07 Right-Hand Rule

Demo 19-08 Oersted's Needle

Demo 19-09 Magnetic Fields Around Currents

Demo 19-10 Solenoid Bar Magnet

Demo 19-11 Large Electromagnet

Demo 19-12 Electromagnet with 1.5-V Battery

Demo 19-13 Pinch Wires

Demo 19-14 Biot-Savart Law

Chapter 49 Magnetic Properties of Matter

Demo 19-15 Magnetizing Iron by Contact

Demo 19-16 Magnetic Domain Model

Demo 19-17 Magnetizing Iron

Demo 19-18 Demagnetizing Iron by Hammering

Demo 19-19 Barkhausen Effect

Demo 19-20 Magnetic Shielding

Demo 19-21 Permalloy in Earth's Field

Demo 19-22 Paramagnetism and Diamagnetism

Demo 19-23 Dysprosium in Liquid Nitrogen

Demo 19-24 Curie Nickel

Demo 19-25 Curie Temperature Wheel

DISC TWENTY

Chapter 50 Magnetic Forces on Currents

Demo 20-01 Jumping Wire

Demo 20-02 Ampere's Frame

Demo 20-03 Deflected Electron Beam

Demo 20-04 Fine Beam Tube

Demo 20-05 Barlow's Wheel

Demo 20-06 Ion Motor

Demo 20-07 AC/DC Magnetic Contrast

Demo 20-08 D'Arsonval Meter

Demo 20-09 DC Motor

Demo 20-10 Hall Effect

Chapter 51 Electromagnetic Induction

Demo 20-11 Wire and Magnet

Demo 20-12 10/20/40 Coils with Magnet

Demo 20-13 Earth Coil

Demo 20-14 Faraday Disc

Demo 20-15 AC/DC Generator

Demo 20-16 Current-Coupled Pendula

Demo 20-17 Inductive Coil with Lamp

Demo 20-18 Thomson's Flying Ring

Demo 20-19 Faraday Repulsion Coil

Demo 20-20 Two Coils

Demo 20-21 Induction Coil

Demo 20-22 Vertical Primary and Secondary Coils

Demo 20-23 Transformers

Chapter 52 Eddy Currents

Demo 20-24 Eddy Current Pendulum

Demo 20-25 Arago's Disc

Demo 20-26 Eddy Current Tubes

Demo 20-27 Electromagnetic Can Breaker

Chapter 53 Hysteresis

Demo 20-28 Hysteresis Curve

Demo 20-29 Hysteresis Waste Heat

DISC TWENTY-ONE

Chapter 54 Inductance And LR Circuits

Demo 21-01 Inductance Spark

Demo 21-02 Inductor with Lamp on AC

Demo 21-03 Lamps in Parallel with Solenoid

Chapter 55 LRC Circuits

Demo 21-04 Driven LRC Circuit

Demo 21-05 Damped LRC Oscillation

Demo 21-06 Tesla Coil

Chapter 56 Electromagnetic Waves

Demo 21-07 Light in a Vacuum

Demo 21-08 Straight Line Propagation

Demo 21-09 Pinhole Camera

Demo 21-10 Inverse Square Law

Demo 21-11 Radio Waves

Demo 21-12 Impossible Triangle

Demo 21-13 Lecher Wires

Demo 21-14 Microwave Unit

Demo 21-15 Microwave Standing Waves

Demo 21-16 Microwave Absorption

Demo 21-17 Radio in Faraday Cage

Chapter 57 Plane Mirrors

Demo 21-18 Microwave Reflection

Demo 21-19 Diffuse/Specular Reflection

Demo 21-20 Angles of Incidence and Reflection

Demo 21-21 Location of Image

Demo 21-22 Parity Reversal in a Mirror

Demo 21-23 Hinged Mirrors

Demo 21-24 Corner Reflector

Demo 21-25 Barbershop Mirrors

Demo 21-26 Mirror Box

DISC TWENTY-TWO

Chapter 58 Curved Mirrors

Demo 22-01 Concave and Convex Mirrors

Demo 22-02 Spherical Aberration in a Mirror

Demo 22-03 Energy at a Focal Point

Demo 22-04 Heat Focusing

Demo 22-05 Large Concave Mirror

Chapter 59 Refraction and Internal Reflection

Demo 22-06 Refraction/Reflection from Plastic Block

Demo 22-07 Small Refraction Tank

Demo 22-08 Acrylic/Lead Glass Refraction

Demo 22-09 Three Different Prisms

Demo 22-10 Disappearing Eye Dropper

Demo 22-11 Critical Angle/Total Internal Reflection

Demo 22-12 Silver Soot Ball

Demo 22-13 Light Pipes

Demo 22-14 Optical Path in Fibers

Demo 22-15 Laser Waterfall

Chapter 60 Lenses

Demo 22-16 Real Image Formation

Demo 22-17 Lens Magnification

Demo 22-18 Ray Tracing with Lenses

Demo 22-19 Fresnel Lens

Demo 22-20 Fillable Air Lenses

Demo 22-21 Spherical Aberration

Demo 22-22 Chromatic Aberration

Demo 22-23 Astigmatism

Demo 22-24 Off Axis Distor tion

DISC TWENTY-THREE

Chapter 61 Diffraction

Demo 23-01 Microwave Diffraction

Demo 23-02 Single Slit Diffraction

Demo 23-03 Single Slit Diffraction (Cornell Slides)

Demo 23-04 Thin Wire Diffraction

Demo 23-05 Poisson's Bright Spot

Demo 23-06 Shadow of Needle

Demo 23-07 Pin Hole Diffraction

Demo 23-08 Knife Edge Diffraction

Demo 23-09 Resolving Power

Chapter 62 Interference

Demo 23-10 Microwave Double Slit Interference

Demo 23-11 Double Slit Interference

Demo 23-12 Multiple Slit Interference

Demo 23-13 Interference Gratings

Demo 23-14 Glass Plates in Sodium Light

Demo 23-15 Newton's Rings

Demo 23-16 Interference Filters

Demo 23-17 Pohl's Mica Sheet

Demo 23-18 Soap Film Interference

Demo 23-19 Microwave Interferometer

Demo 23-20 Michelson Interferometer with White Light

Demo 23-21 Holograms

Chapter 63 Spectra And Color

Demo 23-22 Infrared in Spectrum

Demo 23-23 Colors in Spectral Light

Demo 23-24 Rainbow Disc

Demo 23-25 Newton's Color Disc

Demo 23-26 Additive Color Mixing

DISC TWENTY-FOUR

Chapter 64 Polarization

Demo 24-01 Polaroid Sheets Crossed and Uncrossed

Demo 24-02 Polaroids Cut at 45 Degrees

Demo 24-03 Rotation by Polarizing Filter

Demo 24-04 Microwave Polarization

Demo 24-05 Polarization by Reflection

Demo 24-06 Polarization by Double Reflection

Demo 24-07 Polarization by Scattering

Demo 24-08 Artificial Sunset

Chapter 65 Optical Activity

Demo 24-09 Optical Activity in Cellophane Tape

Demo 24-10 Polarized Lion

Demo 24-11 Optical Activity in Corn Syrup

Demo 24-12 Polage

Demo 24-13 Photoelastic Sress Figures

Demo 24-14 Barbershop Sugar Tube

Demo 24-15 Quarter Wave Plate

Demo 24-16 Double Refraction in Calcite

Demo 24-17 Liquid Crystal Sheets

Chapter 66 Quantum Physics

Demo 24-18 Radiation Spectrum of a Hot Object

Demo 24-19 Photoelectric Effect in Zinc

Demo 24-20 X-ray Ionization

Demo 24-21 Solar Cells

Demo 24-22 Microwave Barrier Penetration

Demo 24-23 Electron Diffraction

Demo 24-24 Millikan Oil Drop

Demo 24-25 Bichsel Boxes

DISC TWENTY-FIVE

Chapter 67 Atomic Physics

Demo 25-01 Emission Spectra

Demo 25-02 Spectral Absorption by Sodium Vapor

Demo 25-03 Thermionic Emission

Demo 25-04 Electron Discharge Tube with Cross

Demo 25-05 Discharge Tube and Vacuum Pump

Demo 25-06 Plasma Tube

Demo 25-07 Flame Salts

Demo 25-08 Jacob's Ladder

Demo 25-09 Triboluminescence

Demo 25-10 Luminescence

Demo 25-11 Fluorescence

Demo 25-12 Franck-Hertz Effect

Chapter 68 Nuclear Physics

Demo 25-13 Rutherford Scattering

Demo 25-14 Nuclear Shielding

Demo 25-15 Mousetrap Chain Reaction

Demo 25-16 Half-Life

Demo 25-17 Cosmic Rays