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Science Skills \$20

Measurement Overview: Metric System (Prezi)

Meters, Liters, and Grams Song - The Metric System (3:00)

Metric Progression Song ... learn the metric units (1:18)

Measurement Overview (Notes) (2:25)

Measurement Overview: Metric System, Factor Labeling, Scientific Notation & Uncertainty ctr (2:20)

Metric Units Song (2:51) ... metric units for each category of measurement (m, l, g)

Metric Progression Song ctr (1:08) ... learn the metric units

Metric Progression & Factor Labeling Basics ctr (4:13)

Factor Labeling "Thumbs Up / Thumbs Down" Rule ctr (4:10)

Factor Labeling Example (negative exponents) ctr (3:34)

Scientific Notation Overview ctr (3:31)

Scientific Notation: Adding/Subtracting ctr (1:22)

Scientific Notation: Multiplying/Dividing ctr (0:58)**Significant Figures: Precision Part 1 ctr (3:28)****Significant Figures: Precision Part 2 ctr (6:24)**

Properties of Matter \$25 (includes “States of Matter”)

Extensive & Intensive Properties ctr (1:53) ... used to classify matter

Electrical Conductivity (Properties) ctr (1:13) ... solids & water

Electrical Conductivity (Properties) ctr (1:31) ... solutions

Samples of Classifying Matter ctr (6:10) ... Non-uniform mixtures/suspensions/colloids are all heterogeneous.

Classifying Matter Notes ctr (1:52) ... Graphic Organizer ... Pure substances versus mixtures.

Dancing Raisins (1:06)

Classifying Matter: What's Opera Doc (5:47)

- *Look for homogeneous matter (elements, compounds) and heterogeneous matter (non-uniform, suspensions, colloids).*

Density: An Intensive Property ctr (1:12) ... Beware of Whacky Scientists!

Separating Mixtures: Distillation ctr (2:32)

Physical Versus Chemical Changes LAB ctr (5:01) ... demonstrations (part 1)**Physical Versus Chemical Changes LAB ctr (5:04) ... demonstrations (part 2)**

States of Matter (*discount included in previous set*)

Mass of Ice Before and After Melting (0:41)

Sublimation of Dry Ice (1:59)

Physical Versus Chemical Properties ctr ... Discussion & "Burning Water" (2:36)

Physical Versus Chemical Changes LAB ctr (5:01) ... demonstrations (part 1)

Heating Curve of Water (Time Lapse) (1:11)

Heating Curve Song (3:20) ... PE, KE, Endo & Exothermic, Graphing Phases (Review).

Gas Laws \$8

Kinetic Theory ctr (2:01) super ball and elastic collisions

Pressure Demonstrations (5:32)

- **PSI (Breaking a Board using Atmospheric Pressure)**
- **Manometer Readings**
- **Boiling Water below 50 C**

Collapsing Can (0:47)

Charles' Law & Gay-Lussac's Law ctr (3:12)

Boiling Water Using ICE! ctr (3:08)

Atomic Structure \$8 (includes Modern Atomic Theory)

Electrostatic Force Demonstrations [Charges Exist] (2:59)

Van Der Graaf Demo [Charges Exist] (1:15)

Crookes' Tube: Cathode Ray deflected by Magnet (Electrons) (1:07)

The Nucleus: Atoms are mostly empty space (0:48)

Rutherford's Experiment: Atom's center is a Nucleus (0:47)

Modern Atomic Theory (*discount included in previous set*)

PHET Simulation: Atomic Model History (5:37)

Atomic History Song (Mark Rosengarten (4:14)

Electron Configuration (Review) Song (3:24)

Periodic Table

The Periodic Table Song (2:44) ... over 100 elements.

Tom Lehrer's The Elements Song (1:26) 1970

The Periodic Table Review Song (3:07) ... Periods, Groups, Valence, Electronegativity (Review).

Bonding \$5

Electron Dot Diagrams (Lewis Structures) (4:57) 5 Steps

Ionic Bonds & Ionic Compounds ctr (4:30)

Electrical Conductivity ctr (1:13) ... solids in water AND Electrical Conductivity ctr (1:31) Ionic & Covalent Compounds dissolved in water.

Conductivity of Dissolved Substances (1:29) ... tap, distilled, salt, HCl, NaOH, sugar, vinegar, ethanol, BaSO₄ (Beware of weird guy!)

Conductivity of Solids & Aqueous Solutions Lab (1:30) For Lab Activity ... Metals, Ionic Compounds

Formulas \$5

Chemical Formulas & Oxidation Numbers ctr (7:43) ... element symbols, subscripts, coefficients, oxidation states

Writing Chemical Formulas ctr (4:18) Oxidation & Criss Cross Method

Naming Chemical Formulas (Introduction) ctr (1:57) Naming elements, HOFBrINCl (diatomic) Molecules, & Ionic (Binary) Compounds.

Naming Covalently Bonded Molecules (6:11)

Metallic Properties & Bonding ctr (3:04)

Reactions \$10

Mass of Ice Before and After Melting (0:41) Law of Conservation of Mass

Mole Day: October 23 (1:58)

Types of Chemical Reactions (5) Overview (3:56)

Synthesis or Combination Reactions (3:21)

Synthesis or Combination Reactions: Magnesium (1:22)

Synthesis of Water (2:15) ... in the classroom!

Synthesis of Water (0:38)

Single Replacement Reactions (4:33)

Double Displacement/Replacement Reactions (5:48) ... Formation of a Precipitate, Solubility Chart, Ionic Equations, Net Ionic Equations, Spectator Ions.

Flaming Bubbles (0:38)

Activation Energy Demo: Sulfuric Acid + Sugar (1:05)

Solutions \$8

Dissolving (Dispersion) & Hydration (1:19) How Water Dissolves Salt

Solution Formation: Dissolving (Dispersion) / dissociation & Hydration (0:46) animation

Electrolytes: The Electric Pickle (2:07) Stephen Spangler

"Seeding" a Supersaturated Solution (1:29)

Dancing Water ctr (1:09) ... Polarity of Water

Electrostatic Attractions show Polarity (2:59)

Solubility (polar and non-polar substances) (2:24)

Factors Affecting Solubility & the Rate of Solubility ctr (4:08) stirring/agitation, surface area, temperature, pressure

Acid / Base \$2 (*with any other set*)

Rainbow Connection (4:04) Acid-Base Indicators

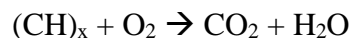
- **You will hear a "special needs" student in the background who will brighten your day!**

Titration (1:18)

Carbon Chemistry

Carbon: The Basis of Life, Hydrocarbons & Fossil Fuels (5:41)

Combustion Reaction: Calcium Carbide Canon (2:47)



Nuclear Chemistry

Nuclear Energy in the 1940 & 50's (4:48)

Force & Motion \$7

Relative Motion (0:32) Car in a snow storm

Relative Motion (0:55) Boy on Train platform

Relative Motion Bugs and Daffy (fun) (6:53)

What is a Vector? "Despicable Me" (0:39)

Motion in Two Directions ctr (0:25) Hula Hoop

Motion in Different Directions (0:20) Velocity versus Acceleration

Terminal Velocity (1:22) Skydiving

Terminal Velocity ctr (0:59) Suspending a Balloon with a Fan

Newton's Laws \$15

Projectile Motion (0:15)

- Showing the cart and ball BOTH moving with constant velocity
- Showing the ball moving in a curved path (projectile motion: trajectory)
- Newton's 1st Law (inertia)

Projectile Motion 2 (0:27) similar experiment to above.

Newton's Laws of Motion Overview Sports (3:12)

Newton's Laws of Motion Overview Hockey (5:22)

Newton's 1st Law of Motion: Inertia (3:37) Football

Newton's 2nd Law of Motion (3:37) Football Place Kicker

Newton's 2nd Law of Motion (1:16) Car Racing

Newton's 3rd Law of Motion: Action/Reaction (0:36) Golf Ball in Slow Motion

Newton's 3rd Law of Motion: Action/Reaction Golf Ball (0:07)

Newton's 3rd Law of Motion: Action/Reaction (0:12) (Bottle Rocket)

Newton's 3rd Law of Motion: Action/Reaction & Momentum (3:58) Football & Newton's Cradle

Newton's Laws & Momentum Demonstrations ctr (4:35) Fan cart, masses hanging on a string, balloon, minicar, and bouncy balls

Conservation of Momentum (1:42) Elastic Collisions Using Newton's Cradle

Conservation of Momentum (1:02) Inelastic Collision Using Motion Carts

Momentum: Remember the Titans (1:29) Look for mv and direction.

Work Power \$6

Work & Power Song (3:30)

Work & Power Hockey (5:03)

Simple Machines Overview (3:02)

Bugs Bunny Barber of Seville Classes of Levers (Simple Machines) (6:03)

Wheel & Axle & Pulleys (2:16)

Machines (*discount included in previous set*)

Compound Machines: "This Too Shall Pass" Song (3:47)

Mechanical Advantage in Simple Machines (5:25)

Efficiency in Machines (4:07)

Energy

Pendulum Swing (1:17)

Heat

Specific Heat of a Metal (3:04) The metal's temperature decreased drastically while water's temperature increased a little.

Heat Transfer: Radiometer (1:41)

Heat Transfer: Convection (2:08)

Mechanical Waves \$4

PHET Simulation of Amplitude and Frequency (1:23) Class Demonstration

PHET Simulation of Frequency & Wavelength (1:25) Class Demonstration

Car Horn (0:13)

Echo & Reverberation (1:09)

Sound \$5

PHET Simulation of Transmitting Sound (1:12) Class Demonstration

Sonic Boom (2:07)

Examples of Sonic Booms (1:36)

Standing Waves & Resonance (1:51)

Sound Waves: Diffraction & Interference (7:21)

Light \$10

Simulation on Reflection (0:22)

Reflection ctr (2:45) ... Specular vs Diffuse. Law of Reflection.

Refraction ctr (3:52) Light "bending". Index of Refraction.

Dispersion in Prisms ctr (2:40) Dispersion. Total Internal Reflection.

Mirror Cloaks (1:21)

Invisibility (Making a Drinking Straw Partially Disappear (1:00)

Laser Maze (2:26)

Converging Lenses ctr (2:05)

Diverging Lenses ctr (1:37)

Near Sighted Vision ctr (2:05) What is myopia? How is it corrected?

Far Sighted Vision ctr (0:58) ... What is hyperopia? How is it corrected?

Electric Force & Current \$10

The Atom: Electrostatic Force Demonstrations ctr (2:59)

Acrylic Tape Demo (1:30)

- **Balloon with paper punches showing friction, induction and conduction**

Electric Force: Cow Touching an Electric Fence (0:18)

Beaker's "Ode to Joy" Beware. This is Shocking! (1:41)

Components of Static Electricity (5:31)

M & M's Jumping on a Cake! Who'd da thunk? (0:39)

Electric Circuits ctr (Lighting a Plastic Bulb; The Famous Electric Pickle!) (2:17)

Electric Pickle (2:07) Stephen Spangler

Electric Circuits (PHET simulation) (5:46)

Electromagnetism (PHET simulation) (3:23)

Student Projects \$5

Rube Goldberg Apparatus with permission from JW (2:40)

Simple Machines Water Wheel & Such with permission from CG (1:28)

Johnathan Riesen "Baseball Song" (4:03)

Revenge of the Trebuchet RM Simple Machines (2:24)

Rube Goldberg Apparatus BF Simple Machines (2:02)

Electric Circuits LR Electricity (3:09)

Newton's Laws in Volleyball JS Newton's Laws (1:49)

Rube Goldberg Apparatus - The Pressure Cooker AS Simple Machines (2:48)

Clock Killer LB Simple Machines (3:15)

Simple Machines AH (1:25)

The Dog Ate My Homework - Simple Machines HH (1:21)

Wonderful, Wonderful Grace BR Song Sound (3:17)

The Atheist's Delusion (11:39)