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Physical sciences

Project ideas

Physics

Decreasing the effects of friction when skating and skiing
 How do cordless telephones work?
 How can the structure of a violin affect sound frequency?
 Using nebulae to understand the history of stars
 Creating a form of transportation that operates by means of magnetic levitation
 The creation and use of crystals
 What is the origin of the northern lights?
 Detecting the passage of meteorites using radio wave reflection
 Determining the height of a lunar mountain using its shadow
 Determining the Sun's mass
 Determining the thrust of a rocket engine, using simple machines
 Determining the Sun's rotational speed
 What's the purpose of $E=mc^2$?
 What if Einstein was wrong?
 Studying the acoustic properties of different types of heat or acoustic insulation
 The effects of radiation on plants, seeds, etc.
 Experimenting with gravity
 Examining fluorescence in household products
 Growing large crystals
 Io—one of Jupiter's moons
 The aerodynamics of baseballs
 The aerodynamics of golf balls
 The aerodynamics of cycling
 Wave analysis
 Is astrology a science?
 How does gravitational attraction affect our lives?
 3-D effects in Imax movies
 Electricity
 Wind energy
 Nuclear energy
 Solar energy
 The importance of the Gemini telescope in astronomy
 Rayleigh instability
 Man's obsession with time travel
 The biophysics of humans
 The biophysics of a walking cat
 The Faraday cage
 Building sand castles
 Einstein's cross

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Quantum cryptography
 Does pore size affect acoustic transmission?
 Can centrifugal force affect plant growth?
 Calculating friction
 The origins and the end of the universe
 Colour perception
 The physics of baseballs
 The physics of golf balls
 The physics of footballs
 The physics of soccer balls
 The physics of curling
 The physics of cycling
 Sonoluminescence
 Quantum teleportation
 Is teleportation possible?
 3-D vision
 The Big Bag Theory
 The concept of cold
 Lasers as sources of energy
 Lasers—multiple or specific uses?
 Perpetual motion
 The Bose-Einstein phenomenon or the behaviour of atoms in the absence of heat
 The principle of photo development
 The sun is more complex than it seems.
 The Bernoulli theorem
 Magnets
 Northern lights
 Electrical circuits
 Comets
 Nuclear waste
 Are dice loaded?
 Lunar and solar eclipses
 Galaxies
 Optical illusions
 Gravitational microlenses
 The dangers of wave bombardment
 The chaotic behaviour of the pendulum
 Divers and pressure
 Quasars
 Gamma bursts
 Black holes
 Why are oil slicks so colourful?
 Mars—CO₂ explosions rather than water?
 Is Mars similar to our planet?
 Mercury—the enigmatic planet

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Listening to Jupiter
 Listening to the Sun
 Is it possible to cook carrots on Everest?
 Where does sound pollution begin?
 What power does a cat generate to run 100 metres?
 Moving around by means of magnetohydrodynamics
 Testing the effectiveness of wax on skis
 3-D projectors
 Stroboscopes beyond the dance floor
 A self-activated water pump?
 Can humans survive on other planets?
 Is there still room for new waves?

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Project ideas

Chemistry

Choosing between bottled and tap water
 How can we measure the concentration of nitrogen in the air?
 How can we measure the concentration of oxygen in the air?
 Comparing different toothpastes
 Developing an organic cleaning product for fruits and vegetables
 Creating perfume
 Developing a solvent for chewing gum
 New materials—carbon fibre
 Discovering and comparing the effectiveness of shampoos
 Developing natural cosmetics
 Developing varnish using UV-block lotions
 Developing a water-resistant varnish
 Isolating an essential oil
 How ozone acts on UV-B radiation
 Does air help mold grow on food?
 The effects of UV-B rays on plants
 Hydrogen—a clean energy source
 The role of CO₂ in the greenhouse effect
 Ozone—a water disinfectant
 The use chemistry in the police force
 Combinatory chemistry
 The chemistry of wine
 Manufacturing polymers
 Photography: a chemical phenomenon
 The synthesis of biologically active compounds
 Carbon-14
 The role of atoms
 Soap throughout history
 Can cancer treatments come from the forest?
 The secret side of ozone
 Natural medicines
 Synthetic fabrics
 Measuring the concentration of CO in the air
 Is our water really safe for drinking?
 What is the best laundry detergent?
 Which fabric is easiest to clean?
 Is it possible to synthesize odours?
 Testing the effectiveness of fruit and vegetable cleaning products
 Testing the effectiveness of floor cleaners