

Here's a comprehensive list of science investigatory project ideas for high school, categorized for easy reference:

Biology

1. Effect of different types of light on plant growth
2. Testing the antibacterial properties of natural substances
3. Investigating the impact of fertilizers on plant growth
4. Effect of pH on seed germination
5. Analyzing the growth of mold on various types of bread
6. Effectiveness of natural vs. chemical insect repellents
7. Study of plant response to music
8. Effect of different soil types on plant growth
9. Investigating the effect of temperature on yeast fermentation
10. Comparison of the effectiveness of various natural dyes on fabric

Chemistry

11. Investigating the reaction rates of different acids with metals
12. Creating biodegradable plastics from natural materials
13. Effect of temperature on the solubility of salt in water
14. Testing the effectiveness of different household cleaners
15. Investigating the properties of different types of soap
16. The effect of concentration on the rate of a chemical reaction
17. Creating and testing homemade indicators for pH
18. Investigating the impact of different solvents on dissolving rates
19. Study of the effects of different concentrations of salt on ice melting
20. Investigating the factors affecting the formation of crystals

Physics

21. Study of how different materials affect sound insulation
22. Investigating the impact of different surfaces on friction
23. Testing the efficiency of various types of renewable energy sources
24. Effect of angle on the range of a projectile
25. Investigating the efficiency of different types of thermal insulators
26. Study of the relationship between mass and acceleration
27. Testing the impact of different shapes on aerodynamics
28. Investigating the principles of buoyancy using various objects
29. Effect of weight distribution on the stability of a structure
30. Study of how different types of pulleys affect lifting efficiency

Environmental Science

31. Investigating the impact of pollution on local water sources
32. Study of the effectiveness of different methods for recycling plastic
33. Effect of different types of waste management systems on soil health
34. Analyzing the impact of deforestation on local wildlife
35. Investigating the efficiency of different types of air filters
36. Study of the effects of climate change on local plant species
37. Investigating the impact of agricultural practices on soil erosion
38. Effectiveness of various methods for water purification
39. Study of the impact of urbanization on local ecosystems
40. Investigating the role of wetlands in flood control

Astronomy

41. Study of the phases of the moon and their effects on tides
42. Investigating the impact of light pollution on stargazing
43. Analyzing the movement of planets in the night sky
44. Study of the different types of telescopes and their effectiveness
45. Investigating the impact of solar activity on Earth's climate
46. Study of the characteristics of different types of stars
47. Analyzing the effects of gravitational forces on celestial bodies
48. Investigating the history of astronomical discoveries
49. Study of the properties of meteorites
50. Investigating the effect of different filters on observing celestial objects

Engineering and Technology

51. Designing and testing a water filtration system
52. Investigating the effectiveness of different types of insulation in buildings
53. Study of the efficiency of various renewable energy sources
54. Creating a simple robotic system and testing its capabilities
55. Investigating the impact of different materials on the strength of structures
56. Designing and testing a low-cost earthquake-resistant structure
57. Study of the effectiveness of different designs for wind turbines
58. Investigating the performance of various types of batteries
59. Creating and testing a simple hydraulic system
60. Study of the impact of different designs on aerodynamics

Health and Medicine

61. Investigating the effects of different types of exercise on heart rate
62. Study of the impact of diet on skin health
63. Testing the effectiveness of various home remedies for common ailments
64. Investigating the effects of sleep on cognitive performance
65. Study of the impact of different stress levels on overall health

66. Testing the effectiveness of various hand sanitizers
67. Investigating the impact of different types of vitamins on health
68. Study of the effectiveness of different methods for treating headaches
69. Investigating the impact of different types of music on mental health
70. Testing the effectiveness of different types of pain relief methods

Mathematics and Statistics

71. Study of statistical methods for analyzing environmental data
72. Investigating the use of mathematical models in predicting weather patterns
73. Study of the effectiveness of different methods for solving algebraic equations
74. Investigating the relationship between geometry and art
75. Study of the use of statistics in sports performance analysis
76. Investigating the impact of different algorithms on computer performance
77. Study of the application of mathematics in architecture
78. Investigating the effectiveness of different methods for data visualization
79. Study of the relationship between probability and decision-making
80. Investigating the use of mathematical models in predicting population growth

Geology

81. Study of different types of rock formations and their properties
82. Investigating the impact of erosion on landforms
83. Study of the effects of earthquakes on different types of structures
84. Investigating the role of weathering in soil formation
85. Study of the impact of volcanic activity on local ecosystems
86. Investigating the properties of different types of minerals
87. Study of the effects of human activity on local geology
88. Investigating the impact of water flow on sediment transport
89. Study of the relationship between geological formations and natural resources
90. Investigating the effects of glacial activity on landforms

Marine Science

91. Study of the impact of pollution on marine life
92. Investigating the effects of different types of fishing practices on fish populations
93. Study of the role of marine ecosystems in climate regulation
94. Investigating the impact of ocean currents on weather patterns
95. Study of the effects of different types of marine habitats on biodiversity
96. Investigating the impact of coastal development on marine environments
97. Study of the relationship between ocean temperature and coral reef health
98. Investigating the effects of marine noise pollution on marine animals
99. Study of the impact of invasive species on marine ecosystems
100. Investigating the role of marine microorganisms in nutrient cycling

Psychology

101. Study of the effects of different types of learning methods on memory retention
102. Investigating the impact of social media on mental health
103. Study of the relationship between sleep patterns and cognitive performance
104. Investigating the effects of different types of therapy on stress levels
105. Study of the impact of color on mood and behavior
106. Investigating the effects of different types of music on concentration
107. Study of the relationship between personality traits and academic performance
108. Investigating the impact of different types of rewards on motivation
109. Study of the effects of different types of exercise on mental health
110. Investigating the impact of peer pressure on decision-making

Ecology

111. Study of the impact of different types of vegetation on soil health
112. Investigating the effects of different types of animal behaviors on ecosystems
113. Study of the role of different species in ecosystem stability
114. Investigating the impact of habitat destruction on biodiversity
115. Study of the effects of different types of pollution on plant and animal life
116. Investigating the role of microorganisms in nutrient cycling
117. Study of the impact of invasive species on local ecosystems
118. Investigating the effects of different types of conservation efforts on wildlife
119. Study of the role of different types of habitats in supporting biodiversity
120. Investigating the impact of climate change on local ecosystems

Genetics

121. Study of the effects of different types of mutations on organism traits
122. Investigating the inheritance patterns of different traits in plants
123. Study of the impact of genetic variation on disease susceptibility
124. Investigating the effects of different environmental factors on gene expression
125. Study of the role of genetics in determining behavior
126. Investigating the impact of genetic modification on crop yield
127. Study of the relationship between genetics and disease resistance
128. Investigating the effects of different types of gene editing techniques
129. Study of the role of genetics in determining physical traits
130. Investigating the impact of genetic diversity on population health

Chemistry in Daily Life

131. Investigating the effectiveness of different types of toothpaste
132. Study of the chemical reactions involved in cooking
133. Investigating the impact of different types of cleaning agents on stain removal

134. Study of the effects of different types of water on tea flavor
135. Investigating the impact of different storage methods on food preservation
136. Study of the chemical properties of different types of cosmetics
137. Investigating the effectiveness of various methods for removing odors
138. Study of the chemical reactions involved in soap-making
139. Investigating the impact of different types of containers on food freshness
140. Study of the effects of different types of packaging on product shelf life

Technology and Innovation

141. Designing and testing a simple electronic circuit
142. Investigating the effectiveness of different types of sensors in monitoring environmental conditions
143. Study of the impact of different types of software on computer performance
144. Investigating the role of artificial intelligence in different applications
145. Study of the effectiveness of different types of data encryption methods
146. Investigating the impact of different types of user interfaces on productivity
147. Study of the role of different types of programming languages in software development
148. Investigating the effectiveness of different types of virtual reality systems
149. Study of the impact of different types of computer hardware on performance
150. Investigating the role of different types of algorithms in data analysis

Energy and Sustainability

151. Study of the efficiency of different types of solar panels
152. Investigating the impact of different types of renewable energy sources on energy consumption
153. Study of the effectiveness of different types of energy-saving devices
154. Investigating the impact of different types of energy storage systems
155. Study of the role of different types of energy sources in reducing carbon emissions
156. Investigating the impact of different types of energy conservation practices on household energy use
157. Study of the effectiveness of different types of green building materials
158. Investigating the impact of different types of energy-efficient appliances on energy consumption
159. Study of the role of different types of energy sources in reducing greenhouse gas emissions
160. Investigating the impact of different types of energy-efficient lighting on energy use

Mathematics and Engineering

161. Study of the relationship between mathematical models and engineering design

162. Investigating the impact of different types of mathematical algorithms on engineering calculations
163. Study of the role of mathematics in optimizing engineering processes
164. Investigating the effectiveness of different types of mathematical simulations in engineering
165. Study of the relationship between mathematical modeling and structural engineering
166. Investigating the impact of different types of mathematical methods on engineering problem-solving
167. Study of the role of mathematics in designing efficient engineering systems
168. Investigating the effectiveness of different types of mathematical tools in engineering analysis
169. Study of the relationship between mathematical optimization and engineering design
170. Investigating the impact of different types of mathematical techniques on engineering performance

Food Science

171. Investigating the impact of different types of cooking methods on nutrient retention
172. Study of the effectiveness of different food preservation techniques
173. Investigating the impact of different types of food packaging on freshness
174. Study of the role of different types of food additives in preserving flavor
175. Investigating the impact of different types of cooking oils on health
176. Study of the effects of different types of food processing on nutrient content
177. Investigating the role of different types of food textures on taste perception
178. Study of the impact of different types of food storage on shelf life
179. Investigating the effectiveness of different methods for reducing food waste
180. Study of the effects of different types of cooking temperatures on food safety

Physics in Daily Life

181. Investigating the impact of different types of insulation on energy efficiency
182. Study of the effects of different types of sports equipment on performance
183. Investigating the impact of different types of lighting on visual comfort
184. Study of the effects of different types of exercise equipment on physical fitness
185. Investigating the impact of different types of household appliances on energy consumption
186. Study of the effects of different types of transportation on fuel efficiency
187. Investigating the impact of different types of window treatments on heat retention
188. Study of the effects of different types of packaging materials on product protection
189. Investigating the impact of different types of home heating systems on energy use
190. Study of the effects of different types of ventilation systems on indoor air quality

Mathematics in Nature

191. Study of the patterns and symmetry in plant growth
192. Investigating the relationship between mathematical patterns and animal behavior
193. Study of the role of fractals in natural formations
194. Investigating the impact of mathematical ratios on natural structures
195. Study of the patterns in weather phenomena using mathematical models
196. Investigating the relationship between mathematical sequences and natural processes
197. Study of the role of mathematical shapes in natural formations
198. Investigating the impact of mathematical principles on ecological systems
199. Study of the use of mathematical models in predicting natural events
200. Investigating the relationship between mathematical patterns and biodiversity