

Where do ideas come from?

1. BE AWARE

Wondering where to begin? Simply observe the world around you. Science is everywhere you look—in your kitchen, your garage, the skate park down the street, in a puddle or a tidepool, on an anthill or a ski slope, even in your uncle's autobody shop. Think like a scientist.

2. BE CURIOUS

The best topics are sparked by curiosity. The more compelling you find your topic, the more engaged you'll be for the full six weeks. Plan to devote a good deal of time to brainstorming your topic. Visit your town or school library and flip through a stack of science magazines. Read about the latest trends and discoveries in the Science and Technology sections of your newspaper.

3. BE REASONABLE

When it comes to brainstorming your topic, start big, then narrow it down. Remember, your topic must be narrow enough to be testable and measurable. It must also be manageable and capable of being mastered in a short period of time. Soon you'll be expected to be an expert on

your chosen topic and be able to answer questions from peers, teachers and perhaps judges. So keep it simple!

4. BE FOCUSED

Come up with a list of questions. Things you've always wondered about; things you're suddenly curious about. Then do some preliminary research to refine your questions. Next you'll parlay the best one into a working hypothesis.

HERE'S AN EXAMPLE:

Subject Area: Food and Nutrition

Topic: Vitamin C

Questions:

- Do oranges lose any Vitamin C after they're picked off the tree?
- Do whole oranges contain more Vitamin C than orange juice?
- Do different brands of orange juice contain different amounts of Vitamin C?
- Which fruits contain the highest concentrations of Vitamin C?
- Does light or temperature affect the Vitamin C content of juice?

MAKE YOUR INTERESTS PAY OFF!

FOLLOW YOUR INTERESTS

Let your hobbies be your guide. Learn about the Scientific principles behind your favorite activities, and then come up with some questions. Fiddle around with your ideas, figure out the best question and then formulate that into a hypothesis.

INTERESTED IN FASHION?

Experiment with various natural ingredients to dye fabrics such as beets, berries, red cabbage, wildflowers, onion skins, nut shells, tea, and turmeric powder. Compare the breathability and heat retention of different fabrics.

SPORTS?

Explore the physics behind skateboard tricks or snowboarding. Why do some balls bounce higher than others? Which makes a ball go faster—a metal bat or a wooden bat?

MUSIC?

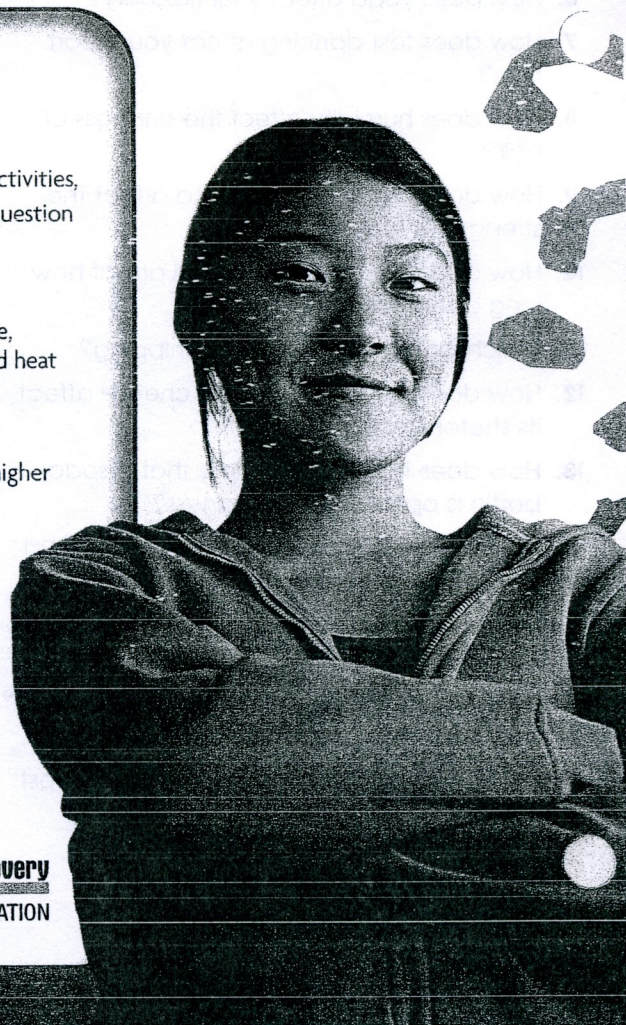
Build your own radio and uncover a Scientific problem along the way. Study the Scientific principles behind your favorite musical instrument. Compare the quality of analog (record) vs. digital (CD) sound recordings. Does room temperature affect the sound or pitch of musical instruments?

ART?

Make a spin-painting machine to demonstrate centrifugal force. How is paint affected by temperature changes? How do museum conservators preserve paintings and textiles?

DIGITAL PHOTOGRAPHY?

Compare different digital image formats. How does the amount of compression affect a JPEG image? Examine DPI and image quality.



200 Science-Project Ideas That Will Wow Judges!

Name: _____

Date: _____

Read this list of 200 science-fair project ideas.

Circle all of the ones that sound interesting to you.

1. How does the temperature of a tennis ball affect the height of its bounce?
2. How does the air pressure of a soccer ball affect how far it travels when kicked?
3. Does a metal baseball bat vibrate more than a wooden one?
4. How does the weight of a bowling ball affect how many pins the ball knocks down?
5. Which increases your heart rate more: walking up and down real stairs or using a stair-master?
6. How does yoga affect your flexibility?
7. How does fast dancing affect your heart rate?
8. How does humidity affect the curliness of hair?
9. How does a shampoo's brand affect the strength of hair?
10. How does the type of material affect how long a shirt takes to dry?
11. Which nail polish best resists chipping?
12. How does the fat content of cheese affect its stretchiness?
13. How does the length of time that a soda bottle is open affect its fizziness?
14. How does the temperature of water affect the time it takes to freeze into ice cubes?
15. How will the time spent chewing bubble gum affect its bubbles' maximum size?
16. How will adding different flavors of Kool-Aid® to water affect the water's boiling point?
17. Which brand of popcorn leaves the fewest unpopped kernels?
18. Does the flavor of gelatin affect the amount of time it takes to set?
19. How does playing video games affect hand-eye coordination?
20. What is the effect of toothpaste brand on teeth-cleaning power?
21. What brand of paper towel is most absorbent?
22. What brand of trash bag can withstand the most weight before ripping?
23. How does a light bulb's wattage affect the amount of heat detected above a light?
24. Under what color light do plants grow best?
25. Which brand of mouthwash kills the most bacteria?
26. Which brand of breath mint lasts longest?
27. How does the amount of sugar in homemade ice cream affect how fast it freezes?
28. In a blind taste test, can you tell the difference between nonfat, low-fat, and whole milk?
29. When you pour soda out of a newly opened soda bottle, which produces more fizz: regular or diet soda?
30. How does brand affect ketchup's flow?
31. Given the same amount of water, how does pot size affect the amount of time it takes to boil water?
32. Where is the best place to store home-baked cookies to keep them fresh longest?
33. How does the amount of yeast affect how high bread rises?
34. Which cereal brand stays crunchy in milk the longest?
35. Which brand of chocolate bar melts fastest in the sun?
36. Which type of bread turns moldy first: store-bought or bakery bread?

200

Science-Project Ideas That
Will Wow Judges!

37. How does the type of container affect ice cream's melting time?
38. Which can support more weight: paper or plastic grocery bags?
39. Does the type of animal in a pet-store window affect the number of people who are attracted to the window?
40. Does the color of a terrarium affect a lizard's skin color?
41. Does the brand of kitty litter affect clumping?
42. Does listening to one type of music lower heart rate more than another type?
43. How old does chewed gum have to be before it stops sticking to shoes?
44. Which frozen dessert melts slowest: ice cream, frozen yogurt, or sorbet?
45. How does the tension in a violin's strings affect its pitch?
46. How does the size of a drum affect its pitch?
47. How does a person's age affect his or her flexibility?
48. How does a person's age affect his or her ability to see at night?
49. How does the amount of air in a bicycle's tires affect how long it takes the bike to brake?
50. How does the size of a bicycle's tires affect how far it travels given a specific amount of pedaling?
51. How does hair's curliness affect its strength?
52. How does color affect a person's mood?
53. How does the time of day affect your body's temperature?
54. How does the type of music that a person listens to while exercising affect how hard he or she works out?
55. Does one type of food fill you up faster than another?
56. Which grows faster: fingernails or toenails?
57. Does gender affect lung capacity?
58. If you are right-handed or left-handed, do you also prefer a certain foot?
59. Does the surface of a tennis court affect the height that a tennis ball bounces?
60. Does the time of day affect your flexibility?
61. How does air temperature affect your flexibility?
62. Does a no-name stain remover work just as well as a brand name?
63. Which is a better insulator: wool, cotton, or down feathers?
64. How do various ski waxes affect the amount of friction between the ski and the snow?
65. Does playing Sudoku puzzles improve your performance on other types of puzzles?
66. How does shutter speed affect the color of a photograph?
67. How can you speed up the ripening of tomatoes?
68. What effect does watering have on how fast a plant grows from a seed?
69. How does gravity affect the direction of a plant's growth?
70. Do all plants seek out light?
71. How does the weight of a paper airplane affect its ability to fly?
72. How does a parachute's material affect the speed at which it falls?
73. How does the anticipation of a tickle affect you?
74. How does the weather affect your mood?
75. Which type of soap removes more grease: dish soap, hand soap, or shampoo?
76. Which type of fruit is more acidic: lemons, oranges, or watermelon?
77. What type of ground layers limit erosion most: sand, gravel, or soil?
78. How does the speed of a river's current affect the size of the grains on the riverbed?
79. How does the type of music played in a store affect the number of purchases made by customers?
80. In what type of lighting does a plant grow best?
81. What difference do low-phosphorous fertilizers have on a lake's pollution levels compared with standard fertilizers?

200 Science-Project Ideas That Will Wow Judges!

82. How does the type of seed in a birdfeeder affect the types of birds that the feeder attracts?
83. What types of flowers attract the highest number of butterflies?
84. Which brand of potato chips has the least grease?
85. How does the material of a bandage affect its ability to stick after getting wet?
86. How does the time of day affect levels of algae in a lake?
87. How does tire pressure affect a car's fuel efficiency?
88. How does the amount of air in a balloon rocket affect how far it flies?
89. How does the type of string used in a "can and string" phone affect the phone's ability to transmit sound?
90. Does one cell-phone carrier get better reception than other carriers?
91. Do "triple roll" toilet paper rolls really last three times as long as regular rolls?
92. Are rooms with carpeted floors noisier or quieter than rooms with wooden floors?
93. How does humidity affect how often a plant needs to be watered?
94. Can people tell the difference between music played on an MP3 player, CD player, tape player, and turntable?
95. How does temperature affect the growth of mold?
96. How does meditation affect your heart rate?
97. Which has a longer life: an LED or an incandescent light bulb?
98. Is the incidence of asthma in a region related to the area's level of air pollution?
99. How does the color of a shirt affect the amount of heat it absorbs?
100. How does the amount of daylight that enters your room affect how late you sleep?
101. How does the type of stuffing in a pillow affect its fluffiness?
102. How does the time of year affect the number of hours of daylight in a 24-hour period?
103. How does the magnification of binoculars affect how far you can see?
104. Do all chocolate candies have the same melting point?
105. Do different types of onions make your eyes tear up more than others?
106. Which is better at cleaning mold and mildew: vinegar or commercial cleaning agents?
107. Does maple syrup's "grade" affect its flow?
108. Do different brands of batteries last longer than others?
109. Which uses more water: a shower or a bath?
110. Which type of cup will keep a hot drink warm longer: paper, plastic, Styrofoam, or glass?
111. Do natural mosquito repellants keep more mosquitoes away than artificial repellants?
112. How do gas stations affect the soil around them?
113. Which cleans teeth more effectively: baking soda or toothpaste?
114. Does the length of a clock's pendulum affect its period?
115. Which holds hair in place for a longer period of time: gel or hairspray?
116. Does listening to music while studying affect your performance on a memory test?
117. Does a person's height affect his or her ability to successfully make a jump shot in basketball?
118. How much trash do you keep out of a landfill by recycling paper and plastics?
119. Which type of photos do people hold on to longer before making prints: digital or film?
120. Do mood rings accurately predict a person's emotions?
121. Is a person's favorite subject in school influenced by gender?

122. Does the weight of a baseball bat affect how far the ball goes when it is hit?
123. Does the temperature of a hockey puck affect how far it will travel when struck by the stick?
124. Do girls spend more time talking on the phone with friends than boys?
125. How does the type of food dispensed in school vending machines affect the eating choices that kids make throughout the day?
126. Which type of fertilizer helps plants grow taller?
127. Which has a better chance of survival: grass that was planted as seed or sod?
128. Is there a correlation between gender and the number of push-ups that a person can do?
129. Do best friends have the same favorite color?
130. Who buys from the "sale" rack more often: kids or adults?
131. Are kids more likely to be influenced by ads that feature other kids or by ads that feature adults?
132. Does the amount of time a student spends watching TV affect his or her grades?
133. Does the length of a surfboard affect its stability?
134. Which stays fresher longer: organic or nonorganic fruit?
135. Does a person's age affect whether he or she goes to the Internet, radio, TV, or newspaper for news?
136. Which stains dentures more: coffee, soda, or grape juice?
137. How does the temperature of a pool's water affect the speed at which a swimmer swims?
138. Does the use of flippers help a person swim faster?
139. Do you wake up feeling more alert when you awaken to an alarm clock that buzzes, plays music, or plays nature sounds?
140. Does the size of a dog determine how high or low-pitched its bark is?
141. Does your cat prefer one brand of food over another?
142. Can blindfolded people tell the difference between bottled water and tap water?
143. Is there a relationship between people's age and the amount of time they can hula hoop?
144. Do objects float better in freshwater or in salt water?
145. How does a person's age affect reaction time?
146. How does caffeine affect people's heart rate?
147. Do some materials conduct heat more than others?
148. How does the roughness of sandpaper affect its ability to smooth various surfaces?
149. How does increasing the height of a ramp affect how far a ball rolls down the ramp?
150. How does the strength of a magnetic field vary with the magnet?
151. Can people identify their pet dog by the sound of its bark alone?
152. Do people who exercise regularly have a greater lung capacity?
153. Can people use their sense of hearing alone to tell apart a penny, nickel, dime, and quarter?
154. Do left-handed people prefer the same school subjects as right-handed people?
155. Does the type of liquid in a glass affect the pitch of the note that results when a person rubs the rim of the glass?
156. Does the length of a wind chime affect its pitch?
157. Do people who live in rural areas name constellations correctly more often than people who live in cities?
158. Does weather affect satellite-TV reception?
159. Do girls and boys talk about the same topics as each other when they hang out with their friends?
160. Does the length of a bat affect how far a baseball will travel?

200 Science-Project Ideas That Will Wow Judges!

161. Does your dog prefer water directly from the faucet or tap water that's been refrigerated?
162. How often can people accurately tell if someone is happy, sad, or mad just by looking at the person's eyes?
163. How often can people correctly determine if a person is left-handed or right-handed just by looking at the person's handwriting?
164. What melts ice the fastest: sand, cat litter, or mineral rock salt?
165. Does temperature affect the growth rate of shoots on a potato?
166. Which type of container traps the most heat: a shoebox covered in aluminum foil, plastic wrap, or wax paper?
167. How does the shape of a boat's hull affect its speed?
168. How does water pressure vary with depth?
169. Which best helps prevent soil erosion on a slope: plants, rocks, or mulch?
170. Does one brand of antacid neutralize acids faster than another?
171. Do gym shoes have more bacteria than sandals?
172. Does sunlight fade the paper more in books or in magazines?
173. In which room of the house do plants grow the highest?
174. Which toothbrushes last longest: ones with natural or nylon bristles?
175. Which air freshener lasts longest?
176. Do mildew-resistant shower curtains really keep mildew away longer than regular shower curtains?
177. Does a person's weight vary throughout the day?
178. Do certain bicycle helmets hold up better after an impact than others?
179. Can you skate faster with in-line skates or roller skates?
180. Do thunderstorms happen more often in the afternoon than in the morning?
181. Does bread stay fresher longer when it is kept in the refrigerator or on the counter?
182. Which kind of gum keeps its flavor longer: sugar-free or regular?
183. Which lightens stains better: vinegar or lemon juice?
184. Which type of bread toasts fastest?
185. Do bigger lemons have more seeds than smaller ones?
186. Does squinting improve your vision?
187. Do fans really make you cooler or do they just make you feel like you're cooler?
188. Do taller people take longer strides than shorter people?
189. Can you judge depth as well using just one eye than using two?
190. Does your "handedness" have any relation to which eye is stronger?
191. Does exercise increase or decrease your energy level?
192. How does your sight affect your balance?
193. Which do people prefer: a booth or a table toward the middle of a restaurant?
194. Do plants inside a mall grow faster under artificial light or under a skylight?
195. Does listening to rock music make you eat faster than listening to classical music?
196. Does eye color affect how well a person sees?
197. Does toothpaste with whitener whiten teeth more than regular toothpaste?
198. Does washing your hands reduce the amount of bacteria on them more than not washing?
199. Does using conditioner leave your hair with fewer knots than not using conditioner?
200. Does hair take longer to dry when using a hair drier or when it dries naturally?

Now, reread all of the questions that you circled. Do these questions have anything in common? If so, what?

Look at your answer above. If the questions you circled have anything in common, you probably have a strong interest in that topic. You might want to think about doing a science-fair project on that topic.

RESOURCES

(Down)loads of Info for Project Ideas and Research

WEB RESOURCES

GENERAL AND REFERENCE

National Science Digital Library: <http://nsdl.org>

Created by the National Science Foundation to provide organized access to high-quality resources and tools that support innovations in teaching and learning at all levels of science, technology, engineering, and mathematics education.

ScienceMaster:

www.sciencemaster.com

An award-winning site designed for middle school and high school students, parents and teachers. Collects the best content from NASA, the USGS, the EPA, NOAA, and leading educational institutions.

National Science Teachers Association:

www.nsta.org/middleschool

NSTA's Middle School page is a good resource for both teachers and parents. In the Teacher Resources area, you'll find the best teacher-approved books and software, targeted to your grade level and subject area.

Research Matters at Harvard University:

www.researchmatters.harvard.edu

Smithsonian Science and Technology:

www.si.edu/science_and_technology

Howstuffworks "Science Channel":

<http://science.howstuffworks.com>

Everyday Mysteries: Fun Science Facts from the Library of Congress:

www.loc.gov/rr/scitech/mysteries/mysteries-home.html

Elmer's Products, Inc.

www.elmers.com

Discovery Education's Science Fair Central

www.discoveryschool.com/sciencefaircentral

Discovery Channel Young Scientist Challenge

www.discovery.com/dcyc

SCIENCE FAIR AND EXPERIMENT IDEAS

MIT's Invention Dimension: Fun Sites for Kids:

<http://web.mit.edu/invent/r-archive-2.html>

Exploratorium's Hands-on Activities:

www.exploratorium.edu/explore/hands-on.html

TryScience—Science Fair Project Ideas from Science Museums:

<http://tryscience.org/home.html>

All Science Fair Projects:

www.all-science-fair-projects.com

Sports Science in the Yahoo! Directory:

<http://dir.yahoo.com/Recreation/Sports/Science>

PRINT RESOURCES

SCIENCE FAIRS & EXPERIMENTS

The Scientific American Book of Great Science Fair Projects by Marc Rosner, Wiley: 2000

Fizz, Bubble & Flash!: Element Explorations & Atom Adventures for Hands-On Science Fun! (Williamson Kids Can! Series) by Anita Brandolini, Ph.D., Williamson Publishing Company: 2003

The Everything Kids' Science Experiments Book: Boil Ice, Float Water, Measure Gravity—Challenge the World Around You! (Everything Kids Series) by Tom Robinson, Adams Media Corporation: 2001

Sports Science Projects: The Physics of Balls in Motion (Science Fair Success) by Madeline Goodstein, Enslow Publishers: 1999

Elmer's Surviving Science Fair! A Guide to a Successful Science Fair Project by Steven L. Jacobs, PhD. D., Showboard: 2005

INVENTIONS

**Eureka! Great Inventions and How They Happened* by Richard Platt, Kingfisher: 2003

The Book of Inventions by Ian Harrison, National Geographic: 2004

Scientific American Inventions and Discoveries: All the Milestones in Ingenuity From the Discovery of Fire to the Invention of the Microwave Oven by Rodney Carlisle, Wiley: 2004

**Fantastic Feats and Failures* by the Editors of YES magazine, Kids Can Press: 2004

WORKING SCIENTISTS AND THE SCIENTIFIC METHOD

**The Case of the Monkeys That Fell from the Trees: And Other Mysteries in Tropical Nature* by Susan E. Quinlan, Boyds Mills Press: 2003

**Hidden Worlds: Looking Through a Scientist's Microscope* (Scientists in the Field Series) by Stephen P. Kramer, Houghton Mifflin: 2001

How to Think Like a Scientist: Answering Questions by the Scientific Method by Stephen P. Kramer, HarperCollins: 1987

**The Sky's the Limit: Stories of Discovery by Women and Girls* by Catherine Thimmesh, Houghton Mifflin: 2002

**Field Trips: Bug Hunting, Animal Tracking, Bird-Watching, Shore Walking* by Jim Arnosky, HarperCollins: 2002

**What Does a Wheel Do?* by Jim Pipe, Copper Beech Books/Millbrook

That's the Way the Cookie Crumbles: 62 All-New Commentaries on the Fascinating Chemistry of Everyday Life by Dr. Joe Schwarcz, ECW Press: 2002

Sciencing: Learning About the Scientific Method (Science Action Labs) by Edward Shevick, Marguerite Jones, Judy Mitchell (ed.), Teaching & Learning Company: 1998

SCIENCE REFERENCE

The American Heritage Student Science Dictionary by American Heritage, Houghton Mifflin: 2002

Ultimate Visual Dictionary of Science (Ultimate Visual Dictionary) by Dorling Kindersley Publishing: 1998

DK Encyclopedia of Nature by Dorling Kindersley Publishing: 1998

**Scholastic Atlas of Weather* by Marie-Anne Legault (ed.), Scholastic Reference: 200-

**Received "Outstanding Science Trade Books for Students K-12" honor by NSTA (National Science Teachers Association)*

