

Regional Science Fair Categories

1. Behavioral and Social Sciences
2. Biological Sciences
3. Math and Computer Sciences
4. Physical Sciences
5. Team Projects (Up to 3)

Primary subheads, such as the “PHYSICAL SCIENCE” one below, are category topics for the Sacramento Regional Science and Engineering Fair. Secondary subheads or category titles, like “Aerodynamics/ Hydrodynamics” also below, are for the California State Fair. Winners at the regional level will be invited to the State Fair!

Note: Team Categories at the Regional will be placed into a specific category at the State Fair.

Physical Science

Aerodynamics/ Hydrodynamics

- What angle of attack creates the greatest amount of lift?
- How rocket nozzles affect thrust
- Which type of wing design creates the most lift?
- Dihedral angles and their effect on flight
- How does angle of attack affect the distance a glider can fly?
- Does a solid’s temperature affects its speed falling through liquids
- Propulsive Project: Effect of Propeller Size on Boat Speed
- Do the number of fins effect the turn rate of a water wheel?
- Do the number of blades on a propeller affect the thrust?
- Which hull shape produces the least amount of drag?
- Wave Heights and Intervals — Is There a Relationship?!

Applied Mechanics/ Structures & Mechanisms/ Manufacturing

- Does heat affect how high a ball bounces?
- Does Baseball Bat Composition Affect the Distance that a Ball Can Be Hit Given All Other Factors Are Held Constant?
- Does Air Pressure Affects a Soccer Ball's Flight

- Is a Horizontal or Vertical Axis Wind Turbine More Efficient at Generating Power
- What's the best position for the accelerator weight on a Pinewood Derby car?
- Which type of lubricant works best on skateboard wheels?
- Does a solid's temperature effect how fast it falls through a syrupy liquid?
- Which earthquake detection device works best?
- How does hardness vs. softness affect roller skate wheels?
- Which golf ball goes the furthest?
- Does the size of a fly wheel affect how much energy it can store?
- Which type of energy cell works best: fuel or solar?

Earth Sciences/ Planetary Sciences/ Physical Environments

- What Kind of Reef Slows Cliff Erosion?
- Does air temperature affect air pressure?
- What area of a river moves the fastest?
- Which type of soil composition has the greatest grabbing ability and stability?
- Does the type of material (sand or soil) decrease the magnitude of compression waves?
- Which type of soil is most susceptible to liquidification in an earthquake?
- Does water's surface temperature affect its susceptibility to a hurricane?

Environmental Engineering

- Which type of mulch is most effective at controlling erosion?
- Water purification: filtration vs. evaporation
- What type of erosion control product works best?
- What is the effect of large woody debris on erosion sediment transport)?
- Effects of Terracing on Erosion
- Which prevent erosion best: plant life or straw mulch?

Environmental Science

- Does rain affect the salinity of salt water?
- How the Number of Carbon Atoms in a Primary Alcohol Affects the Evaporation Rate
- What color light shines the brightest through fog?
- How does grass length affect its growth?

Electricity & Electronics

- Does storage temperature affect battery life?
- Does Weather Really Affect Radio Transmissions?
- How does the intensity of light affect the output of solar cells?
- How does cold affect hearing aid battery life?
- Which of three types of food groups has the greatest electrical conductivity?
- Is the Life of a Light Bulb Related to its Burnout Voltage?

Materials Science

- Cold Feet? Hot Socks! Which Socks Keep Your Feet the Warmest?
- Effect of Temperature on Viscosity of Fluids
- What is the effect of sand grain size on the durability of concrete?
- Do flame resistant baby clothes lose their effectiveness after repeated washings?
- Which material protects against UV Radiation best?
- Thermal Insulation: What Materials Work Best?
- Which laundry detergent works best?
- Do the more expensive laundry detergents clean best?
- Alcohol-based hand sanitizer vs. antibacterial soap, which cleans best?
- Can Hair Conditioner Lessen the Effects of Chlorine on Bathing Suit Material?
- Which of six fabrics is the best insulator?
- Blocking the Wave: Which Materials Block Radio Waves the Most?
- Water vs. mercury thermometers
- Kitty Paws: Which Scoopable Cat Litter Has the Most Liquid Absorbency?
- Which material works best at sound proofing?
- Which parachute material will give a rocket the longest hang time?
- Does the fat layer under the skin keep an animal warm?
- Does the salinity of water affect its heat absorption rate?

Pharmacology/ Toxicology

- Which is more effective at reducing musculoskeletal pain in middle-aged athletes: acetaminophen or ibuprofen?
- How effective are sunscreens from protecting human skin from sun rays?

Physics & Astronomy

- What makes the best hearing aid? Comparing....
- Most Effective Tubing for a Solar Heater
- Which Wood Burns Hottest and Longest?
- Heat Transfer in Earth Materials
- Does temperature effect sound frequency?
- Which of six fabrics is the best insulator?
- Does the density of liquids affect the speed of sound through them?
- How Liquid Crystals are Affected by Varying Degrees of Heat and Energy

Structural Capability & Strength of Materials

- Are composite woods stronger than natural woods?
- How does age affect the stability of wood?
- Which bridge design will hold the most weight?

Behavioral & Social Sciences

Behavioral Sciences

- Lung capacity: runner vs. non-runner
- Between 10-15 year old boys (or girls) and 30 - 35 year old men (or women) who has the quickest reaction times?
- Who is distracted easiest: boys or girls?
- Semantic encoding vs. acoustic encoding
- Does temperature affect mental performances?
- Does temperature affect physical performances?
- Can people with autism integrate both sight and sound at the same time?
- Peripheral vision reaction time of...
- Do people remember color or black and white better?
- Do advance readers miss more words than beginner readers?
- What affect does touch have on the feeding habits of horses?
- Do emotions affect how much a person blinks?
- Does light affect the eating habits of _____?
- Do People Follow Directions When Working Under Pressure?

- Does the Tempo of Background Music Affect Problem Solving?
- Does age affect reaction speed?
- Do 12 year old boys or girls have faster reaction speeds?
- Do emotions affect how much a person blinks?
- Does Color Affect a Person's Reading Speed?
- Do 12 year old girls read faster than 12 year boys?
- Are girls more easily distracted than boys?
- Does low blood sugar affect a diabetic's perception of sweetness?
- Which relaxation technique works best?
- Do Bees Select the Sweetest Flowers First?
- Do Z's Get You A's?: Does Sleep Affect your Grades?
- Does Right Brain Stimulation Affect Reading Comprehension for Dyslexic Students?
- Effects of Object Recognition on Vision Testing Results
- Left/Right Handedness versus Brain Dominance
- Seeing or Hearing: Which Has a Greater Impact on Comprehension?
- Visual or Verbal: What's the Best Way to Learn?
- Which works best: Auditory, Visual, and Kinesthetic Learning?
- Do Dyslexics Read Better Upside Down and Backwards?
- Does Right Brain Stimulation Affect Reading Comprehension for Dyslexic Students?

Social Sciences

- Can adults pass a standard 6th grade science test?
- Does the color of a drink influence the perception of its sweetness?

Biological Sciences

Biochemistry/ Molecular Biology

- Does temperature affect an enzyme's ability to digest protein?
- Do Sixth-Grade Wind Musicians Have More Lung Capacity Than Non-Musicians?
- Does Pulsed DC Electricity affect the Bacteria level in Pond Water?
- Fingerprints: Do Family Members Have Similar Fingerprints?
- Which Essential Oil with Proven Antibacterial Properties Will be Most Effective for Killing Common Bacteria Found on the Hands?

Chemistry

- Does the salinity of a liquid affect it's ability to store heat?
- What affect does body fat have on keeping warm?
- Absorption of Solar Heat: Water vs. Saline Solution
- Which fresh-flower preservative works best?
- What is the most effective ice-melter, and what are the factors that make it work?
- Does oxygen level affect burn time?
- How do Earthworms Affect Different Types of Soil?
- How do sausages vary in fat and water content?
- Do cola drinks affect the weight of teeth?
- Do earthworms have an affect on the pH level of soil?

Plant Biology

- Under which type of light do plants grow best?
- Lima Bean Germination After Microwave Treatment
- Does grass length affect its growth?
- How does laundry water affect plant growth?
- Does Seed Size Correlate with Growth Rate?

Mammalian Biology

- Which fingerprint pattern is most common: Arch, Whorl, or Loop?
- Relation of Eye Dominance to Peripheral Vision
- Age Differences in Taste Thresholds
- Can dogs really discriminate voices?
- Does Dark to Light Stimulation Vary with Age?

Microbiology

- Which brand (or type) of soap is most effective at preventing bacterial growth?
- How Does Alcohol Affect Bacteria?
- Is antibacterial soap more effective at preventing bacterial growth than non-antibacterial soap?
- Does garlic reduce the amount of oral bacterial growth in the mouth?
- Does the amount of fat affect the spoilage rate of milk?
- How do different temperatures affect the fermentation rate of yeast?
- Do different types of manure affect the growth of microorganisms?
- How do additives affect the growth of microorganisms?
- The Optimal Environment for Algae

Pharmacology/ Toxicology

- The effect of runoff on a natural habitat?
- The effects of storm water runoff on pond life

Zoology

- Does water temperature affect how fast frog eggs hatch?
- Does light affect the eating habits of _____?
- Do frogs hatch faster in warmer water?
- Does temperature affect the activities of garden snails?
- What color of food do humming birds choose the most?
- Do creatine monohydrate and chromium picolinate affect the locomotor performance of Lumbriculus Variegatus (worms)?
- Do gold fish have water temperature preferences?

Math & Computer Science

Mathematics & Software

- Do Different Genres of Music Each Exhibit a Unique Mathematical Pattern?
- How Does the Size of a Statistical Sample Affect Its Accuracy?