ALL SAINTS SCHOOL
# SCIENCE FAIR
2019

**IMPORTANT DATES TO REMEMBER:**

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|---|---|
| **Jan. 23, 7-8 PM** | **Parent Information Night (2nd – 6th grades)**<br>Science experts provide Science Fair overview, project examples and suggestions for parents, followed by Q&A. |
| **Feb. 11, 6:30-8 PM**<br>**Mar. 4, 6:30-8 PM** | **5th Grade Only Pizza Nights: Parent/Student Help Session**<br>This is additional help session for students and families. (Student drop-off optional.) |
| **Feb. 8, 8:30-9:30 AM**<br>**Mar. 1, 8:30-9:30 AM** | **Parent/Student Help Session (2nd – 6th grades)**<br>Morning help session option for all students and families at the Library. |
| **Mar. 20, 7:30-8 AM** | **Project Drop Off**<br>Students and families bring in project presentations in gym and set up. |
| **Mar. 20, 8-11 AM** | **Science Fair: Student Viewing and Judge Reviews**<br>Throughout the morning, classrooms walk through the fair and science experts judge projects and provide feedback. |
| **Mar. 20, 6:30-7:30 PM** | **Science Fair: Open House**<br>Students, family and friends invited to view projects in the school gym. |

Detailed information packet available online at www.allsaintsportland.com/sciencefairpacket

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## 5th GRADE | ALL SAINTS SCIENCE FAIR REGISTRATION FORM

1. Student Participant Name: _____

2. Student Grade and Teacher: _____

3. Adult Helper Name & Relationship to Student: _____

4. Parent Signature: _____

☐ Yes, 5th grade student will attend Pizza Night Help Sessions on Feb. 11 and Mar. 4 for pizza dinner.

☐ Yes, parent will also attend Pizza Night. Parent Email: _____

☐ Yes, the student will participate in the optional 3-5 minute oral project presentation at the Science Fair.

Please bring **completed tear-off section** to the front office or Parent Information Night.

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## INTRODUCTION

All Saints Science Fair is a chance to have fun and encourage a spirit of scientific inquiry. **Using the scientific method, students will test a hypothesis around a theme like chemistry, physics or life sciences.** The experiments, observations and results are documented then presented to students and families at a school-wide fair. Science experts and enthusiasts will review each project with awards given to participants and best in-class.

## PARTICIPATION

2nd-6th Grades Science Fair projects are voluntary for students to complete at home with the help of friends or family. **To promote more participation from our 5th grade students and families, All Saints will be hosting two Pizza Nights to offer more support from our science experts.**

The 1st Pizza Help Session on Feb 11 students and experts work together to complete a project plan including the experiment they will perform at home. The 2nd Pizza Help Session on Mar 4 students bring data from their finished experiment for help in documenting their results, analysis and conclusions.

Students and parents are also welcome to join the other 2nd-6th Grade morning help sessions in the library on Feb. 8 and Mar 1. It provides more opportunities to ask questions and get help from our science experts. (Example projects are also listed on the attached sheet.)

PROJECT REQUIREMENTS: Students must use the scientific model for their projects. This includes:

- Ask questions, research and form hypotheses
- Create experiments to test those hypotheses
- Organize data and draw conclusions
- Share process and results on a display board
- Science fair project submissions are limited to individuals or teams of 2 students maximum.

There is also the option to participate in a 3-5 minute oral presentation to one or two judges the morning of the Science Fair. It is a great opportunity for students to work on presentation skills by giving a verbal overview of their project! Additional awards will be given for best oral presentations.

## MORE INFORMATION

Please join us by participating in this year's Science Fair! **Complete the Participation Form** and turn in to the office at your earliest convenience or at the general Parent Information Night on January 23 from 7-8 PM in the Library.

Detailed information packet is also available online at www.allsaintsportland.com/sciencefairpacket.

Questions: Keith Zawadzki at keith.e.zawadzki@intel.com or Reniera Eddy at reniera.eddy@gmail.com

| # | Theme | Question | Data to Measure | Reference |
|---|---|---|---|---|
| 1 | **Chemistry:** Reactions | Are enzymes the key to laundry stain removal? | Qualitative: ability for different detergents and enzymes to remove different stain types | https://www.sciencebuddies.org/science-fair-projects/project-ideas/Chem_p039/chemistry/are-enzymes-in-laundry-detergents-effective-stain-removers |
| 2 | **Chemistry:** Reaction Rates | Can you slow down or speed up a chemical reaction? | Reaction speed vs reactant size/temperature | https://www.education.com/science-fair/article/reaction-speed-particle-size/ |
| 3 | **Chemistry:** Reactions | Can you make a battery out of fruit or vegetables? | Electrical current(Amps) vs fruit type/nail coatings [need ammeter] | https://www.teachengineering.org/activities/view/cub_energy2_lesson04_activity2 |
| 4 | **Chemistry:** Reactions | What percentage of air is oxygen? | Perform experiment to estimate about of oxygen in air | https://www.sciencebuddies.org/science-fair-projects/project-ideas/Weather_p004/weather-atmosphere/oxygen-content-of-air-rust#summary |
| 5 | **Physics:** Gravity, Forces, Mechanical Advantage | How do elevators work and can you increase the maximum weight? | Mechanical advantage vs #/size of pulleys [need spring scale] | https://www.teachengineering.org/activities/view/cub_simple_lesson05_activity1 |
| 6 | **Physics:** Gravity, Forces | What is the best water dam design to produce the most power? | Distance water spouts out vs water depth, hole size | https://www.education.com/science-fair/article/earth-science_squirter1/ |
| 7 | **Physics:** Gravity, Forces | What is the best launch angle for height or distance? | Catapult launch distance or height vs angle/object weight/force | https://www.sciencebuddies.org/science-fair-projects/project-ideas/Phys_p085/physics/use-a-catapult-to-storm-castle-walls |
| 8 | **Physics:** Potential vs Kinetic Energy | How to design a roller coaster? | Marble coaster speed or time(kinetic energy) vs tower height(potential energy) | https://www.teachengineering.org/activities/view/duk_rollercoaster_music_act |
| 9 | **Physics:** Gravity, Forces | What is the best airplane design? | Flight distance vs wing size/shape/weight | https://www.teachengineering.org/activities/view/cub_airplanes_lesson06_activity1 |
| 10 | **Physics:** Electromagnetism | How do you create an electromagnet? | # of paper clips vs # of coils | https://www.teachengineering.org/activities/view/cub_mag_lesson2_activity1 |
| 11 | **Physics:** Electrical Conduction | What materials conduct electricity? | Electrical current(Amps) vs material [need ammeter] | https://www.sciencebuddies.org/science-fair-projects/project-ideas/Elec_p018/electricity-electronics/conductors-insulators-basic-circuit |
| 12 | **Physics:** Thermal Conduction | What materials are best for keeping items hot or cold? | Measure how fast heat is lost from various containers – glass, plastic, metal. Do the same materials which conduct electricity also conduct heat? | https://www.steampoweredfamily.com/activities/heat-transfer-projects-for-kids-stem-activities/ |
| 13 | **Physics:** Thermal Conduction | How does land affect local temperatures? | Measure temperatures in different environments: NSEW of building, over road, over grass, basement, attic, etc. | |
| 14 | **Physics:** Gravity, Forces, Pressure | What is barometric pressure and how does it change versus location? | Measure the barometric pressure at various places (mountain/hill, in valley, various levels of elevator) vs elevation (smart phone app). | https://easyscienceforkids.com/make-your-own-barometer/ |
| 15 | **Physics:** Magnetism | How do you create a magnetic chain reaction? | Distance/speed ball travels vs # of magnets | https://www.scienceproject.com/projects/detail/Free/FG043.asp |
| 16 | **Physics:** Bernoulli's Principal | How does wind impact air pressure? | Time for objects to collide vs separation distance/temperature/wind speed | https://www.sciencebuddies.org/science-fair-projects/project-ideas/Aero_p039/aerodynamics-hydrodynamics/bernoulli-principle#procedure |
| 17 | **Physics:** Properties of Matter | What objects float versus sink? | Plot sink or float vs density ( values > 1 sink, and < 1 float). Density= wt/volume and volume can be determined by displacement of water. Compare different woods or metals. | https://easyscienceforkids.com/all-about-sink-and-float/ |
| 18 | **Physics:** Properties of Matter | How do dissolved substances change the density, boiling/freezing point of water? | Test float or sink objects in tap water. Retest as you add more salt to change the density. | https://sciencing.com/water-density-science-experiments-8029220.html |
| 19 | **Life Sciences:** Photosynthesis | How to optimize plant growth? | Plant growth vs amount of water/light/soil pH/color of light | https://education.seattlepi.com/experiment-ideas-photosynthesis-6593.html |
| 20 | **Life Sciences:** Human Body | How Does Heart Rate Change with Exercise? | Measure heart rate (phone app) vs activities, try different sample groups including gender(boy vs girl), age (kids vs adults) | https://www.sciencebuddies.org/science-fair-projects/project-ideas/Sports_p006/sports-science/heart-rate-change-with-exercise#summary |
| 21 | **Life Sciences & Physics** | What is the best sports drink? | Electrical current(Amps) vs sports drink [need ammeter] | https://www.sciencebuddies.org/science-fair-projects/project-ideas/Chem_p053/chemistry/electrolyte-challenge-orange-juice-vs-sports-drink#summary |
| 22 | **Biology** | What household objects have the most germs? | Bateria growth after X days vs sample [need purchase petri dishes prefilled with agar] | https://www.scienceproject.com/projects/detail/Free/FG043.asp |