ALL SAINTS SCHOOL
SCIENCE FAIR

IMPORTANT 2024 DATES TO REMEMBER:

Wednesday, January 31st	7-8pm Science Fair Info Night for grade 2-7 parents in the library, students welcome also.
Friday, February 23rd	8:30-9:30am Science Fair help session available in the library for grade 2-7 registered participants, parents welcome also.
Tuesday, March 19th	All Saints Science Fair in the gym! Project drop off in morning and open house and awards from 6:30 - 7:30pm.

Detailed information packet available online at www.allsaintsportland.com/sciencefairpacket
Questions: Please email sciencefair@allsaintsportland.com

ALL SAINTS SCIENCE FAIR GRADE 2-7 REGISTRATION FORM

1. Student Participant Name: _____

2. Student Grade and Teacher: _____

3. Parent name: _____

4. Parent Signature: _____

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

☐ I (parent) am interested in volunteering to support the science fair as a judge or student help session.

My email =_____

Please bring **completed tear-off section** to the front office or email keith.e.zawadzki@intel.com.

INTRODUCTION

All Saints Science Fair is a chance to have fun and encourage a spirit of scientific inquiry. Students look at understanding the world around us through experimentation and problem solving, and develop key skills along the way.

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 to share with 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-7th Grade Science Fair projects are voluntary for students to complete at home with the help of friends or family. Suggestions and resources for creating the hypothesis and experiments are available, as well as a Friday morning help sessions with expert volunteers for support or assistance along the way.

Students are required to 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 your own scientific explorations with your child! **Complete the Registration Form** and turn in to the office at your earliest convenience or at Parent Information Night.

You are invited to our Wednesday, January 31st 7-8pm Science Fair Info Night meeting in the library for more detailed information of the program and project ideas.

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

Questions: Please email sciencefair@allsaintsportland.com

Examples of quantitative experiments with variables and responses easy to measure.

#	Theme	Question	Data to measure	Reference
1	chemistry: reaction rates	Can you slow down or speed up a chemical reaction?	reaction speed vs reactant size/temperature (alka-seltzer bubbling and dissolving in hot vs cold water)	https://www.education.com/science-fair/article/reaction-speed-particle-size/
2	chemistry: reaction rates	How to change baking soda bubbling reaction with vinegar concentration?	ratio of vinegar in water solution (& temperature) vs height of bubble reaction in a cup (inches) while stirring	
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, different metals, alloys, pennies before/after 1982.	https://easyscienceforkids.com/all-about-sink-and-float/
18	physics: properties of matter=density	How do dissolved substances change the density 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 for electrolytes?	electrical current(Amps) vs sports drink or amount of salt added to water [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
23	Physics: mechanical advantage	Can an adult teeter-totter(see-saw) with a child?	weight of children, adults and distance from fulcrum/pivot to find equilibrium	
24	physics: pressure	how does pressure and or temperature inside a basketball impact the bounce?	pressure (psi) and/or temperature of bball vs bounce height when dropped from height	
25	chemistry: reactions	Amount of baking soda vs baking power impact muffins rising?	amount of baking soda or baking powder added to muffin recipe (grams or teaspoons) vs height (inches) of muffins after cooking	