

SCIENCE FAIR



24TH ANNUAL SCIENCE FAIR

Thursday, February 28, 2019

Lancaster Event Center

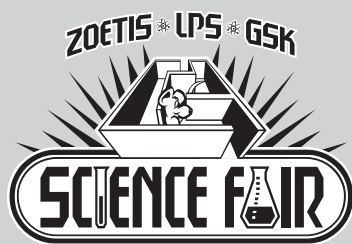
5:00-7:30 p.m.

Open to all 5th-8th grade students

Registration Deadline: February 8, 2019

Register online at www.lps.org, jump code PTBV

Student Guidebook



Welcome to the 24th Annual Zoetis*LPS*GSK Science Fair 2019!

Thursday, February 28, 2019

Lancaster Event Center • 4100 North 84th Street • Pavilion 1

Lincoln, Nebraska

5:00-7:30 p.m.

NOTE: REGISTRATIONS ARE DUE FEBRUARY 8, 2019

STUDENT GUIDEBOOK

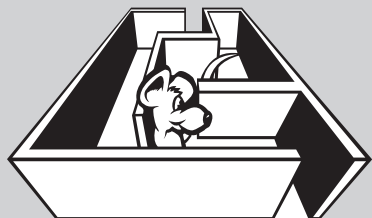
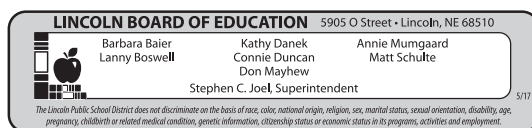


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SUSTAINABILITY

Sustainability is a BIG topic that covers a range of ideas for using our resources in an environmentally responsible manner. According to the Environmental Protection Agency, "to pursue sustainability is to create and maintain the conditions under which humans and nature can exist in productive harmony to support present and future generations." Sustainability is vital for the future of the earth, and it is better achieved through science.

Projects that align with the sustainability theme will focus on reducing non-renewable natural resource use, and can cover topics such as energy, transportation, waste, environmental management, sustainable agriculture, and environmental science, among others.

For those students that choose to do a sustainability themed project, you will be eligible receive a "Going Green" ribbon for your project. This green ribbon is in addition to whichever ribbon your project receives based on score. If you would like to be eligible to receive a "Going Green" ribbon, please be sure to check the box on the registration form indicating that you have opted to do a sustainability project.



SCIENCE FAIR RULES & REGULATIONS

1. Project must be written in the form of a question.
2. Teacher must approve project.
3. Project **may not** endanger humans or animals.
4. Students may work individually or with a partner.
5. Project must have a display which is no larger than 4 feet in length and 16 inches in depth. **Note:** Any student who qualifies for free and reduced lunch and wishes to enter the science fair, may apply for a display board to be supplied to him or her without cost.
6. Commercial kits are not allowed.
7. Project must show evidence of a search for background ideas.
8. ALL live animals must be kept inside a cage or other suitable container. Animals will be handled only by their owner not by visitors to the fair. All cats and dogs must be licensed.
9. DANGEROUS OR COMBUSTIBLE CHEMICALS **may not** be displayed at the fair. Rockets or engines **MUST NOT** contain fuel. All chemicals displayed must have the contents clearly marked on the container. No mercury thermometers or instruments may be used or displayed at the fair.
10. Open flames will not be permitted. Exceptions may be granted during the judging process. Contact the fair director.
11. Laser pointers are not allowed at the fair.



AREAS OF SCIENCE

LIFE SCIENCE will include:

- plants and seeds
- animals
- life cycles
- body structure
- the five senses
- health and nutrition

EARTH SCIENCE will include:

- air
- water
- weather
- the earth
- ecology
- above and beyond the earth
- geology
- compost
- energy efficiency
- renewable energy
- recycling
- sustainability

PHYSICAL SCIENCE will include:

- nature of matter
- energy
- light
- sound
- simple machines
- technology
- magnetism
- static electricity
- current electricity
- chemistry



SCIENTIFIC INVESTIGATIONS

SCIENCE FAIR CHECKLIST

- ☐ Choose a topic of interest.
- ☐ Think of a **question** to answer.
- ☐ Ask teacher for approval.
- ☐ Complete registration form.
- ☐ **Research** topic.
- ☐ Record sources of information.
- ☐ Write **hypothesis** as an if, then statement.
- ☐ Plan **procedure**.
- ☐ Gather your materials.
- ☐ Conduct **experiment** as planned.
- ☐ Record **results**.
- ☐ Review results.
- ☐ State **conclusion**.
- ☐ Prepare display.
- ☐ Prepare oral presentation.
- ☐ Bring display to the fair



DISPLAY BOARD ORGANIZATION

<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Procedure <hr/><hr/><hr/> </div> <div style="border: 1px solid black; padding: 5px;"> Source of Information <hr/><hr/><hr/><hr/> </div>	TITLE <i>(Student Name)</i> <div style="border: 1px solid black; padding: 5px; margin: 5px auto; width: 80%;"> Question <hr/> </div> <div style="border: 1px solid black; padding: 5px; margin: 5px auto; width: 80%;"> Hypothesis <hr/> </div> <div style="margin-top: 20px;"> <div style="display: flex; justify-content: space-around;"> <div style="width: 20%; height: 40px; background-color: #cccccc;"></div> <div style="width: 20%; height: 40px; background-color: #cccccc;"></div> <div style="width: 20%; height: 40px; background-color: #cccccc;"></div> </div> <div style="width: 60%; height: 40px; background-color: #cccccc; margin: 5px auto;"> <i>(Photos)</i> </div> </div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Results <hr/><hr/><hr/> </div> <div style="border: 1px solid black; padding: 5px;"> Conclusion <hr/><hr/><hr/><hr/> </div>
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EXAMPLE QUESTIONS

PHYSICAL SCIENCES:

1. Which type of water evaporates the quickest: salt, tap, or fresh?
2. Can more drops of water be placed on top of a penny or a dime?
3. Which type of cloth will dry faster: cotton or polyester?
4. What kind (shape) of sail will make a boat go the fastest?
5. Which design of paper airplane will fly farther?
6. Through what surfaces will a magnet attract?
7. Which materials are conductors of electricity?
8. How does temperature affect the rate of evaporation?
9. How does the size of a sponge affect the amount of water absorbed?
10. Does the size of a ball affect the rate of fall?
11. How does wetting the paper affect its strength?
12. Which paper has the fastest capillary action?

EARTH SCIENCES:

1. Which will develop faster; salt crystals or sugar crystals?
2. Which soil has the best water retention?
3. Which solids decompose faster?
4. How do plants affect erosion?
5. How does temperature affect the speed of molecules?
6. Which rocks are attracted by a magnet?
7. What factors affect water erosion?
8. Which rocks conduct electricity?
9. How is the distance a rock rolls in a stream related to the rounding of its edges?
10. How does composting aid the environment?
11. Which biodegradable objects break down into compost faster?
12. Does turning compost accelerate decomposition?
13. How do greenhouse gases warm the Earth?
14. How does agricultural runoff affect aquatic life?
15. How can water flow be used to produce energy?
16. How is solar energy captured?
17. How do wind turbines create clean energy?
18. Which lights are most energy efficient?
19. How does the recycling process work?

LIFE SCIENCES:

1. How much salt will a plant be able to tolerate and still grow?
2. Which kind of seed will sprout more quickly?
3. What is the best surface for lifting fingerprints?
4. How does the sprouting time for a seed change with planting depth?
5. Which packaging method best reduces the growth of mold or fungus?
6. How does gravity affect the direction that a seed grows?
7. How does caffeine affect plant growth?
8. Which materials are the best filters for water?
9. How does the size of a fruit affect the number of seeds it contains?
10. How does an individual's foot length relate to his/her height?
11. How does exercise affect blood pressure?
12. How does human weight change with time of day?

MORE IDEAS

See Science Buddies:
www.sciencebuddies.com





SCIENTIFIC INVESTIGATIONS CONTINUED

SCIENCE FAIR CHECKLIST

- ☐ Choose a **topic** of interest.
- ☐ Think of a **question** to answer.
- ☐ Ask teacher for approval.
- ☐ Complete registration form.
- ☐ Locate and record your sources of information.
- ☐ **Research** your topic.
- ☐ Plan how to **share** information.
- ☐ Prepare charts, tables, or other visual aids.
- ☐ Prepare **display**.
- ☐ Prepare oral presentation.
- ☐ Bring display to the fair



DISPLAY BOARD ORGANIZATION

<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Information <hr/><hr/><hr/> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="width: 40%; height: 80px; background-color: #ccc; margin-bottom: 5px;"></div> <div style="width: 20%; height: 40px; background-color: #ccc; margin-bottom: 5px;"></div> <div style="width: 40%; height: 80px; background-color: #ccc; margin-bottom: 5px;"></div> </div> <div style="text-align: center; font-style: italic;">(Photos/Charts)</div>	<p>TITLE (Student Name)</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: 80%;"> Question <hr/> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: 80%;"> Sources of Information <hr/><hr/><hr/><hr/><hr/><hr/> </div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Information <hr/><hr/><hr/> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="width: 40%; height: 80px; background-color: #ccc; margin-bottom: 5px;"></div> <div style="width: 20%; height: 40px; background-color: #ccc; margin-bottom: 5px;"></div> <div style="width: 40%; height: 80px; background-color: #ccc; margin-bottom: 5px;"></div> </div> <div style="text-align: center; font-style: italic;">(Photos/Charts)</div>
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EXAMPLE QUESTIONS

PHYSICAL SCIENCES:

1. What things make sound?
2. How does sound travel?
3. What kinds of materials can carry sound?
4. How does light travel?
5. How does a camera work?
6. How does the human eye work?
7. Why do things fall?
8. What are the various forms of energy?
9. What is magnetism?
10. How does a compass work?
11. What are insulators and conductors of electricity?
12. What is an electric circuit?

LIFE SCIENCES:

1. Why do living things need air, food, and water?
2. How do plant cells differ from animal cells?
3. Why are roots, stems, and leaves important to plants?
4. How do light, air, water, and temperature affect germination?
5. What are food chains?
6. How do insects develop?
7. What are the special adaptations of plants and animals?
8. How does the human ear work?
9. How does the tongue taste foods?
10. What foods contain high amounts of acids?
11. What kinds of bacteria are helpful or harmful?
12. What is a virus?

EARTH SCIENCES:

1. What are the four layers of earth?
2. How are igneous, sedimentary, and metamorphic rocks formed?
3. How are crystals formed?
4. What causes earthquakes?
5. What causes a volcano to erupt?
6. What factors affect weathering?
7. What are fossils and how are they formed?
8. What is the water cycle?
9. What are the different kinds of clouds?
10. What are constellations?
11. Which planet has an atmosphere most capable of supporting life?

MORE IDEAS: See Science Buddies – www.sciencebuddies.com



SCIENTIFIC INVESTIGATION JUDGING FORM

**Zoetis-LPS-GSK Science Fair
Lincoln Public Schools**

Project #: _____

Student Name(s): _____ Final Score: _____

Topic: _____

SCIENTIFIC THOUGHT (Verbal Presentation)**a. Knowledge of Scientific Fact or Theories**

- 23-25** Knowledgeable, shares information freely, good understanding of topic, able to answer questions.
- 20-22** Provides explanation of some facts and shows general understanding of topic.
- 17-19** Provides some facts with prompting.
- 15-16** Minimal information shared on topic.

Comments

_____/25

b. Planned and Organized

- 14-15** Understands and utilizes a methodical scientific approach (e.g. Scientific Method, engineering design process, obtain-evaluate-communicate information, using computational and mathematical process, etc.) to complete project.
- 11-13** Demonstrates some evidence of a planned and methodical approach.
- 8-10** Exhibits limited understanding of the approach to planning and organizing or requires prompting.

Comments

_____/15

c. Explains Graphs, Charts, and Display

- 9-10** Is able to explain graphs, charts, or other visual aids as they pertain to the project.
- 7-8** Is able to explain graphs, charts, or other visual aids with prompting.
- 6** Gives limited explanations to graphs, charts, or other visual aids.

Comments

_____/10

THOROUGHNESS OF DISPLAY (Visual Presentation)**a. Scientific Method and Sources of Information**

- 18-20** Display accurately reflects the use of the Scientific Method (hypothesis, procedure, results, conclusion) **and/or** includes detailed sources of information (demonstrations, research reports from first hand or published sources-such as observations of nature)
- 16-17** Display accurately reflects some evidence of the Scientific Method **and/or** includes detailed sources of information
- 14-15** Display reflects limited evidence of the Scientific Method **and/or** includes limited sources of information

Comments

_____/20



Points Earned-Page 1: ____/70

THOROUGHNESS OF DISPLAY *(continued)***b. Accurate and Complete Visual Aids**

- 9-10 Display includes two or more of following: graph, chart, photograph, illustration, or model that accurately reflects project.
- 7-8 Display includes one of the following: graph, chart, photograph, illustration, or model that accurately reflects project.
- 0 Display does not include a visual aid.

Comments

_____/10

TECHNICAL SKILL (Visual Presentation)**a. Exhibit 'Catches the Eye' and Focuses Attention of Visitor**

- 5 Display 'grabs' your attention and interest.
- 4 Display is neat and organized but not 'eye-catching'.
- 3 Display is organized but lacks neatness.
- 2 Display is unorganized and appears put together quickly.

Comments

_____/5

b. Words are Spelled Correctly.

- 5 All words are spelled correctly.
- 4 1 or 2 words are misspelled.
- 3 3 or 4 words are misspelled.
- 2 5 or more words are misspelled.

Comments

_____/5

c. Labels are Neat and Easy to read.

- 5 Labels are attractive, neat, and easy to read.
- 4 Labels are fairly easy to read.
- 3 Labels are difficult to read.
- 2 Few or no labels present.

Comments

_____/5

ORIGINALITY**a. Original and Unique Ideas for Topic and Display**

- 5 Unique and original topic and display.
- 3-4 Original topic and/or unique display.
- 1-2 Some originality in topic and display.

Comments

_____/5

RIBBON EARNED - EXPERIMENT**PURPLE**

90-100 Points

BLUE

80-89 Points

RED

70-79 Points

WHITE

69 or Below

Points Earned-Page 2: ____/30

Points Earned-Page 1: ____/70

Total Points: ____/100

BIBLIOGRAPHY OF RESOURCES

Use this form to record your sources of information. You may need to make additional copies.
(This information must be included in your display.)

Book:

Author _____
Title of Book _____
Publisher _____
Copyright _____

Book:

Author _____
Title of Book _____
Publisher _____
Copyright _____

Encyclopedia:

Author (if available) _____
Title of Article _____
Title of Encyclopedia _____
Edition _____ Date of Publication _____

Encyclopedia:

Author (if available) _____
Title of Article _____
Title of Encyclopedia _____
Edition _____ Date of Publication _____

Electronic Sources:

Author (if available) _____
Title of CD-ROM, video, web site _____
Year of Publication _____

E-Mail Communication:

Writer's Name _____
Subject Heading _____
Type of Document _____
Date of Document _____



REGISTRATION FORM

Exhibit #: _____

(for office use only)

Registration Deadline: February 8, 2019

(Registration is required **for each participant**)

Register Online at: www.lps.org — jump code PTBV — OR

Exhibitor's Name: _____
(Please print first and last name)

Partner with: _____
(Optional. Print first and last name)

Grade Level: _____ School: _____

Teacher's Name: _____

Question to be answered: _____

Sustainability Project: ☐ Yes ☐ No

T-Shirt Size (adult sizes): ☐ Small ☐ Medium ☐ Large ☐ X-Large

NOTE:

I agree to set up my exhibit between the hours of 4:15 p.m. and 5:00 p.m. on February 28, 2019.
I will stay until 7:30 p.m. and dismantle my exhibit by 7:45 p.m. that evening.

Required:

Student Signature: _____

Parent or Guardian Signature: _____

Parent Email: _____

Teacher Signature: _____

REGISTRATION FORMS ARE TO BE SENT TO:

Rochelle Settles • Fredstrom Elementary School • 5700 NW 10th Street • Lincoln, NE 68521

