



# SCIENCE FAIR 2017



## 22<sup>ND</sup> ANNUAL SCIENCE FAIR

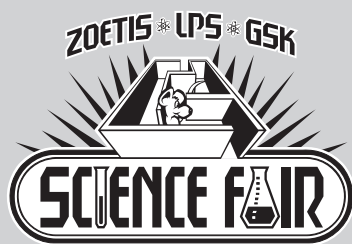
Thursday, March 2, 2017  
Lancaster Event Center  
5:00-8:00 p.m.

Open to all 5th-8th grade students

Registration Deadline: February 10, 2017

Register online at [www.lps.org](http://www.lps.org), jump code PTBV  
by February 10, 2017

# Student Guidebook



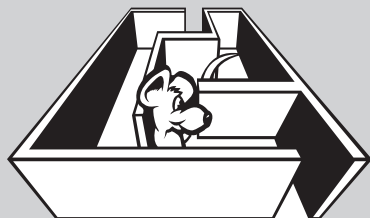
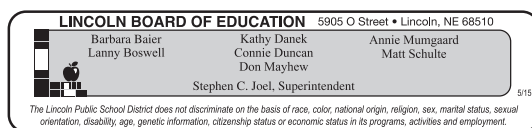
# Welcome to the 22nd Annual Zoetis\*LPS\*GSK Science Fair 2017!

**Thursday, March 2, 2017**

**Lancaster Event Center • 4100 North 84th Street • Pavilion 1  
Lincoln, Nebraska  
5:00-8:00 p.m.**

**NOTE: REGISTRATION FORMS ARE DUE FEBRUARY 10, 2017**

# STUDENT GUIDEBOOK



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## SCIENCE FAIR RULES & REGULATIONS

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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

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### 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





## EXPERIMENTS

### 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 (For Experiment)

<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <b>Procedure</b>  <hr/><hr/><hr/> </div> <div style="border: 1px solid black; padding: 5px;"> <b>Source of Information</b>  <hr/><hr/><hr/><hr/> </div>	<b>TITLE</b> <i>(Student Name)</i> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <b>Question</b>  <hr/> </div> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <b>Hypothesis</b>  <hr/> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"> <div style="width: 20px; height: 20px; background-color: gray;"></div> <div style="width: 20px; height: 20px; background-color: gray;"></div> <div style="width: 20px; height: 20px; background-color: gray;"></div> <div style="width: 20px; height: 20px; background-color: gray;"></div> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px; width: 100%;"> <i>(Photos)</i> </div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <b>Results</b>  <hr/><hr/><hr/> </div> <div style="border: 1px solid black; padding: 5px;"> <b>Conclusion</b>  <hr/><hr/><hr/><hr/> </div>
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## EXAMPLE EXPERIMENTAL 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](http://www.sciencebuddies.com)



**EXPERIMENT 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 the Scientific Method to complete project.
- 11-13** Demonstrates some knowledge of the Scientific Method.
- 8-10** Exhibits limited understanding of the Scientific Method with 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 includes sources of information.
- 16-17** Display reflects some evidence of the Scientific Method and includes sources of information.
- 14-15** Display reflects limited evidence of the Scientific Method and includes sources of information.

Comments

\_\_\_\_\_/20


**FILL OUT PAGE 2 OF FORM**

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







## DEMONSTRATIONS

### 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 (For Demonstration)

<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <b>Information</b>  <hr/><hr/><hr/> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="width: 40%; height: 100px; background-color: #cccccc;"></div> <div style="width: 20%; text-align: center;"> <div style="width: 20px; height: 20px; background-color: #cccccc; margin: 0 auto;"></div> <div style="width: 20px; height: 20px; background-color: #cccccc; margin: 0 auto;"></div> </div> <div style="width: 40%; height: 100px; background-color: #cccccc;"></div> </div> <p style="text-align: center; margin-top: 10px;">(Photos/Charts)</p>	<p><b>TITLE</b> (Student Name)</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: 80%;"> <b>Question</b>  <hr/> </div> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: 80%;"> <b>Sources of Information</b>  <hr/><hr/><hr/><hr/><hr/><hr/> </div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <b>Information</b>  <hr/><hr/><hr/> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="width: 40%; height: 100px; background-color: #cccccc;"></div> <div style="width: 20%; text-align: center;"> <div style="width: 20px; height: 20px; background-color: #cccccc; margin: 0 auto;"></div> <div style="width: 20px; height: 20px; background-color: #cccccc; margin: 0 auto;"></div> </div> <div style="width: 40%; height: 100px; background-color: #cccccc;"></div> </div> <p style="text-align: center; margin-top: 10px;">(Photos/Charts)</p>
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## EXAMPLE DEMONSTRATION QUESTIONS

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### 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? harmful?
12. What is a virus?

### EARTH SCIENCES:

1. What are the four layers of the 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](http://www.sciencebuddies.com)



**DEMONSTRATION JUDGING FORM**  
**Zoetis-LPS-GSK Science Fair**  
**Lincoln Public Schools**

Project #: \_\_\_\_\_

Student Name(s): \_\_\_\_\_ Final Score: \_\_\_\_\_

Topic: \_\_\_\_\_

**KNOWLEDGE (Verbal Presentation)****a. Knowledge of Facts or Theories**

- 22-25 Knowledgeable, shares information freely, good understanding of topic, able to answer questions.
- 20-21 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**

- 13-15 Shares information in an organized and sequential manner.
- 11-12 Shares information in a fairly organized and sequential manner.
- 9-10 Shares information with a prompting from the judge.
- 6-8 Shares information in an unorganized manner.

Comments

\_\_\_\_\_/15

**c. Explains Visual Aids**

- 9-10 Is able to thoroughly explain visual aids as they pertain to the project.
- 7-8 Is able to explain visual aids with prompting.
- 6 Is unable to explain visual aids with prompting.

Comments

\_\_\_\_\_/10

**THOROUGHNESS OF DISPLAY (Visual Presentation)****a. Complete and Concise Text with Sources Identified**

- 18-20 Display includes both visual and written information including at least three or more sources of information.
- 16-17 Display includes both visual and written information including two sources of information.
- 14-15 Display includes both visual and written information including one source of information.
- 10-13 Display includes both visual and written information without a source of information.

Comments

\_\_\_\_\_/20


 FILL OUT PAGE 2 OF FORM

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 reflect project.
- 7-8 Display includes one of the following:  
graph, chart, photograph, illustration, or  
model that accurately reflect 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.**

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Comments

\_\_\_\_\_/5

**RIBBON EARNED - DEMONSTRATION****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:

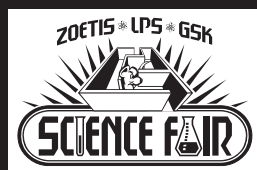
Author (if available) \_\_\_\_\_  
Title of Article \_\_\_\_\_  
Title of Encyclopedia \_\_\_\_\_  
Edition \_\_\_\_\_ Date of Publication \_\_\_\_\_

### 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 10, 2017***

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

Register Online at: [www.lps.org](http://www.lps.org) -- jump code PTBV

**Exhibitor's Name:** \_\_\_\_\_  
*(Please print first and last name)*

**Partner with:** \_\_\_\_\_  
*(Optional. Print first and last name)*

**Grade Level:** \_\_\_\_\_ **School:** \_\_\_\_\_

**Teacher's Name:** \_\_\_\_\_

**Check one:** ☐ Experiment ☐ Demonstration

**Question to be answered:** \_\_\_\_\_

**Field of Science** *(check one):* ☐ Life ☐ Earth ☐ Physical

**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 March 2, 2017.  
I will stay until 8:00 p.m. and dismantle my exhibit by 8:15 p.m. that evening.

**Required:**

**Student Signature:** \_\_\_\_\_

**Parent or Guardian Signature:** \_\_\_\_\_

**Teacher Signature:** \_\_\_\_\_

**REGISTRATION FORMS ARE TO BE SENT TO:**

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



