

School: _____

Nominate science fair chaperones:

<http://tinyurl.com/scifairchaperones>

Student projects

1. Grade level: _____ Project (circle one):
Science Engineering Technology
2. Grade level: _____ Project (circle one):
Science Engineering Technology
3. Grade level: _____ Project (circle one):
Science Engineering Technology
4. 4th grade only: **Electric cars /or
Design an Energy Device Project**

Visit these websites for project ideas:

<http://www.ipl.org/IPLBrowse/GetSubject?vid=12&cid=3&tid=4317&parent=4278>

<http://archimedesinitiative.org/>

<https://student.societyforscience.org/science-project-resources>

Programming/coding websites:

<https://scratch.mit.edu> <https://Code.org>
<https://tynker.com> <http://appinventor.mit.edu>
<http://lightbot.com> www.alice.org



TRENTON BOARD OF EDUCATION
CENTRAL SERVICES BLDG

Curriculum Department, STEM Division
108 North Clinton Avenue
Trenton, NJ 08609

Lucy Feria, Interim Superintendent
Michael Tofte, STEM Supervisor
John Dunston, STEM Leader



"Children come first, Los ninos son primero"

2016 Next-Gen STEM Showcase / Science Fair



Board-approved March 21, 2016

District finals:

Friday, May 20, 2016

Ellis Auditorium

9:30 a.m.—1:30 p.m.

Trenton Public Schools

Central Services Building

108 North Clinton Avenue

Science, Technology, Engineering

Trenton Public School Students grades 3 through 8 create projects incorporating the 8 Science and Engineering Practices (8 SEPs):

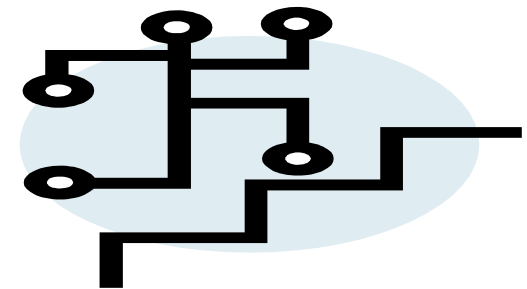
1. Asking questions (for science) and defining problems (for engineering)
 2. Developing and using models
 3. Planning and carrying out investigations
 4. Analyzing and interpreting data
 5. Using mathematics and computational thinking
 6. Constructing explanations (for science) & designing solutions (for engineering)
 7. Engaging in argument from evidence
 8. Obtaining, evaluating and communicating information
- ◇ Top projects from each school (one per grade level) enter the Next-Gen STEM Showcase/Science Fair district finals.
 - ◇ Elementary schools enter a fourth project based on the 4th grade PSI Electric Cars Performance Based Assessment/Design an Energy Device Lab in Trenton's 4th grade science curriculum (unit 6).
 - ◇ Students receive awards and recognition for top projects.

& Mathematics (STEM)

Goal: To provide a fun, challenging and inspiring forum which enhances students' interest in the STEM disciplines.

Basic guidelines:

- ⇒ Each school nominates 2 - 3 chaperones to accompany student finalists on May 20, 2016 (only one chaperone must attend; the others may be alternates).
- ⇒ Each school identifies one STEM project from each grade level, plus one additional 4th grade project on Electric Cars/Energy Devices to represent in district finals.
- ⇒ To attend district finals, selected students must provide school written parental permission, as per district policy.
- ⇒ Judging criteria (reverse side) are based upon Mercer Science and Engineering Fair <<http://www.mercersec.org/>> and incorporate the 8 Science & Engineering Practices (8SEPs).
- ⇒ Contact: jdunston@trenton.k12.nj.us for more information!



**STEM Showcase/Science
Fair criterion checklist**
(see reverse side)

Science Fair / Next-Gen STEM Showcase criterion checklist

Grade level: _____ Project # _____
 Project title: _____

Rate *one* of these *first three* categories (**science, engineering or technology**); cross out the other two categories:

30	Scientific thought	/30
3	Student clearly states problem and makes a scientific claim to investigate.	
3	Student limits the problem enough in order to realistically solve it (scientists identify important problems <i>which they can solve</i>).	
3	Student 's procedures for answering a question/solving a problem link scientific claim to evidence which is possible to gather.	
3	Student clearly recognizes and defines key variables in gathering and using evidence to support scientific claim.	
3	Student recognizes the need for necessary "controls" and uses them correctly.	
3	Student produces adequate data (evidence) to support conclusions about his/her claim.	
3	Student recognizes data's limitations in analyzing and interpreting it.	
3	Student can show and explain how project relates to other research.	
3	Student has an idea of what future research (if any) may be necessary to support or refute scientific claim.	
3	The student cites scientific literature instead of only popular literature (i.e., local newspapers, Reader's Digest).	

or	30	Engineering design goals	/30
	5	Student clearly defines problem and objective using criteria and constraints which realistic solutions have to meet.	
	5	Student relates objective to a user's needs, based on criteria for realistic solutions (modeling).	
	5	Student solves problem within constraints (economic, technical, etc.) while also meeting criteria of possible users.	
	5	Student shows how his/her solution can lead to the successful design or build of an "end product."	
	5	The student's solution significantly improves upon previous alternatives.	
	5	Student optimizes solution by systematically testing and refining performance under conditions of normal use.	

or	30	Technology goals	/30
	5	Student clearly and concisely defines specific, consistent goals in using a suitable process to solve a problem .	
	5	Student tells an engaging story using accurate content in solving the problem, while using media/sound/animation to enhance communication.	
	5	Student applies an existing design to more efficiently and effectively meet a users' needs in solving problem.	
	5	Student builds a working end product of high technical quality (purposeful visual/audio layout, enhancements, editing, etc.).	
	5	Student explains why and how solution serves its intended purpose.	
	5	Student tests solution to make sure it works under various conditions.	

Judge initials: _____



30	Creative ability	/30
5	Student makes a claim by asking questions, approaching problems and analyzing / interpreting data in a creative way.	
5	Student gathers evidence to support claim by using, constructing and/or designing equipment in a creative or original way.	
10	Student answers questions in an original way by obtaining evidence from creative research to support the investigation of his/her claim.	
10	Student creatively solves problems in an efficient and reliable way. No points are awarded for "gadgets" having nothing to do with solving problems for student's claim.	

15	Thoroughness	/15
3	Student purposefully completes project consistent with project's original intent, in showing how scientific evidence supports the scientific claim.	
2	Student completely addresses the problem.	
2	Student bases conclusions upon <i>multiple</i> experiments/trials, where appropriate, rather than only one experiment or trial.	
2	Student's project notes are complete, reflecting any necessary computations and/or evidence which form the basis of any arguments and conclusions .	
2	Student articulates other approaches or theories in solving or addressing the problem.	
2	Student spends extensive/moderate/minimal time completing the project.	
2	Student is familiar with scientific literature relevant to project.	

15	Skill	/15
5	Student <i>owns</i> the relevant skills (lab, computation, design or observational) to obtain data (evidence) supporting claim or solution.	
4	Student completes project with minimal help from parents, teachers, scientists/engineers in a lab based at home/classroom/school/university/corporation.	
3	Student largely completes project independently, under minimal or limited adult supervision.	
3	Student obtains equipment independently by building it, by borrowing it or by directly gaining access to a laboratory.	

10	Clarity	/10
3	Student clearly explains project purpose, procedures, and conclusions, showing how evidence connects to his/her claim. Student argues why other claims are not appropriate, using evidence to support his/her reasoning.	
1	Student provides written materials which reflect or summarize understanding of the research.	
1	Student presents important phases of the project in an orderly, sequential manner.	
1	Student clearly presents data (scientific evidence) supporting claim.	
1	Student clearly presents the results.	
1	Student's project display explains the project well.	
1	Student presents ideas in a straight-forward way, without relying upon tricks or gadgets.	
1	Student performs all the project work without help.	



Total points earned: _____ /100

Judges award all points/section or none.