SCIENCEFAIR 2017

HUNTERS CREEK

5th GRADE

SCIENCEFAIR 2017

HUNTERS CREEK

October 23, 2017

Dear Parents,

Your child is invited to take part in the annual Hunters Creek science fair! This exciting event encourages students to think like young scientists, to think up their own experiment, to carry it out, make a poster showing what they discovered, and to make a presentation to their class. This is a great opportunity for the students to have fun, to make a mess of your kitchen or yard, and learn about the scientific method in the process. On top of it all, your child can earn some extra credit!

During the next few weeks, your child, working on their own or with a friend from their own class, will be designing a science project that uses the scientific method to solve a problem. They will need your support and encouragement. Please be prepared to talk through their ideas with them to enable them to make a good practical decision about what to do in the time available and how to do it. It is the parents' responsibility to ensure that the experiments are carried out safely and that nobody comes to harm during this month.

Attached to this letter is a science fair packet that contains a calendar, instructions, and a sample experiment.

A Science Fair Instruction Video will be available online (HCEPTA.com under the School Info Tab) starting October 23rd.

There will be a special session for Science Fair lab work in the school library in November 8th from 3:00 to 4:00pm. The date will also be communicated through *The Cougar Express.* At the session, we will provide resources to help students come up with project ideas. Students who already know what they want to do, but aren't sure how to do it, can also talk to us. If they have already finished their projects, we can help them to turn their data in to charts and graphs for their posters.

Your support is key to a successful project! This is a great opportunity for parental involvement, however, it is important that your child work with problems and try to solve them. Guide your child whenever and wherever you can, but let the final project reflect your child's individual effort and design. Also, keep in mind that a successful project can be completed for under $10.00. Science fair boards can be purchased for $4 in the school office starting on October 23rd.

Sincerely,

Your Science Fair Chairs and Science Teachers

SCIENCEFAIR 2017

HUNTERS CREEK

SCIENCE FAIR DATES 2017

October 23	**Science Fair Kick off** Teacher exposition to 4th & 5th grades. (Teachers provide rubrics)
October 23	**Science Fair Instruction Video available online for Parents**
Oct 23-Nov10	**Display boards on sale in front office$4.00**
November 8	**Computer Lab and Student Help** 3:00pm – 4:00pm in the library. A parent will be available after school to help students design projects and work on the computers to make graphs and reports.
November 13	**Projects are Due/ Student presentations**
November 14	Science Fair set up in cafeteria (students will bring boards to cafeteria stage after lunch (after 1:30pm)
November 14	**Science Fair EXPO- Family Viewing** 5:30pm-7:00pm
November 15	**Science Fair EXPO- School Viewing** 8:00am-10:00am
November 15	Take down and clean up (posters moved to stage) Posters go home. 10:00am-10:55am

Ideas for projects

You can find science fair books in the Hunters Creek library (our librarian, Lisa Stultz, can help you), the public library in section 500 and at any area bookstore such as Barnes and Noble.

We encourage children to come up with their own ideas but here are some suggestions you can use as a starting point:

1. Which is the strongest acid? Test vinegar, lemon, grapefruit, orange, etc. Could test on a penny.
2. Which cola contains the most acid?
3. Test various liquids (e.g. lemon juice) on avocados as a preservative.
4. Which type of bread molds the most rapidly?
5. How does light and temperature affect bread mold?
6. Which type of cheese molds the most rapidly?
7. How do temperature and light affect the rising of bread dough with yeast?
8. Test the absorbency of synthetic and natural sponges.
9. Which acts as the best insulator to an ice cube? Styrofoam, tinfoil, plastic etc.
10. Which metals are the best conductors of heat?
11. Test how salt can lower the boiling temperature of water.
12. Test how salt can lower the freezing point of water.
13. Test how different amounts of salt can melt ice.
14. Test how salt affects the buoyancy of objects in water.
15. Test the density of various liquids.
16. Test the change in density of hot and cold water.
17. How does temperature affect how much salt or sugar can be dissolved in water?
18. How does the surface area of an object affect its buoyancy?
19. How does surface area affect the evaporation of a liquid?
20. Test the concept of “drag” on dropped objects with respect to gravity. Quarters vs. feathers vs. cotton ball vs. marble etc.
21. Does the mass of an object affect the speed at which it falls?
22. Test water resistance: try dropping different shaped objects (coin, marble, paper) into a cup at the bottom of a container of water. What happens?
23. Test cars on a ramp with different types of resistance-sandpaper, fabric, aluminum, waxed paper etc.
24. Use a wood block with an attached rubber band to test how easily the block slides on a table with sandpaper, aluminum, waxed paper etc as a test for friction.
25. How does mass (weight) affect the distance that a wind-up toy car can travel? Use the same toy car with pennies taped/glued on to add the increased weight.
26. Design your own lever. Where does the fulcrum have to be to raise a heavy object?
27. Test suction cups on different surfaces.
28. Compare bonding strength of different kinds of glue or tape.
29. Does temperature affect the strength of rubber bands?
30. How does volume of liquid in the glass affect the sound in “singing wine glasses”?
31. Grow plants under different light conditions.
32. Grow plants under different water conditions or soil conditions.
33. Test various metals with a magnet. Are they magnetic? What weight of different metals can you pick up? What seems to be the controlling factor?

Display Boards

Your Science Fair Project should be displayed on a standard 3-part folded science display board. These are available in the school office for $4 starting on October 23rd. They are also available at Michaels, Hobby Lobby or Texas Art Supply. Every project must include the following sections, which should be clearly identified on your display board:

1. **Catchy Title**: This is the name of your project. It should appear at the top of your display board.
2. **Question/Purpose**: The purpose must be stated in question form. What question are you trying to answer?
3. **Research**: These are resources such as books and web sites that will help you find information about your question/purpose.
4. **Hypothesis**: Using complete sentences, explain what you think the answer to your problem question is. It is okay for you to be wrong here. It is fun to learn something new through your science project experience.
5. **Procedure**: This is a step-by-step set of directions on how you did the experiment. Numbering each step will make it easier for everyone to understand what you did. An observer should be able to re-create your experiment from these directions. Identify the variables (as described below). The same steps should be performed at least 3 times. This way, you have at least 3 sets of information to measure and record.

   Variables:
   Constant Variable – These are any parts of the experiment that you kept the same. Examples might be amount of sun, type of soil used, amount of water, etc.
   Independent (Manipulated) Variable – This is the part of the experiment that you changed on purpose. It is what you do that causes something else to happen.
   Dependent (Responding) Variable – This is what happened because of the experiment. This is the variable, which you will measure or record for your results.

   Another way of thinking about this:
   Problem: How does ____ affect ____?

   The first blank is the **independent variable** and the second blank is the **dependent variable.**
6. **Observations**: What did you find out? Use charts and data tables to show your results of what you found out. Pictures and photographs help too. You can use computer software or draw by hand to show your results.
7. **Conclusion**: Re-answer the problem question using what you learned from your observations. If you learned something new or unexpected, this will be different than your hypothesis. This is a very important part of the science fair board because it shows that you learned something based on finishing your experiment. If you encountered problems during your work, you may discuss what impact these issues may have had on your results. Scientists are always learning from unexpected results.
8. **Application/Further Research**: These ideas and changes in your experiment that you might want to try to further explore your topic.

You can stick photographs, pictures, paper print-outs and flat objects on to the board, but please do not attach any heavy or three-dimensional objects as it makes the boards hard to fold.
Most students use a computer to write out the words and to make the charts, data tables, etc. This certainly looks better but it is not necessary – a neat hand-drawn graph and clear handwritten text is good. This is a science project not an art project!

Sample

Catchy title: Hot Dirt!

Observations: When I go to a swimming pool in the summer, I have found out the hard way (ouch!) that some things get burning hot in the sun (wooden decks, metal steps, hard dirt) but others stay cool (grass, and the water). The same sun is shining on the pool, deck, steps, and dirt. I wonder why this happens. Perhaps the same amount of sunlight makes different materials warmer?

Question: Which warms faster, water or soil?

Hypothesis: If I heat water and soil for the same time, I think the soil will warm faster.

Procedure:

1. Get an adult to help cut the top and side off a box
2. Fill one cup with soil and an identical cup with the same amount of water
3. Place the cups together at the back of the box. Leave them for at least an hour so that they will be at the same temperature.
4. Put a thermometer in each cup. The bulb of each thermometer should be about a quarter of an inch below the top of the water and the top of the soil.
5. Tape the top of the thermometer to the back of the box to keep it in place.
6. Prepare a chart to record the experimental results
7. After the thermometers have been in the cups for at least 15 minutes, record the temperature of each material.
8. Place the box under an electric lamp so that the light bulb is about 10 inches from the top of the cups, and is centered over them. Make sure that the light bulb does not touch the box.
9. Record the temperatures in each cup every 5 minutes.
10. After 30 minutes, turn the lamp off and measure the temperature in each cup. These are the final temperatures.
11. Calculate and record the changes between the starting temperatures and the final temperatures.
12. Analyze data and compare your results with the hypothesis.

Variables and constants

Constant (what is always the same)
The volume of material used (one cup); the heating method applied to each cup; the length of time elapsed when each measurement is taken

Independent (the thing you change)
The material in the cup

Dependent (the thing that changes, which you measure)
The temperature change in the cup

Data collection sheet

Time is in minutes, temperature is in degrees F

Measured temperature

Soil temperature	
Time	Temperature
0	75
5	83
10	82
15	84
20	84
25	85
30	86

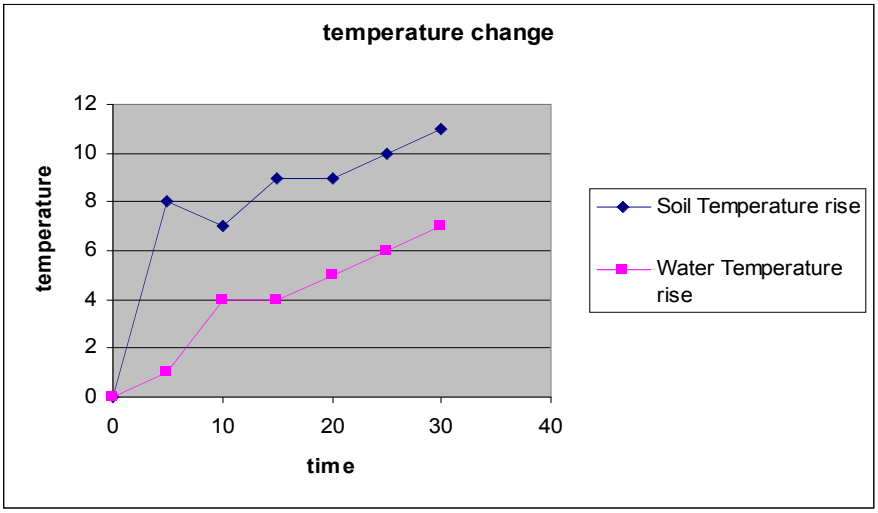
water temperature	
Time	Temperature
0	73
5	74
10	77
15	77
20	78
25	79
30	80

Calculated temperature changes

Soil temperature	
Time	Soil Temperature rise
0	0
5	8
10	7
15	9
20	9
25	10
30	11

water temperature	
Time	Water Temperature rise
0	0
5	1
10	4
15	4
20	5
25	6
30	7

Graph



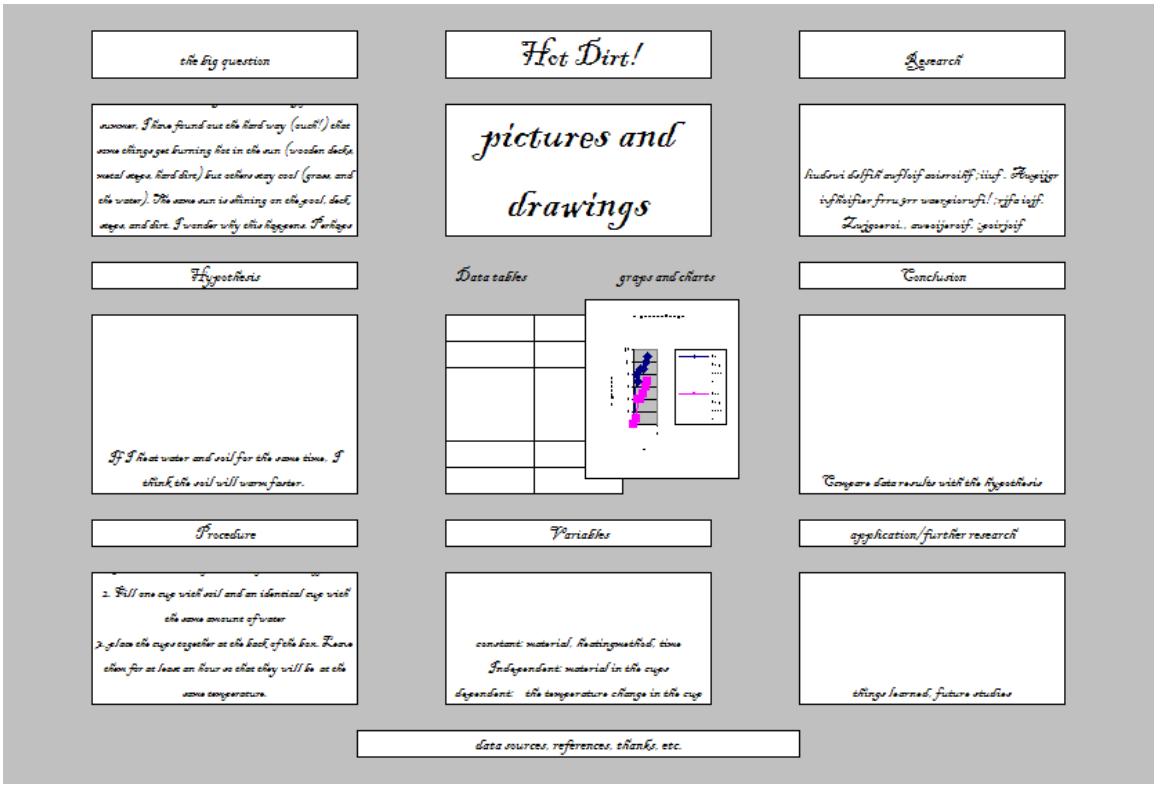
Conclusion

My hypothesis was right! I thought that soil would heat faster than water, and the data collected from my experiment shows that this was what happened. After 30 minutes, the temperature of the soil had risen 11 degrees and the temperature of the water had risen 7 degrees.

Application/further research

In my experiment, water heated more slowly. But at the end of the experiment, the temperature was still rising! I wonder what would have happened if I had let the experiment run on for a longer time?
Also, I would be interested to see if different materials (such as turf or wood chips) behaved differently, and I would like to see if the materials cooled at the same rate.

Board layout:



Science Fair Application 5th

Student:_____Phone:_____

Grade:_____ Teacher:_____

Project Title:_____

Topic: (What is the problem or question you intend to investigate?
This is your Question/Purpose written in a sentence.)

_____

_____

Hypothesis? (This is your guess of what you think will happen. It is written in a sentence.)

_____

I am aware that experiments may use no animal or human testing and no alcohol. Parents are responsible for monitoring the safety of the students.

Junior Scientist Signature (Student) Parent/Guardian Signature

For more information, including the science fair video and a link to the Science Fair Packet, visit the PTA website at HCEPTA.com under the "School Info" tab, then Science Fair.

Important dates:

Oct 23rd	Science Fair Kickoff in classrooms
Oct 23rd	Science Fair Boards for sale in the front office ($4)
Oct 23rd	**Science Fair Instruction Video available online for parents**
Nov 8th	3:00-4:00 Computer Lab and Student Help after school in library
Nov 13th	Science Fair **Projects DUE/Students present to class**
Nov 14th	Science Fair EXPO- Family Viewing 5:30-7:00pm
Nov 15th	Science Fair EXPO- School Viewing 8:00-10:00am (posters go home)