Spring ~~2014~~2016 Home Lab Research Project Name _____

Honors Biology – Jenkins

****This lab has 2 components: the actual lab with a formal lab report, and a creative display of your lab. These 2 components are the 2 summative grades you will earn.**

PART ONE: CONDUCTING THE LAB, WRITING THE PAPER

Instructions:

1. Check out a lab manual from the Honors Biology classroom. You will be picking 1 home lab to do from a list of 4-8 possible options. (The list of options is a separate document you must read.)
   Read through all the options in the lab manual, then put in writing to the teacher which option you want to do.
   ***Only 1 of each type of home lab can be done in each class period, therefore you must reserve your choice.**
   (Take good care of the lab manual – if you damage it, you must pay to replace it!)
   ****The lab manual is meant to be a guide only. You cannot just do the lab as written, fill out the question section and expect to get a passing grade on this assignment. You will be <u>modifying and/or</u> adding to these labs to make them <u>uniquely your own</u>!**

2. Once your home lab choice is approved, and using the lab manual as a guide, develop a problem to investigate in proper scientific method terminology. Remember, this should be in question form.

3. Do background research on the topic. For example, if you are using a type of plant and investigating the effects of fertilizer on the plant, you will need information on fertilizer components, what plants need to grow, the plant type itself you are using, etc.
   *****Be sure to keep track of your sources in proper MLA format, with URL's for websites. You will need this when writing your paper, and when typing up your reference page! You must have a minimum of 3 references, and 1 must not be from the internet!!!**

4. Develop a hypothesis to test from your background research. Please put it in "IF…….THEN…….. format! Remember, it should be a statement, and should not use the words "I" or "We", "Think" or "Believe". State it as a FACT!

5. **Write a set of procedure steps to test your hypothesis. Be sure to make them logical, precise and include units of measurement where needed. Also remember to use ONLY METRIC measure, so if you need to convert units, do it.**
   Pay attention to safety! For example, if parts of your procedure involve chemicals, what should you include as a safety step?
   **** Note: Remember to include a materials list with your procedure!!!**
   ******When you reach this point, bring a rough draft of this work in to Ms. Jenkins for permission to continue! You may not get full credit for your research project if you skip this step!!!!**

6. Design a data table to record your experimental results on as you perform the experiment.
   *Remember to include units of measure on this table, as well as a DESCRIPTIVE TITLE!.

7. Conduct your experiment and record your data.

YOU MUST ALSO HAVE A VISUAL RECORD OF YOUR WORK. TAKE PICTURES AS YOU GO, TO USE IN THE CREATIVE DISPLAY PORTION OF THIS PROJECT.

8. Graph your data on the appropriate style of graph for the type of data. (Line graph? Bar Graph? Pie graph? **Be sure to label each axis, include units of measure, and a DESCRIPTIVE TITLE**!. (You may use more than 1 graph if you did more than 1 trial, but be sure to have a final summary graph, too!)

9. Include a narrative paragraph that discusses what your data and graph show. Also discuss possible sources of error in the lab.

10. Write a conclusion in which you accept or reject your hypothesis based on the data you collected. Be sure to restate your hypothesis in this conclusion. Say if your data supported or did not support your hypothesis.

11. Add 2-3 paragraphs about what worked well, and what did not work well in doing this lab, what you would do differently next time. Also include what further research should be done on this topic and why. Relate the lab to real life.

12. Type up a formal lab report paper that puts your entire home lab into narrative form with data table(s) and graph(s) included.

Be sure to cite sources of information in the background section of your paper in proper MLA format.

Paper Mechanics: Your paper must be:

1. **Times New Roman Font, size 10 or 12, double spaced**
2. **5 – 6 pages long (body of paper). The Title page, Table of Contents and Reference page do not count in this 5-6 pages)**
3. **Include a separate Title page (Title of project, name, class, date)**
4. **Include a separate Table of Contents – identify where each part of the scientific method is located in your paper and where your tables and graphs are.**
5. **Include a separate reference page in proper MLA format, with URL's for websites. and that has your entries in alphabetical order. (See me if you do not know how to do this!)**

PART 2: CREATIVE DISPLAY

INSTRUCTIONS FOR THE CREATIVE DISPLAY COMPONENT OF YOUR PROJECT

1. Make a tri-fold display board of the entire lab report, similar to a Science fair board.

2. The trifold board must include these areas:
   a. Title of project
   b. Research problem
   c. Hypothesis
   d. Procedure – in bulleted steps
   e. Data table(s) and graph(s)
   f. Conclusion
   g. Illustrations/ and/or photographs of the project

3. All parts of this display must be typed!!!

4. **Do not just make a copy of your research paper to stick onto a board**. Your paper will be too wordy. Your display needs to be more concise. Use bulleted lists for procedure, for example, rather than paragraphs.
5. See the rubric for how this part of the project will be graded.

HONORS BIOLOGY HOME LAB
Formal Lab Report Grading Rubric

NAME _____

TITLE OF HOME LAB: _____

TOPIC	POINTS POSSIBLE	YOUR POINTS
I. Preapproved Procedure with Ms. Jenkins' initials on it.	10	_____
Ii. Final report: the final report will be graded on each of the following:		
a. Problem -question form (2 1/2 pts.) - accurate (2 1/2 pts.)	5	_____
b. Background information** - minimum of 2 paragraphs (2 pts.) - descriptions of materials used and properties That may affect the lab's outcome~~otucome~~ (8 pts)	10	_____
c. Hypothesis statement -statement form (1 pt.) - doesn't use: "I~~i~~ think", "will be", etc. (1 pts.) - stated as a fact (1 pt.) - proper if…….then…… format (2 pts.)	5	_____
d. Procedure - step format (2 pts.) - logical sequence of steps (5 pts.) - includes materials list (5 pts) - easy to follow, complete, well explained (6 pts.) - quantitative, objective measure included (2 pts.) (if applicable for type of lab chosen)	20	_____
e. Data and observations - logical format for recording data (i.e.. Table or chart and , graph) (5 pts.) - complete data for each test trial (10 pts.) - objective, quantitative data included (2 pts.) - data understandable (rating scales or units included when appropriate, descriptive title on tables and graphs(3ts.)	20	_____
f. Conclusion - minimum of 4 paragraphs (4 pts.) - restates original hypotheses (2 pts.) - does not use "hypothesis was correct, or failed", but "supported or not supported", or "accepted/rejected" (2 pts.) - relates the background information to an explanation of why the lab data collected was like it was (5 pts.) - analyzes what worked well, what did not, and what you would do differently next time (4 pts.) - suggests ideas for further research on the topic (3 pts.)	20	_____
g. Paper mechanics - grammar (2 pts.) - spelling and punctuation (2 pts.) - typed (2 pts.) - include a separate reference page in proper MLA format, with URL'S for websites. It should have your entries in alphabetical order. (4 pts.)	10	_____
TOTAL:	100	_____

**Note: You must cite sources in MLA Format within this section. Otherwise, you will lose 10 points from the paper.~~——~~

~~COMMENTS:~~

SPRING 2015 HOME LAB NAME _____

RUBRIC FOR TRI-FOLD CREATIVE DSIPLAY TITLE OF LAB _____

*NOTE: ANY TOPIC THAT IS COMPLETELY MISSING AUTOMATICALLY WILL SCORE "0" POINTS

TOPIC Maximum Point Values	BELOW AVERAGE TO AVERAGE	AVERAGE TO GOOD	GOOD TO EXCELLENT	YOUR POINTS
OVERALL APPEARANCE:				
3 SIDED BOARD (5)	FLAT BOARD (1)	2 SIDED (3)	3 SIDED (5)	
ALL TYPED (10)	NONE TYPED (7)	SOME TYPED (8)	ALL TYPED (10)	
BOLD HEADINGS (5)	POOR HEADINGS (1)	ORDINARY HEADINGS (3)	STAND OUT HEADINGS (5)	
SEPARATE TITLE (5)	HARD TO FIND (1)	SEPARATE TITLE (3)	STAND OUT TITLE (5)	
SCIENTIFIC METHOD:				
PROBLEM (10)	UNCLEAR (7)	CLEAR, NOT ? (8)	CLEAR, ? FORMAT (10)	
HYPOTHESIS (10)	AMBIGUOUS (7)	POOR WORDING (8)	CLEAR/STATEMENT(10)	
MATERIALS LIST **(5)**	NO/POOR LIST (3)	MAIN LIST (4)	COMPLETE LIST (5)	
PROCEDURE (10)	AMBIGUOUS (7)	MINOR ERRORS, TOO WORDY (8)	WELL EXPLAINED, YET **CONCISE** (10)	
RESULTS (10)	POORLY ORGANIZED (7)	SOME ORGANIZATION (8)	WELL ORGANIZED (10)	
CONCLUSION (10)	INCOMPLETE (7)	INCOMPLETE/REFERS TO HYPOTHESIS (8)	COMPLETE/ REFERS TO HYPOTHESIS (10)	
DATA: CHART/GRAPH RESULTS IN (10) LOGICAL FORMAT	INADEQUATE GRAPHS AND/OR CHARTS, NO TITLE OR POOR TITLES (7)	ADEQUATE GRAPHS AND/OR CHARTS (8)	MANY GRAPHS AND/OR CHARTS W/ GOOD TITLES (AND AXIS LABELS) (10)	
OTHER INFORMATION:				
SPELLING/GRAMMAR **(5)**	6 + ERRORS (3)	1 - 5 ERRORS (4)	NO ERRORS (5)	
METRIC MEASUREMENT (5)	ENGLISH UNITS/ NO UNITS (3)	MOSTLY METRIC (4)	ALL METRIC, ALL UNITS INCLUDED (5)	
MAXIMUM TOTAL (100)				

COMMENTS: