First Trimester Physics Project Description

Introduction:

This trimester students will design, build and present an experiment demonstrating the relationship between two physical variables. Students will receive a question asking about the relationship between their two variables on the fifth day of school. The project is worth 10% of the student's trimester grade and is divided into the three assignments listed below.

Blueprint: (Due 1/11/11):

The blueprint proposes the experiment that the student feels will successfully determine the relationship between the two variables. The blueprint consists of 4 sections: a scaled drawing, a parts list, a variable analysis table, and a graph showing the trend of the expected data. The drawing may be done in pen on an ordinary 8.5 x 11 inch sheet of paper and should be scaled with all parts of the experimental set-up labeled. The parts list is a table or spreadsheet listing the materials used for the experiment, their price and the source where they will be purchased or found. The variable analysis table identifies the independent, dependent and control variables of the experiment and describes how the independent variable is changed, the dependent variable is measured and the control variable(s) is/are held constant. The graph shows the independent and dependent variables on the correct axes, the magnitude and units that are expected for these variables, and a curve showing the trend of the expected data. A rubric can be found at the class website that will be used to grade this assignment.

Peer Review (Due 2/15/11):

During the peer review students will set up their experiment and write-up to be evaluated by another student. The evaluation will have the peer perform the experiment and compare results to previous data. As such the experiment should be robust so as not to break and be consistent in the data it collects. The student's ID number should appear on both the write-up and the device. Students will be given 20 minutes to set up their project and papers for the review. Projects not set up in this time will receive a zero.

The write-up consists of introduction, procedure, results, conclusion and experimental error sections. In the introduction, the original question should be stated, the independent, dependent and control variables identified and the changing, measuring and control of these variables described. The procedure consists of a materials list, step by step directions of how the experiment is done and a labeled diagram or photos showing the experiment being performed. Steps should follow a statement-explanation-expectation (SEE) format and refer to the diagram when useful. The results section shows five or more data points from the experiment in tabular and graphical form. Tables should include variable name and units used. For calculated quantities show the formula used and one sample calculation. Graphs should include variables on the correct axes, units and consistent scaling. The conclusion should state the relationship between the independent and dependent variables and how the data collected during the experiment demonstrates this relationship.

Students from another physics class will grade the student's project using the peer review rubric. A student may appeal this grade by setting up the experiment and write-up by 3:00 PM on 11/11 for the teacher to review. The teacher given grade is final whether higher or lower than the previous grade. A template and grading rubric is available online at the class website.

Presentation (Due 2/24 – 2/25/11):
Students present their experiment visually using a poster or poster board. Poster should have sections for the original question and the variable analysis table, the procedure written in a SEE format, results including graphs and tables, and a conclusion which includes a discussion of how the results support the conclusion, a correct and complete error analysis and a statement as to the validity of the conclusion given the error and resulting error bars. A template and rubric is available online at the class website.

Grading:
The following percentages reflect how much each assignment is worth of the final project grade.

Blueprint----------20%
Peer Review----------30%
Presentation----------50%

Deadlines:
No late work will be accepted for any reason including excused absence.

My experiment question is:

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