Model Project

Eighth Grade – House B
Interdisciplinary Study

Students will create an interdisciplinary project related to a model of their choice.

This project is designed to reinforce and teach the skills needed to complete long-term inter-disciplinary projects and to give them an idea of our expectations when they are asked to complete projects in our cluster.

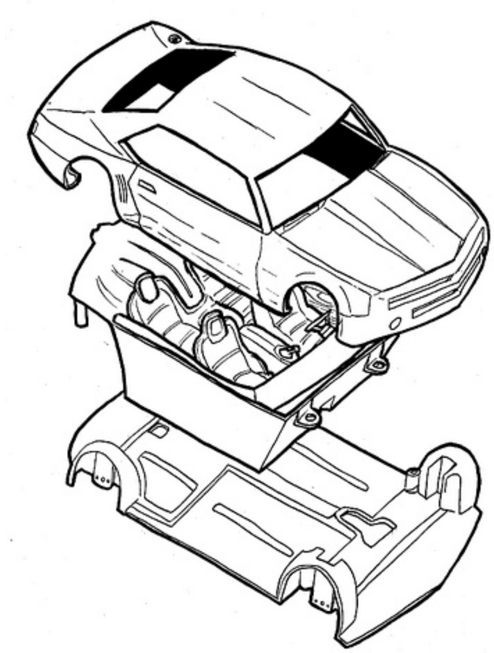
History – Students will do either a History Fair project or an American history project. They may want to use the model as "double duty" for both the history project and this model project. If so, they should choose models that are related to their topics. The History Fair topic this year is: Revolution. The American history project should be on any topic in American history from 1607 to 1877.

Construction of Model – Science

It is important that students practice learning to follow detailed procedures correctly.
The completed model will be graded by these standards. The aesthetics and quality of the finished model and display card are important.

4 – Exemplary: THE WORK IS EXEMPLARY. All moving parts, if any, move. No glue or blemishes are present in the work. Decals, painting or other decoration adds to the overall appearance and originality of work. Display card is neat, with background design that compliments model or theme.

3 – Proficient: THE WORK IS ACCEPTABLE BUT COULD BE IMPROVED. Some moving parts are glued solid, some glue or blemishes show, and decals or painting may need to be of higher quality. Display card is neat but with no design or theme to complement model.



2 – Novice: THE WORK SHOWS FLASHES OF QUALITY. All parts are glued solid, some parts not used and obvious areas for improvement of decals, painting and decoration. Display card has no theme and has numerous errors in grammar, spelling, and punctuation.

1 – Beginner: Model is incomplete; glue and blemishes showing throughout; no painting, decorating, or decals. THE WORK IS AT THE BEGINNING STAGE. Display card is missing or so full of errors that it can't be interpreted.

Model Presentation Card - History

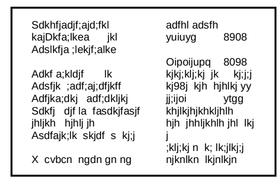
The student is to research the history of the object modeled, including such information as how and where it originated, people who contributed to its design, its historical significance, and other information as is appropriate to adequately and accurately portray the object.

The student may wish to choose a model which is related to his/her history fair topic. If so, it can be used as part of the history fair project.

The research should include:

- One internet source
- One text source which can be information from the box.
- Minimum of five facts from each source, for a total of at least ten facts
- Facts are to be summarized or paraphrased

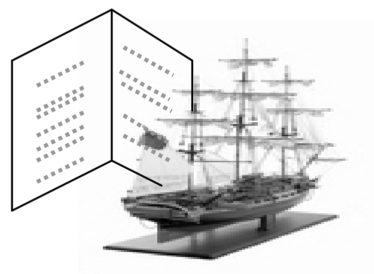
The information should be typewritten and formatted to be displayed on a single 8½ x 11" page, landscape orientation, with two columns **à à à**
Cut out the two columns and paste them onto cardstock.
Mr. Scott will give everyone a piece of cardstock to use.
Fold your card in half, from top to bottom.



Your card should include:

- Name of item modeled
- Scale of model
- Dimensions of full-sized item
- Year original item was created
- Designer or manufacturer of original
- Relevance in history
- Be sure to cite your sources
- On the back of the card – write your name and the period that you have history

Your finished project will be displayed:

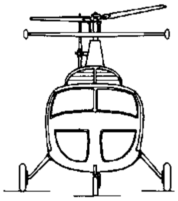


Due dates

You will be graded on these.
Work that is late will be for reduced credit. Work that is very late will not be accepted.

Blue Day	***Green Day***	
Aug 25	Aug 26	Have the model. Bring the instructions ***[<u>not</u> the model itself]*** to science class.
Sept 9		All work is due for everyone, regardless of blue/green day. Turn in:

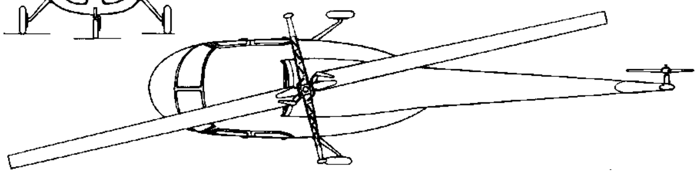
- Completed model
- Display card
- Math and the Model
- Instruction sheet that came with the model



Math and the Model

Name: ____

Math at period: ___________



Make a photocopy of the box or instructions where it indicates the scale (ratio) of your model. Attach the photocopy to this assignment.

Write the scale (ratio) of your model as indicated on the box (or in the instructions): ________________________
[include the units, if given on the box]

Transforming from the model to the full-sized:

Measurement

- Measure the length, width, and height of your model.
  If your scale is in inches, use inches to measure, using fractions for partial inches.
  If your scale is in centimeters, use centimeters with decimals for millimeters.
  If your scale does not give units, use centimeters.
  Write the measurements in the chart below.
- Write proportions to show how to do this.
  Example of how to set up your proportion:

$$\frac{\text{Length of model}}{\text{Length of full-sized}} = \text{scale (ratio)}$$ *written as a fraction*

- Calculate the dimensions of the full-sized object,
  using the same units as the scale.
- Simplify the units of the full-sized object
  - change centimeters into meters (using decimal rounded to the nearest tenth), or
  - change inches into feet and round to the nearest foot.

Please check one about the scale of the model:

___ The scale does not state units.
Example: Scale = 1/15

___ The scale states units and they are the same.
Example: Scale = 1 inch to 15 inches

___ The scale states different units
Example: Scale = 1 inch to 15 feet

Only if yours is the last one (different units), you should re-write it all in the same units.
Use whichever unit is smaller.
If the scale is written in inches and feet, convert it to all inches.
If the scale in written in centimeters and meters, convert it all to centimeters.
Example:
Box says 1inch = 3 feet.
You should convert your scale to: 1 in / 36 in

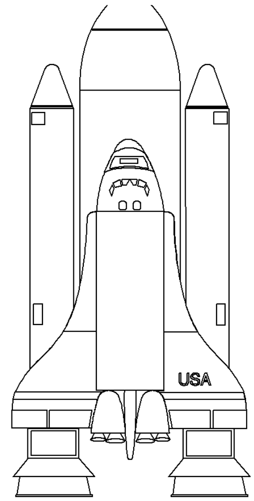
Write ***your*** converted scale here: ________________

In all the math exercises, **use the converted scale**, not the original one that was on the box.

	Model	***Proportion***	***Full-sized*** *[state units]*	***Simplified*** *[state units]*
Length				
Width				
Height				

Show your calculations/process here:

Conversion



Convert the units of the full-sized object into the other system of measurement, English or metric.

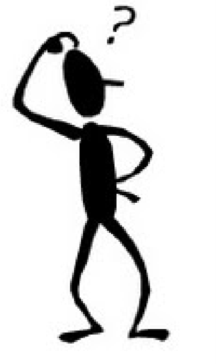
- If you have used inches, convert to centimeters by multiplying the inches by the factor 2.5
- If you have used centimeters, convert to inches by multiplying the centimeters by the factor 0.4
- Simplify your converted units
  - change centimeters into meters (using decimal rounded to the nearest tenth), or
  - change inches into feet and round to the nearest foot.
- **Beware: You will need this information for your display card for history class. Therefore, be sure that you write it down somewhere else before you turn in your math assignment.**

	Full-sized *[state units]*	***Factor***	***Full-sized, converted*** *[state units]*	***Full-sized, simplified*** *[state units]*
Length				
Width				
Height				

Show your calculations/process here:

Draw a sketch of your model. Label the length, width, and height and give the dimensions:

Transforming from the full-sized to the model:



You: If you made a statue of yourself, how tall would the statue be if the statute was standing next to your model, and everything was proportional?

- Measure your height to the nearest millimeter and give your answer in centimeters, with a decimal as needed for millimeters: _____________ cm
- Using the same scale as your model, write an algebraic statement to show how to calculate how tall your statute would be.

Statement in English:

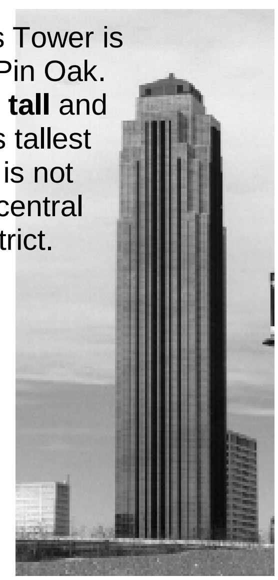
The height of my statue is the scale times my height.

Rewrite the statement in algebra.
To do so, put in a variable for the height of your statue, and put in the model's scale and your actual height. And "is" becomes "=".

- Your re-written algebraic statement is an equation. Solve the equation to determine the height of your statue, showing all steps of your calculations. Round your answer to the nearest millimeter, which in this instance would be one decimal place. *Do not use a proportion.*

How tall would your statue be? _______________ cm

The Williams Tower is visible from Pin Oak. It is **901 feet tall** and is the world's tallest building that is not located in a central business district.



Williams Tower [formerly Transco Tower]

If you made a model of the Williams Tower to display beside your model, how tall would the Tower model be, if everything was proportional?

- Using the same scale as your model, write an algebraic statement to show how to calculate how tall theTower model would be.

Statement in English:

The height of the Tower model is the scale times the Tower's height.

Rewrite the statement in algebra.
To do so, put in a variable for the height of the Tower, and put in the model's scale and the Tower's actual height. And "is" becomes "=".

- Your re-written algebraic statement is an equation. Solve the equation to determine the height of your statue, showing all steps of your calculations. Round your answer to the nearest millimeter, which in this instance would be one decimal place. *Do not use a proportion.*

How tall would the tower model be, rounded to the nearest foot? _______________ feet

Model Project

Eighth Grade – House C
Interdisciplinary Study

Parents:

This is the first of many home study activities we would like you and your child to complete together. We will introduce concepts and set the projects going, but it is our hope that through these activities we can make a connection between the home and school. In the course of the year, you may be asked to have your child teach you something they have read, or help perform an experiment, or even come join us in a car caravan to a field study. Whatever the activity may be, your active participation is needed and is appreciated.

For this first activity we are asking our students to build a model. The model can be any kind, a car, a ship, a plane, etc., but we do ask you to be sure it is ***at least a skill level of 2*** and ***not the quick-build or metal or snap-type. Should be age 14 and up.*** Hobby Lobby and Michaels have a selection of models at inexpensive prices. There are also model shops nearby: G&G Model Shop at 2522 Times Blvd in the Rice Village and M&M Hobby Center at 6703 Chimney Rock, near the Bellaire Triangle.

This was listed on the cluster supply list which was distributed in May and again at Charger Camp. If you have not yet acquired your model, please do so promptly.

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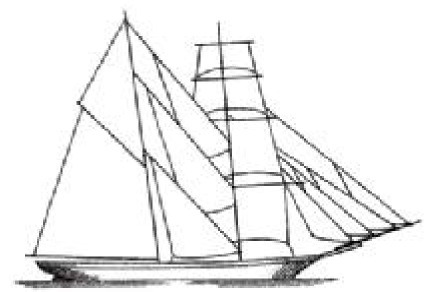

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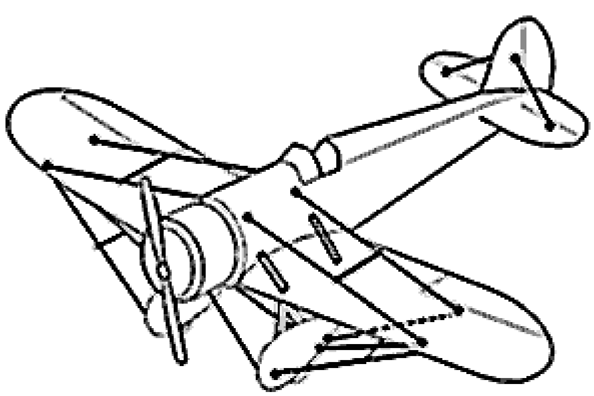

Specific information on the aspects of the project will be distributed in classes during the next few days.

Students should open the box and bring the instructions only *[**not the model itself yet**]* to science class on:

August 25 [blue day science class] or
August 26 [green day science class]