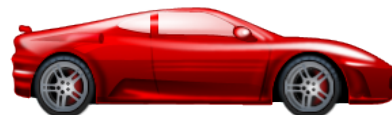
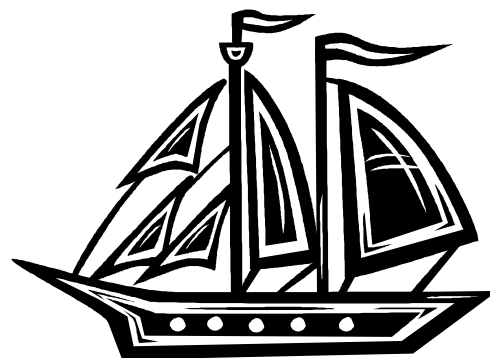


ELKHART COUNTY



4-H

MODEL



BUILDING



Some manuals are used more than one year. An additional copy will cost \$1.00.



UPDATED: DECEMBER 2018

REQUIREMENTS FOR 4-H MODEL BUILDING PROJECT AND EXHIBIT


1. Read and study the information contained in "Tools, Tips, and Techniques" in this 4-H manual. Use this information as a guide in constructing your model.
2. Select and construct at least one model to exhibit in the following levels.
3. Grade will determine the requirements for the project. The grade level is determined by the grade of the 4-H'er AS OF THE CURRENT ENROLLMENT YEAR.
 - LEVEL A (Grades 3 & 4)
 - LEVEL B (Grades 5 & 6)
 - LEVEL C (Grades 7-9)
 - LEVEL D (Grades 10-12)
4. A completed record sheet is not required to be exhibited with the display, but must be signed by a club leader and kept with the club member's records.
5. For State Fair purposes, Models are classified as an Arts and Crafts project. Two models will be selected for exhibit at the Indiana State Fair.
6. ALL MODELS MUST BE PLACED UPON A FIRM DISPLAY BOARD (SUCH AS BOARD, STYROFOAM, CARDBOARD, MIRROR, ETC.) NO LARGER THAN 1 INCH AROUND THE MODEL. (This is for handling; it will not be judged). The only exception to this is for a diorama which should be no larger than 36"x36".
 Hint: Place and then glue toothpicks or small pieces of wood on each side of the wheel of the model on to the board. After the board and toothpicks are solid, place the model between the toothpicks. This process will keep the model from moving freely.
7. 4-H models may be exhibited only one year and must be completed after the previous fair. Models should be more complex in design than that assembled in previous year. As the 4-H'er progresses through the model project, the models chosen for exhibit should be of a greater difficulty to construct.
8. SINCE NO DIE CAST (METAL) MODELS ARE ACCEPTED AT STATE FAIR, ELKHART COUNTY WILL NOT ACCEPT DIE CAST MODELS FOR EXHIBIT.
9. All model exhibits should have a completed State Fair 4-H Craft Information Card (4-H-618a-W) included with the county exhibit.
10. If the model is being built from a kit, include a copy of the instructions with the 4-H Craft Information Card.
11. Complete the Model Information Sheet and include it with your exhibit (sample):

Grade finished _____ Skill Level of Model _____ Manufacturer of the Model Kit _____ Name of the Kit _____ Exhibitor Name _____ Club _____ Model Information Sheet	This is an example. The following information needs to be placed on the display board: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 50%; padding: 2px;"> Ravell Snap Tite F117 Nighthawk Skill Level 1 </td> <td style="width: 50%; padding: 2px;"> Revell Model Street Burner, 69 Camero Z-28 Skill Level 2 </td> </tr> <tr> <td style="padding: 2px;"> Jada Big Time Muscle 07 Shelby GTO 10+ </td> <td style="padding: 2px;"> Revell SR 71 Black Bird Skill Level 2 </td> </tr> </table>	Ravell Snap Tite F117 Nighthawk Skill Level 1	Revell Model Street Burner, 69 Camero Z-28 Skill Level 2	Jada Big Time Muscle 07 Shelby GTO 10+	Revell SR 71 Black Bird Skill Level 2
Ravell Snap Tite F117 Nighthawk Skill Level 1	Revell Model Street Burner, 69 Camero Z-28 Skill Level 2				
Jada Big Time Muscle 07 Shelby GTO 10+	Revell SR 71 Black Bird Skill Level 2				

← Cut along the center line.


LEVEL A (Grades 3 & 4)

1. Build a simple model - a snap type kit or model that requires small amounts of glue.
2. Use only the parts furnished in the kit.
3. Use only plastic or wood models.
4. Decals are optional.
5. Painting of the model is optional.
6. Place model on a display board (see requirement 6 on page 1).
7. Complete the Models information sheet and include it with your exhibit.

Grade finished _____ Skill Level of Model _____ Manufacturer of the Model Kit _____ Name of the Kit _____ Exhibitor Name _____ Club _____ Model Information Sheet	This is an example. The following information needs to be placed on the display board: <table border="1" style="width: 100%; margin-top: 5px;"> <tr> <td style="width: 50%;"> Ravell Snap Tite F117 Nighthawk Skill Level 1 </td> <td style="width: 50%;"> Revell Model Street Burner, 69 Camero Z-28 Skill Level 2 </td> </tr> <tr> <td> Jada Big Time Muscle 07 Shelby GTO 10+ </td> <td> Revell SR 71 Black Bird Skill Level 2 </td> </tr> </table> <div style="text-align: center; margin-top: 5px;">  Cut along the center line. </div>	Ravell Snap Tite F117 Nighthawk Skill Level 1	Revell Model Street Burner, 69 Camero Z-28 Skill Level 2	Jada Big Time Muscle 07 Shelby GTO 10+	Revell SR 71 Black Bird Skill Level 2
Ravell Snap Tite F117 Nighthawk Skill Level 1	Revell Model Street Burner, 69 Camero Z-28 Skill Level 2				
Jada Big Time Muscle 07 Shelby GTO 10+	Revell SR 71 Black Bird Skill Level 2				


LEVEL B (Grades 5 & 6)

1. Build a model that is more complex than the previous years.
2. Use only the parts furnished in the kit.
3. Plastic or wood kits are acceptable.
4. Decals are required if furnished in the kit.
5. **Painting of the exterior or main structures of the model is *REQUIRED*.** The main structure of the model consists of the car body, aircraft wings and fuselage, and the boat hull.
6. Place model on a display board (see requirement 6 on page 1).
7. Complete the Models information sheet and include it with your exhibit.

Grade finished _____ Skill Level of Model _____ Manufacturer of the Model Kit _____ Name of the Kit _____ Exhibitor Name _____ Club _____ Model Information Sheet	This is an example. The following information needs to be placed on the display board: <table border="1" style="width: 100%; margin-top: 5px;"> <tr> <td style="width: 50%;"> Ravell Snap Tite F117 Nighthawk Skill Level 1 </td> <td style="width: 50%;"> Revell Model Street Burner, 69 Camero Z-28 Skill Level 2 </td> </tr> <tr> <td> Jada Big Time Muscle 07 Shelby GTO 10+ </td> <td> Revell SR 71 Black Bird Skill Level 2 </td> </tr> </table> <div style="text-align: center; margin-top: 5px;">  Cut along the center line. </div>	Ravell Snap Tite F117 Nighthawk Skill Level 1	Revell Model Street Burner, 69 Camero Z-28 Skill Level 2	Jada Big Time Muscle 07 Shelby GTO 10+	Revell SR 71 Black Bird Skill Level 2
Ravell Snap Tite F117 Nighthawk Skill Level 1	Revell Model Street Burner, 69 Camero Z-28 Skill Level 2				
Jada Big Time Muscle 07 Shelby GTO 10+	Revell SR 71 Black Bird Skill Level 2				

LEVEL C (Grades 7-9)

1. Build a model that is more complex than the previous years.
 Example: Cars - hoods that lift showing engine details
 Boats - rigging and with detailed painting
 Airplanes - detailed painting or camouflage painting
2. You can add parts not furnished in the kit to the model (customize).
3. Plastic or wood kits are acceptable.
4. Decals are required if provided or use customized/detailed painting.
5. **Entire painting of the model is required** - interior and exterior (chrome parts are excluded). Detail painting - car interiors, motors, chassis parts, and aircraft marking on the wings or superstructure. If the model is made of pre-colored plastic, it still needs to be painted.
6. Snap together kits will be acceptable provided they have been glued and customized with highly detailed painting.
7. Dioramas may be exhibited at this level. A diorama is a model with a display theme around the model. The whole scene will be judged. All of the models in the diorama must have been made since the last fair.
8. Place model or diorama on a display board (see requirement 6 on page 1).
9. Complete the Models information sheet and include it with your exhibit.


Grade finished _____ Skill Level of Model _____ Manufacturer of the Model Kit _____ Name of the Kit _____ Exhibitor Name _____ Club _____ Model Information Sheet	This is an example. The following information needs to be placed on the display board: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 50%; padding: 2px;"> Revell Snap Tite F117 Nighthawk Skill Level 1 </td> <td style="width: 50%; padding: 2px;"> Revell Model Street Burner, 69 Camero Z-28 Skill Level 2 </td> </tr> <tr> <td style="width: 50%; padding: 2px;"> Jada Big Time Muscle 07 Shelby GTO 10+ </td> <td style="width: 50%; padding: 2px;"> Revell SR 71 Black Bird Skill Level 2 </td> </tr> </table> <div style="text-align: center;">  <p>Cut along the center line.</p> </div>	Revell Snap Tite F117 Nighthawk Skill Level 1	Revell Model Street Burner, 69 Camero Z-28 Skill Level 2	Jada Big Time Muscle 07 Shelby GTO 10+	Revell SR 71 Black Bird Skill Level 2
Revell Snap Tite F117 Nighthawk Skill Level 1	Revell Model Street Burner, 69 Camero Z-28 Skill Level 2				
Jada Big Time Muscle 07 Shelby GTO 10+	Revell SR 71 Black Bird Skill Level 2				

LEVEL D (Grades 10-12)

1. Build a model that demonstrates a high degree of modeling skill.
2. You can add parts to the model not furnished in the kit (customize).
3. Members are to assemble a customized model of their own choice. Members are to make some parts of their models other than those which are included in the kit. All parts of the model must be painted as required.
4. Plastic or wood kits are acceptable.
5. Decals are required if furnished or customized painting if no decals are furnished.
6. **Entire painting of the model is required** - interior and exterior. Detailed painting is encouraged. Painting may include weathering of the model (chrome parts are excluded). Detail painting - car interiors, motors, chaises parts, and aircraft marking on the wings or superstructure. If the model is made of pre-colored plastic, it still needs to be painted.
7. You may design or scratch build an original model not from a kit in this level. The original design or plan needs to be included with the exhibit.
8. Radio controlled models are permitted in this level, although radio controlled models utilizing preformed Styrofoam/plastic for a majority of the construction is not recommended. **Example:**
 - Airplanes with pre-formed wings and fuselage.
 - Cars and trucks in which the entire body has been pre-formed.
 - Boats/ships which the hull and the deck are pre-formed together.

Transmitters are required for judging and need to be taken home following judging.

9. Models that have working parts and lights, etc. should be displayed in a complete working form (batteries may be removed after judging).
10. Models involving "live" steam will not be "fired". They will be judged on construction techniques and appearances.
11. Dioramas may be exhibited at this level. A diorama is a model with a display theme around the model. The whole scene will be judged. All of the models in the diorama must have been made since the last fair.
11. Place model or diorama on a display board (see requirement 6 on page 1).
12. Complete the Models information sheet and include it with your exhibit.

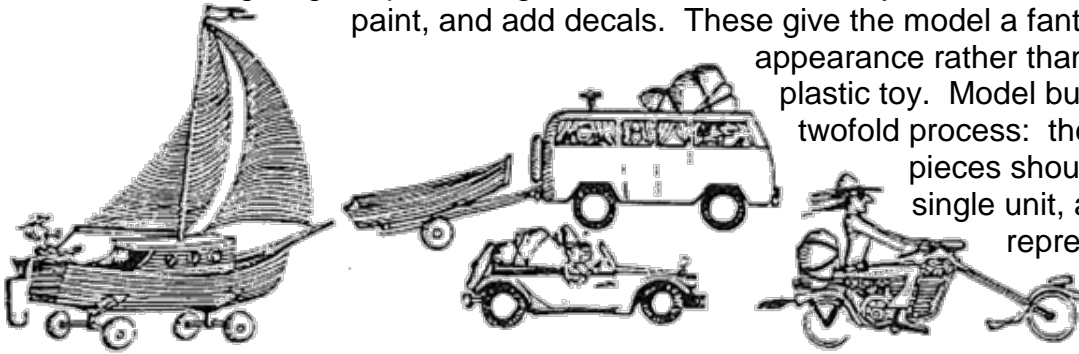
Grade finished _____ Skill Level of Model _____ Manufacturer of the Model Kit _____ Name of the Kit _____ Exhibitor Name _____ Club _____ Model Information Sheet	This is an example. The following information needs to be placed on the display board: <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;"> Ravell Snap Tite F117 Nighthawk Skill Level 1 </td> <td style="width: 50%;"> Revell Model Street Burner, 69 Camero Z-28 Skill Level 2 </td> </tr> <tr> <td> Jada Big Time Muscle 07 Shelby GTO 10+ </td> <td> Revell SR 71 Black Bird Skill Level 2 </td> </tr> </table>  Cut along the center line.	Ravell Snap Tite F117 Nighthawk Skill Level 1	Revell Model Street Burner, 69 Camero Z-28 Skill Level 2	Jada Big Time Muscle 07 Shelby GTO 10+	Revell SR 71 Black Bird Skill Level 2
Ravell Snap Tite F117 Nighthawk Skill Level 1	Revell Model Street Burner, 69 Camero Z-28 Skill Level 2				
Jada Big Time Muscle 07 Shelby GTO 10+	Revell SR 71 Black Bird Skill Level 2				

WELCOME TO 4-H MODEL BUILDING!

This project will allow you to express your creative talents by assembling a replica of a car, boat, motorcycle, etc. and adding your own finishing touches.

There are two main qualities you must master to successfully complete a model. The first is patience, and the second is discipline. With these two qualities you can put together a model that will look dynamite! Model building is much more than gluing the pieces together. You must carefully assemble the pieces,

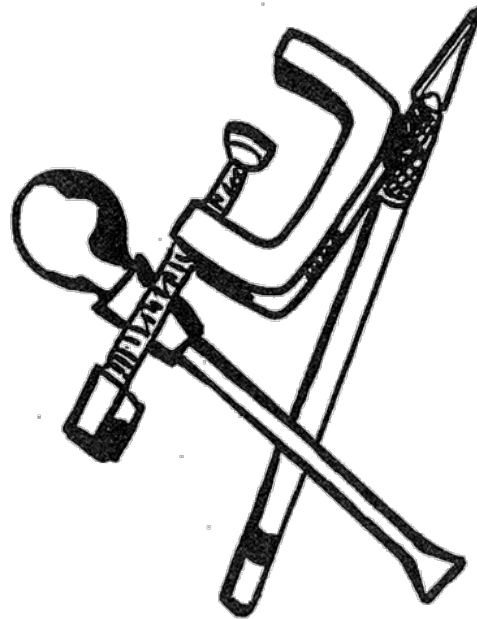
paint, and add decals. These give the model a fantastic appearance rather than the look of a plastic toy. Model building is a twofold process: the plastic pieces should appear as a single unit, and it should represent the full-size object.



TOOLS, TIPS, AND TECHNIQUES . . .

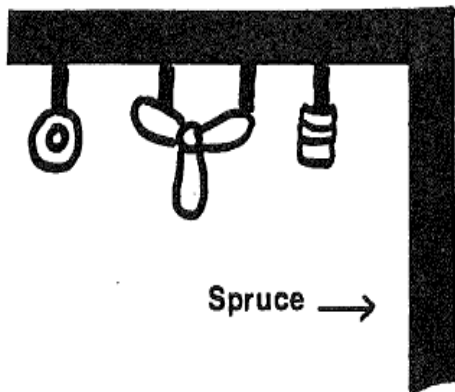
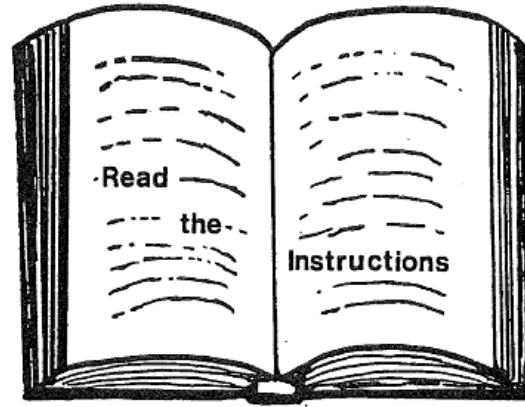
TOOLS OF THE TRADE . . .

- hobby knife
- jeweler's file (round & half-round)
- filecard
- toothbrush
- tweezers
- needle nose pliers
- clothespins (pincher type)
- C-clamp
- paintbrushes—0, 00, 8
- toothpicks
- black electrical tape
- emery board
- extra fine sandpaper
- steel wool
- rubber bands
- metal ruler
- dowel rod
- airbrush
- spray paint



IN THE BEGINNING . . .

The first thing you'll need is a work area. A flat table is necessary, and it should be protected with paper or plastic. Be as neat as possible; remove any excess glue or paint, before it hardens, from the table or tools. Read the instructions and plans carefully before you begin to assemble the model. There is a sequence to follow when putting the model together. Model parts are usually numbered; don't remove the parts from the spruce until you know where they fit.



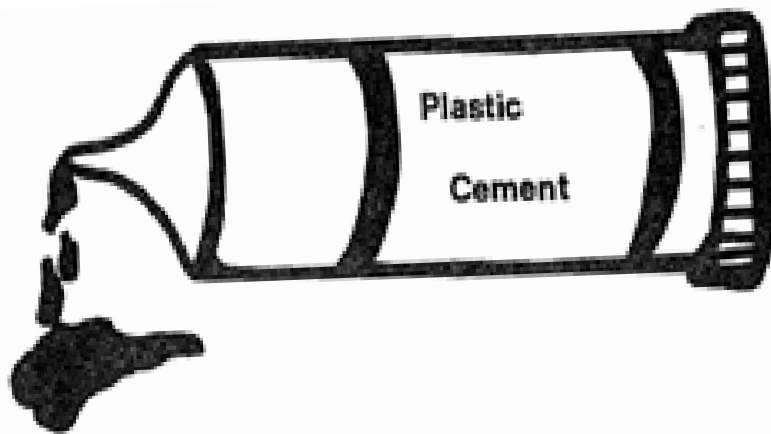
The spruce can be a better holding tool than tweezers for some parts. You may even wish to paint some parts while they are still on the spruce.

PREPARING THE PARTS . . .

After removing the parts from the spruce, use a hobby knife or file to remove excess plastic resulting from the spruce. A round jeweler's file can be used to smooth holes and slots. Also, test to see if the parts fit together; they should fit snugly.

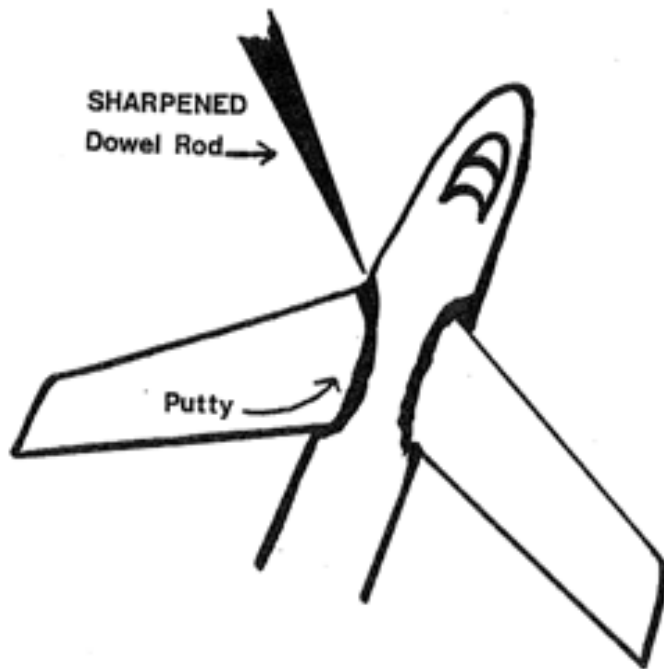
GETTING IT ALL TOGETHER . . .

Plastic cement is used to bond the model pieces together, and only a small amount is needed to join the pieces. Plastic cements are solvents that actually melt the plastic. When the solvents evaporate, it leaves the dissolved surfaces of the plastic joint fused together.



There are two types of plastic cement: a thick type that comes in a tube, or a clear liquid that comes in a bottle. Use a toothpick as an applicator. It is difficult for beginners to apply cement directly from the tube. Besides joining large parts together, cement can be used on small parts that don't fit snugly in place. Be careful not to use too much plastic cement, and never use it as a substitute for putty when filling gaps. The plastic cement can cause glue sinks or evaporate and re-expose the gaps.

While drying the pieces, use rubber bands, masking tape, or clothespins (pincher type), or a C-clamp to hold the pieces together.



PUTTY AROUND . . .

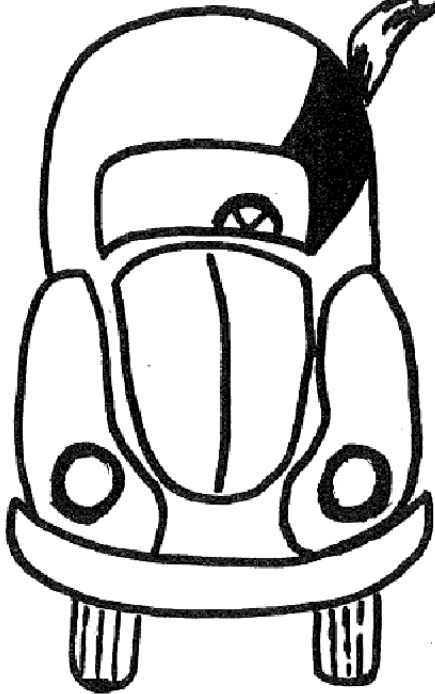
After drying, you may discover that there may be ridges and gaps in the joints and seams. Use a hobby knife and scrape the surface until it is smooth. An emery board and extra fine sandpaper must be used to obtain a smooth appearance. Thin putty may be needed to fill in some gaps or to build up a ridge. Use a sharpened dowel rod to apply the putty. After the putty has completely dried, filing and sanding must be done. If there are small scratches in the finish, use metal or silver polish to rub out scratches. Toothpaste will also take out any scratches.

UNDERCOATING . . .

Before painting, wash off grease and oil with lukewarm water and mild detergent. Apply an undercoat of a flat neutral color (gray or white). The undercoat should be the same type as the finish paint. Undercoating can be applied by a brush, spray can, or air brush. It is important to let the undercoating dry overnight before touching up any flaws or scratches. Reapply undercoating where flaws were found. Wash the model again to clear away any residue.

PAINTING . . .

This can transform your model into a replica of a real-life object. If you have done the proper job with the putty and undercoating, painting is a must! Choosing the correct paint is a difficult task. Many paints have ingredients in them that can destroy a plastic surface. There are paints made for plastic surfaces that will not harm the surface, but they are not often



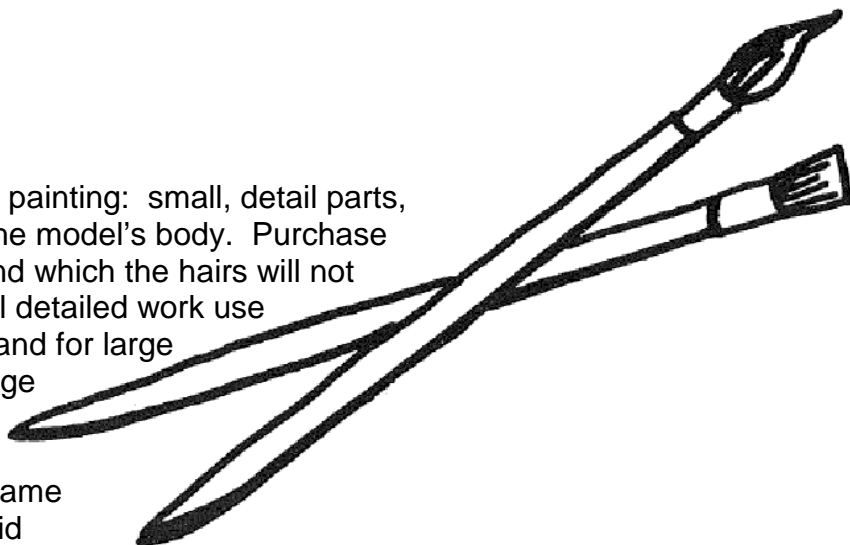
labeled. Ask the hobby shop owner for advice on what type of paint is safe for your model, or learn from experience.

There are two types of paint finishes: glossy and flat. Glossy finishes are great for automobile, motorcycle, truck, and commercial aircraft models. Flat finishes are dull and can be used for military equipment such as aircrafts, tanks, trucks, and ships. Flat paints are very easy to apply, but decals do not stick to the surface of the model as easily as decals stick to a glossy surface.

It is very important to remember that humidity will affect the paint finish, so avoid painting on rainy, damp days.

BRUSH PAINTING . . .

There are two uses for brush painting: small, detail parts, or a large, entire surface of the model's body. Purchase good brushes that are soft and which the hairs will not come out of easily. For small detailed work use a 000 to 0 numbered brush, and for large areas use a number 8 flat-edge brush. When painting with a brush, flow paint on with a long smooth stroke in the same direction. Work fast and avoid using too many strokes. Let the paint dry for a few days before adding any decals.





SPRAY PAINTING . . .

This can be done inexpensively and produces a super finish. Be sure to spray in a well-ventilated area. A cardboard box can be used as a spray booth. Shake the spray can vigorously up and down before the paint is applied. Never start or stop spraying on the model. Move your entire arm in a slow and steady movement over the section you are painting.

AIR BRUSH . . .

The principles of spray painting can be applied to the air brush. The big advantage in air brushing is that you can adjust the amount of paint and the surface area. If you plan to get seriously involved in model building, purchasing an air brush is a good idea. Remember, paint should be mixed extremely well and thinner than paint that is applied by a brush.

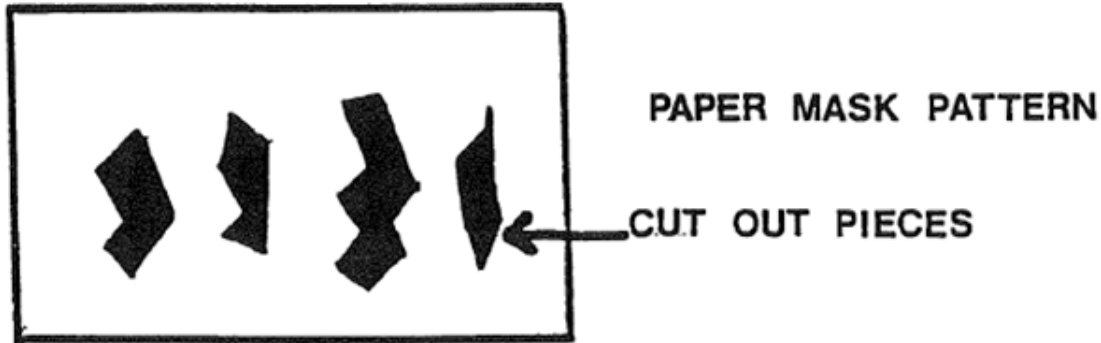


THOSE LITTLE EXTRAS . . .

For a model that calls for a multi-color scheme, you must learn the art of masking. The best tape to use is black electrical tape; it leaves a sharp, crisp, and clean edge.

The lightest color should be applied first to the model. Let the paint completely dry (for at least 24 hours). Apply tape and make sure the tape is clean and crisp. Spray paint and immediately remove the tape after applying the second color. Allow the paint to dry for at least 24 hours. Repeat the same process if more than 2 colors are used.

Camouflaging is effectively done with spray paint or an air brush. You can use black electrical tape to mark off areas or a paper mask (stencil). To make a paper mask pattern, use a piece of medium weight paper and cut out pattern with a hobby knife.



****Acknowledgement**** Material content in the Model Building Manual and illustrations in "Tools, Tips and Techniques" were developed by Maria B. Kaczmarek.

SAFETY GUIDELINES

- A. Do not use modeling glue in an enclosed or tight place. Vapors from glue may be harmful. Stay in well-ventilated or open areas.
- B. Precision tools used in modeling are razor sharp. Consequently, they can be extremely dangerous when used or handled improperly.
- C. Use aerosol spray paint in an open place. The spray mist is flammable and spreads or travels easily. One solution is to spray paint your model in a three-sided cardboard box to collect the spray drift. Remember to place papers under and around the outside of the box on the floor to catch the drift.
- D. Do not work around open flames with aerosol paint supplies and/or the plastic component parts.

DEFINITIONS

A **model** is a small replica model made of plastic or wood. The 4-H'er can choose from several different types. Types to be chosen are model car kits, model truck kits, model boat kits, model plane kits, model train kits, or any other type of model built by a manufacturer.

Simple construction is a model having few parts or features. They are made in large pieces without many accessories. Little gluing is involved in building the model.

Detailed construction models have many parts and features. Some of the parts can be small. Accessory parts are to be added and fine detail work is suggested to complete the model.

Customizing a model is to change the design of the original plastic or wood kit.

When **painting** is required, the entire model must be painted except for the chrome. In the upper levels if the model is made of pre-colored plastic, it still needs to be painted. If the model is made of wood, the models must be finished with the appropriate material (varnish, oil, etc.)

Radio controlled models are entered only in Level D. Radio controlled models must be working models.

Diorama is a basic model placed in a realistic setting. It becomes part of a three dimensional picture. It is a scene that tells a story, but shows that "something is going on". It is an event. Figures are important. It is difficult to tell a story without people. There is a big difference between a display and a diorama. A fighter plane on a runway would be a display. The addition of support equipment and figures preparing it for a flight could be a diorama. The same plane crashed and decaying in a remote area could be a diorama. A model in a diorama is very seldom "factory fresh". It shows its contact with the elements which surround it.

Tips to look for:

- WORKMANSHIP.....
Gluing, neatness, assembly
- CREATIVITY.....
- BODY.....
Paint, decals, window
- INTERIOR.....
Paint correct type
- CHASSIS AND ENGINE.....
Paint, wheels, detail
- APPROPRIATE FOR YOUR AGE.....

4-H MODEL SCORECARD

Name _____

4-H 681C-W
(9/07)

Club/Grade/Division_____

Scorecard for **MODELS** (car, airplane, train, etc.)

Evaluation of project	Excellent	Good	Needs Improvement
Fit/Alignment Parts aligned/positioned correctly No rough edges or mold marks			
Gluing Parts securely attached No excess glue			
Paint Smooth/even edges Good color choice			
Decals Properly placed/no tears/no bubbles			
Displays Appropriately scaled/Attractive			
Level of Difficulty (of kit) Appropriate for age Or Scratch-built			
Miscellaneous Project shows extra time Notes about the project add to exhibit			

COMMENTS:



4-H CLUB RECORD ELKHART COUNTY



MODEL BUILDING

NAME _____ AGE _____ LEVEL _____ YEAR _____

NAME OF CLUB _____ YEAR IN CLUB WORK _____

YEAR IN SCHOOL _____ YEAR IN MODEL BUILDING _____

I have reviewed this record and believe it to be correct:

SIGNATURE OF LEADER _____ DATE _____

1. Type of Model _____ Where Purchased _____

Manufacturer of Model _____

Name of Kit _____

Skill Level of Model _____

2. Date Project Started _____ Date Project Finished _____

3. Estimated number of hours spent on model _____

4. Money spent on model: Cost of model \$ _____
Cost of supplies _____

List

Paint _____

Sandpaper _____

Putty, Etc. _____

TOTAL \$ _____

5. What method did you use to apply paint? _____
(Level 3 & 4 must answer)

6. List three new things you have learned this year in constructing your model:

1. _____

2. _____

3. _____

7. The areas of model building that I need improvement in and how to improve things:
1. _____
 2. _____
 3. _____
8. What models do you plan to build in the future? _____

9. What new techniques do you hope to learn? _____

10. How do you think Model Building can be used in adult life or in what professions can Model Building be applied? _____

11. Where did you receive information or instruction in this project? (List persons who gave instructions; reference materials, books, etc.) _____

Purdue University is an equal access/equal opportunity institution.