

## Classifying the Stars

Fill in the circle to complete the sentence. Then answer questions 3, 4, and 5.

1. Cannon's system classified \_\_\_\_\_.  
Ⓐ stars by temperature  
Ⓑ prisms by color  
Ⓒ stars by distance
2. A star's spectrum is \_\_\_\_\_.  
Ⓐ how old it is  
Ⓑ seen by separating its light  
Ⓒ the same as its distance from Earth
3. How do you know that Cannon's work was important? Give two reasons.

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4. What are some traits of a good astronomer? List three of them.

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5. What was the author's purpose in writing this text?

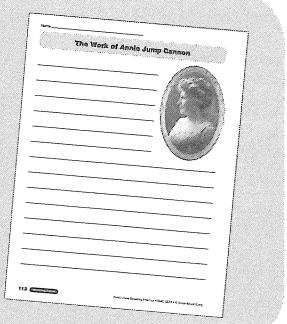
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### Write About the Topic

Use the Writing Form to write about what you read.

You are asked to create a museum for Annie Jump Cannon. What artifacts will you include? List them.



# Making a Car Model

Level 1 ■

## Words to Know list, Reading Selection, and Reading Comprehension questions

<input type="checkbox"/> Name _____  <b>Modeling Cars</b>  Fill in the circle to complete...  <b>Modeling Cars</b>  Every year we start on an idea. Automobile artists and designers come up with new ideas. The designers draw their ideas using computer software. Then a clay model creates a scale model of the car you can build.  It's only so much that automobile designers can do on a screen. They may plan a design that looks good on the right. The clay models give the design a human touch. They feel the car's measurements. Then it is simple to make changes when they see the results. When a car is built from clay, it might take a day to model to perfection. Making a clay model will take a month or more. A clay model can take one, two, or even three months.  A clay model begins with a few items of plastic tools. Two inches of clay are applied to a flat surface. A modeling tool is used to smooth the clay. A sharp edge of a straight edge is used to smooth the edges. Then the clay model user starts to smooth, scrape, and shape the car. The model user adds clay to make the car bigger. The clay is shaped to make the car look like 100° Fahrenheit (17° Celsius). The clay is very soft. That makes it easier to work with.    A clay model is usually made from special clay.  Built, or a clay model, needs to be made to a specific scale. This model is a one-half scale. It has a four-foot wide front end and one-and-a-half feet wide back end. Later, the clay model is cut into pieces so the model makers can use a life-size model.	<input checked="" type="checkbox"/> Want to know <b>Modeling Cars</b>  automobile designers software scale human results headlights millimeters applied rough scope small-scale full-scale carmakers
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**Level 2** ■ ■

## Words to Know list, Reading Selection, and Reading Comprehension questions

<p><b>Car Models from Clay</b></p> <p>Fill in the circle to continue.</p> <p><b>Car Models from Clay</b></p> <p>Very fast, automobile companies show their new cars at the Detroit Auto Show. The cars look fresh and new, but they have been in the works for years. Design, model, and technology come together to make a car. Automobile artists have to work very hard. They are called sculptors. If you're a sculptor, one important artist's rule is "Don't be afraid to start over again." It's all right to start over again if you like. He or she will be able to get another idea on paper.</p> <p>Automobile artists use computers to draw new cars. But there is still so much that goes on in a studio to make a clay modeler to show the car's shape in the real world. Clay models are also measurements given to them by engineers. They can artfully sculpt with clay. They can make the shape of a car that artfully looks like a car. A designer might ask a clay modeler to make a millimeter here or to lower something else. A clay modeler might add a millimeter here or to lower something else. Modeling a new automobile can take a year or even five.</p> <p>A clay model begins with a block of clay. It is then set up to the size of the car. This is the first step in a clay model. This is the size of 160° Fahrenheit (71° Celsius). This is to work with the clay. The clay is easy to work with. The clay modeler makes the model, shapes the model, changes, and shapes the clay. He or she measures the clay, or he or she measures to the millimeter to make the model as perfect as possible.</p> <p>A clay modeler makes a small model of the car. This is the first step in a clay model. All the parts inside and outside must be to scale. Later models are made. These are called full-scale models. They can be painted and studied to see how it looks in the light. It is a good idea to have a camera to take pictures. The engineers can study how air currents move around the car.</p> <p><b>Clay Modeler Work</b> © 1998 Scholastic Books / YAC</p> <p><b>Answers and Solutions</b> Copyright © Scholastic Inc.</p> <p><b>What Is a Clay Model From Clay?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> automobile</li> <li><input type="checkbox"/> visual</li> <li><input type="checkbox"/> technology</li> <li><input type="checkbox"/> artist</li> <li><input type="checkbox"/> modeller</li> <li><input type="checkbox"/> sculptor</li> <li><input type="checkbox"/> software</li> <li><input type="checkbox"/> engineer</li> <li><input type="checkbox"/> millimeter</li> <li><input type="checkbox"/> temperature</li> <li><input type="checkbox"/> small-scale</li> <li><input type="checkbox"/> full-scale</li> <li><input type="checkbox"/> tunnel</li> <li><input type="checkbox"/> currents</li> </ul> <p><b>Makeup a Clay Model From Clay</b></p>
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**Level 3** ■ ■ ■

## Words to Know list, Reading Selection, and Reading Comprehension questions

**Automobile Models from Clay**

Every new car starts with an idea. Automobile critics come up with ideas every year. A clay modeler uses both artistic skill and math ability to turn an idea into a model of a new car.

Automobile designers use computers to refine their cars, using mathematical instruments. But there are some things they can do on a screen. Their primary job is to make sure the car looks right in the real world. Designers give the clay modelers the drawings. The designers can ask them to change the shape until they see the results. Working with clay gives the modelers a chance to change a car's body, add a headlight, or even move a wheel. A clay modeler can add a day meter to a car's dashboard, or add a radio or a lesser something else.

Modelers begin by making a clay model of a car's front end, two at a time. A clay model begins with a block of moist plasticine. Two inches of clay are applied to the form. A milling machine (like a glorified saw) cuts away the excess clay to make smooth edges and rough shapes. Then the clay model goes to work smoothing the edges and shaping. The modeler measures to the millimeter to make sure the model is the right size. In the end, it is warmed in ovens at a temperature of 1,400° Celsius so the model is set to work with.

A clay model makes a smaller scale out fit. The first model is four feet wide. All the parts inside and out must be made to fit. The model will be made full scale. A life-size model will be produced to show how the shape of the car looks in the light. This model also will be put into a wind tunnel. The computers can see how air will move around the car.

Photo courtesy of Plasticine Co., Inc.

**What to Know About Automobile Models from Clay**

- automobile
- scale model
- designers
- software
- human
- results
- headlight
- millimeters
- applied
- rough
- scrapping
- temperature
- models
- full-scale
- tunnel
- currents

**Making a Car Model 1 B 6**

**Scale Models of Plasticine**

**Making a Car Model 1 B 7**

## **Assemble the Unit**

Reproduce and distribute one copy for each student:

- Visual Literacy page: Making a Car Model, page 121
  - Level 1, 2, or 3 Reading Selection and Reading Comprehension page and the corresponding Words to Know list
  - Graphic Organizer of your choosing, provided on pages 180–186
  - Writing Form: Automobile Models, page 122

## Introduce the Topic

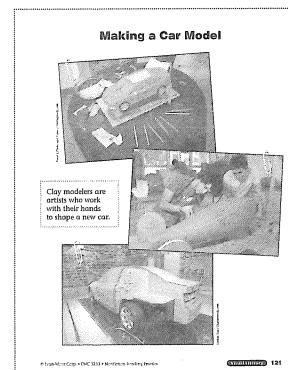
Review the photos with students. Explain that artists who sculpt with clay are an important part of the process of designing new cars. They make scale models and even life-size clay models to help car designers see and touch their designs.

## **Read and Respond**

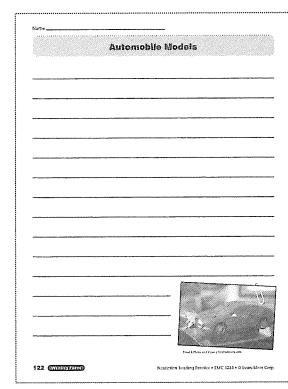
Form leveled groups and review the Words to Know lists with each group of students. Instruct each group to read their selection individually, in pairs, or as a group. Have students complete the Reading Comprehension page for their selection.

## **Write About the Topic**

Read aloud the leveled writing prompt for each group. Tell students to use the Graphic Organizer to plan their writing. Direct students to use their Writing Form to respond to their prompt.

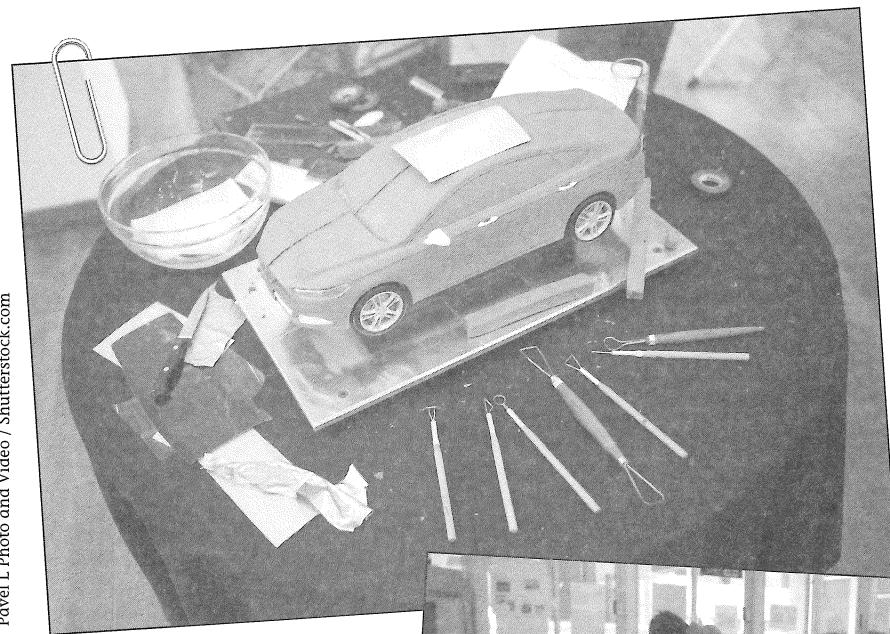


Visual Literacy



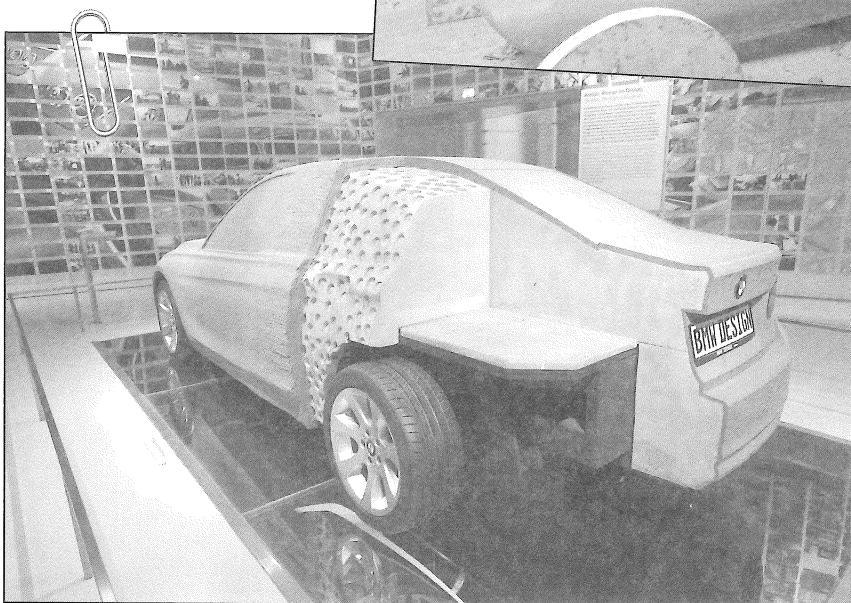
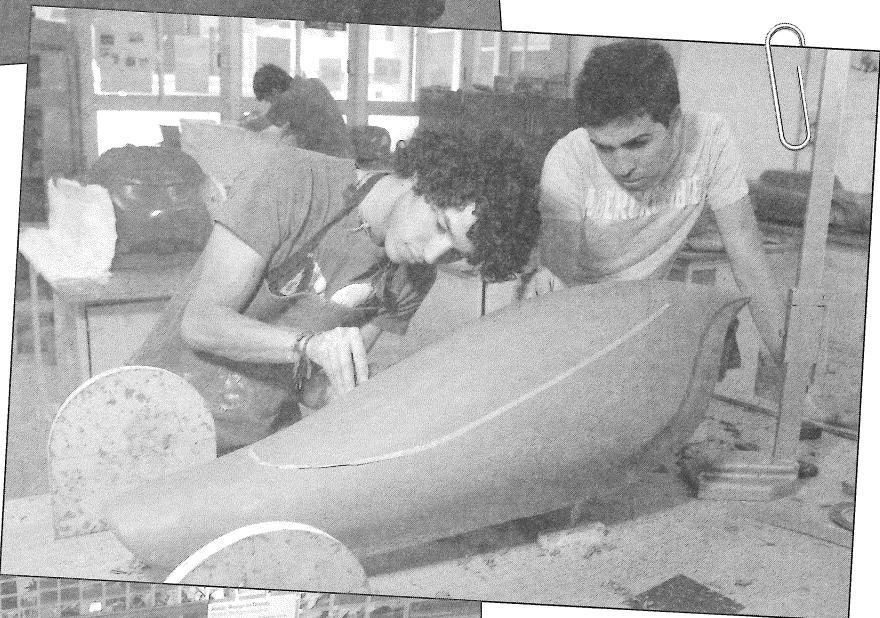
## Writing Form

# Making a Car Model



Pavel L Photo and Video / Shutterstock.com

Clay modelers are artists who work with their hands to shape a new car.



Jordan Tan / Shutterstock.com

Name \_\_\_\_\_

## **Automobile Models**



Pavel L Photo and Video / Shutterstock.com

**Words to Know**  
**Modeling Cars**

automobile  
designers  
software  
scale  
human  
results  
headlight  
millimeters  
applied  
rough  
scrape  
small-scale  
full-scale  
carmakers

Making a Car Model ■■



**Words to Know**  
**Car Models from Clay**

automobile  
visual  
technology  
process  
artists  
modeler  
sculpts  
software  
carmakers  
millimeter  
temperature  
small-scale  
full-scale  
tunnel  
currents

Making a Car Model ■■■

**Words to Know**  
**Automobile Models from Clay**

automobile  
artists  
scale model  
designers  
software  
human  
results  
headlight  
millimeters  
applied  
rough  
scraping  
temperature  
models  
full-scale  
tunnel  
currents

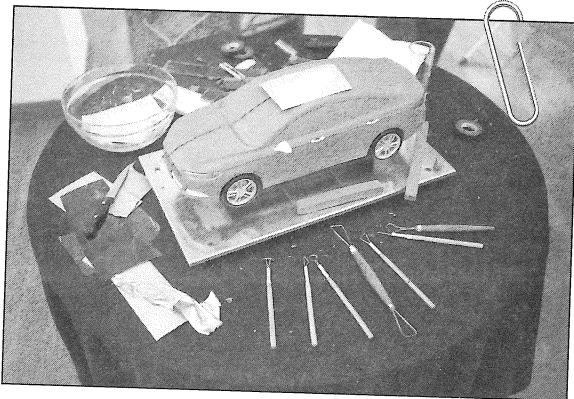
Making a Car Model ■■■■

# Modeling Cars

Every new car starts as an idea. Automobile artists and designers come up with new ideas. The designers draw their ideas using computer software. Then a clay modeler creates a scale model of the new car, bringing it to life.

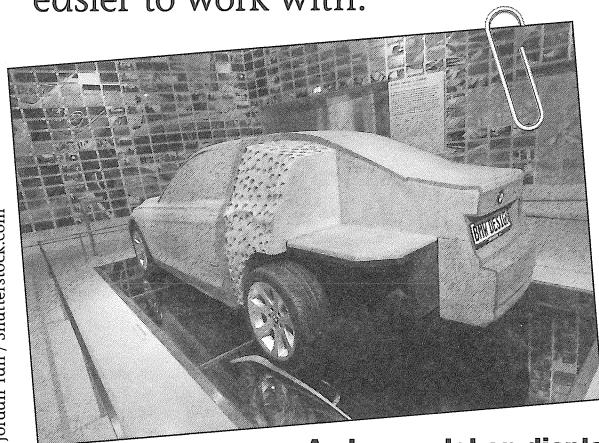
There is only so much that automobile designers can do on a screen. They may print their design and see it isn't quite right. The clay modelers give the design a human touch. They follow the designer's measurements. Then it is simple to make changes when they see the results. Working with clay makes it possible to change the shape of a window or a headlight. A designer might ask a clay modeler to make a window larger. The artist adds millimeters here or lowers something there. Making a clay model of a new automobile can take one, two, or even five years.

A clay model begins with a form made of special foam. Two inches of clay are applied to the form. A milling machine is like a giant drill. The milling machine quickly carves the clay into a rough shape. Then the clay modeler uses artist's tools to smooth, scrape, and shape the car. The modeler measures to the millimeter to make the car match the printed design. The clay is warmed in ovens set at 160° Fahrenheit (71° Celsius). The clay is waxy and soft. This makes it easier to work with.



Clay modeling tools help the artist shape the model.

Pavel L Photo and Video / Shutterstock.com



A clay model on display shows the special foam.

Jordan Tan / Shutterstock.com

First, a clay modeler makes a small-scale car. This model is four-tenths scale. All the parts inside and out must be to scale. Later models will be made full-scale so the carmakers can study a life-size model.

## Modeling Cars

Fill in the circle to complete the sentence. Then answer questions 3, 4, and 5.

1. Working with clay \_\_\_\_\_.  
Ⓐ allows the artist to change a model  
Ⓑ is a quick way to make a model  
Ⓒ can only be used for small models
2. In the first paragraph, the phrase *bringing it to life* means \_\_\_\_\_.  
Ⓐ warming it to 160° Fahrenheit (71° Celsius)  
Ⓑ making it real  
Ⓒ drawing it on a computer
3. Why is it important for a clay modeler to measure carefully?

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4. List some tools and materials used in making a model of a new car.

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5. Do you think clay modelers will ever be replaced by computers? Support your opinion.

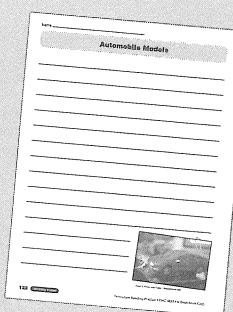
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### Write About the Topic

Use the Writing Form to write about what you read.

You are applying for a job as a clay modeler. Describe your skills for your new boss.



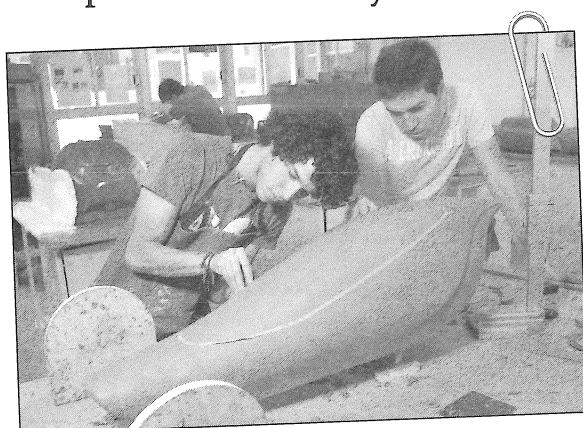
# Car Models from Clay

Every year, automobile companies show their new cars at the Detroit Auto Show. The cars look fresh and new, but they have been in the works for years. Visual thinking, math, and technology came together in the process. Automobile artists have considered every detail. One important artist is the clay modeler. He or she sculpts a car out of clay. Until then, it is just an idea on paper.

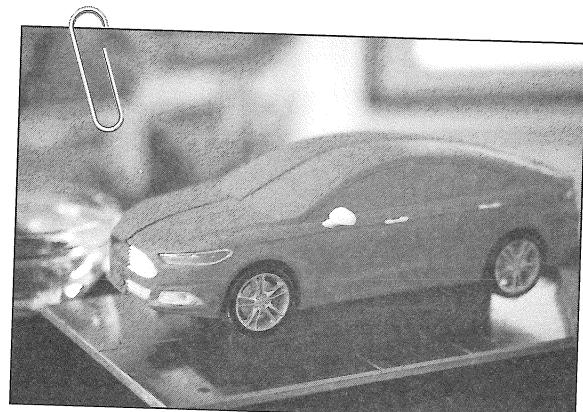
Automobile designers use computer software to draw new cars. But there is only so much they can do on a screen. It's up to clay modelers to show the carmakers how a car looks in the real world. Clay modelers follow the measurements given to them by designers. They use art skills to sculpt with clay. They can change the shape of a window or a headlight, or even move a wheel. A designer might ask a clay modeler to add a millimeter here or to lower something there.

Modeling a new automobile can take a year or two—or even five. A clay model begins with a form made of special foam. Clay is applied to the form. The clay is kept at a temperature of 160° Fahrenheit (71° Celsius). This makes it soft and easy to work with. The clay modeler smooths, scrapes, and shapes the clay. He or she measures to the millimeter to match the printed design.

A clay modeler makes a small-scale car first. The first models are four-tenths scale. All the parts inside and out must be to scale. Later models will be made full-scale. The model can be painted and studied to see how it looks in the light. It can also be put into a wind tunnel. The carmakers can study how air currents move around the car.



Clay modelers work carefully and patiently.



A small-scale model

## Car Models from Clay

Fill in the circle to complete the sentence. Then answer questions 3, 4, and 5.

1. Modeling a new car in clay \_\_\_\_\_.  
Ⓐ is so easy that anyone can do it  
Ⓑ probably isn't necessary now that there are computers  
Ⓒ is an important step in making a new car
2. A clay car model \_\_\_\_\_.  
Ⓐ cannot be changed  
Ⓑ can be made life-size  
Ⓒ has foam on the outside
3. How do car designers and clay modelers work together?

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4. What are some of the skills a clay modeler has?

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5. What is one idea from the text that you would like to learn more about?

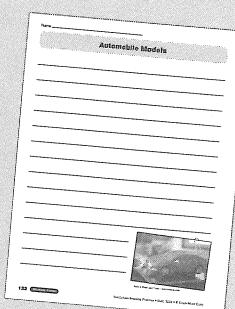
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### Write About the Topic

Use the Writing Form to write about what you read.

How would you prepare for a career with an automobile company? What would you need to learn?



# Automobile Models from Clay

Every new car starts with an idea. Automobile artists come up with new ideas every year. A clay modeler uses both artistic skill and math skills to produce a scale model of a new car.

Automobile designers use computer software to draw new cars, using careful measurements. But there is only so much they can do on a screen. Their printed design might not look quite right. They turn to clay modelers for a human touch in order to see their designs in the real world. Designers give the clay modelers measurements. The designers can ask for changes when they see the results. Working with clay makes it possible to change the shape of a window or a headlight, or even move a wheel. A designer might ask a clay modeler to add a few millimeters here, or to lower something there.

Making a clay model of a new automobile can take a year or two—or even five. A clay model begins with a form made of special foam. Two inches of clay are applied to the form. A milling machine (like a giant drill bit) carves the form into a rough shape. Then the clay modeler goes to work smoothing, scraping, and shaping. The modeler measures to the millimeter to match the design. The clay is waxy and soft. It is warmed in ovens to a temperature of 160° Fahrenheit (71° Celsius) to make it easier to work with.



**Clay modelers work carefully and patiently.**

A clay modeler makes a smaller scale car first. The first models are four-tenths scale. All the parts inside and out must be to scale. Later models will be made full-scale. A life-size model can be painted to show how the shape of the car looks in the light. This model can also be put into a wind tunnel. The carmakers can see how air currents move around the car.