# Experience Technology

**Manufacturing** **Construction**

# EXPERIENCE TECHNOLOGY

## MANUFACTURING • CONSTRUCTION

Second Edition

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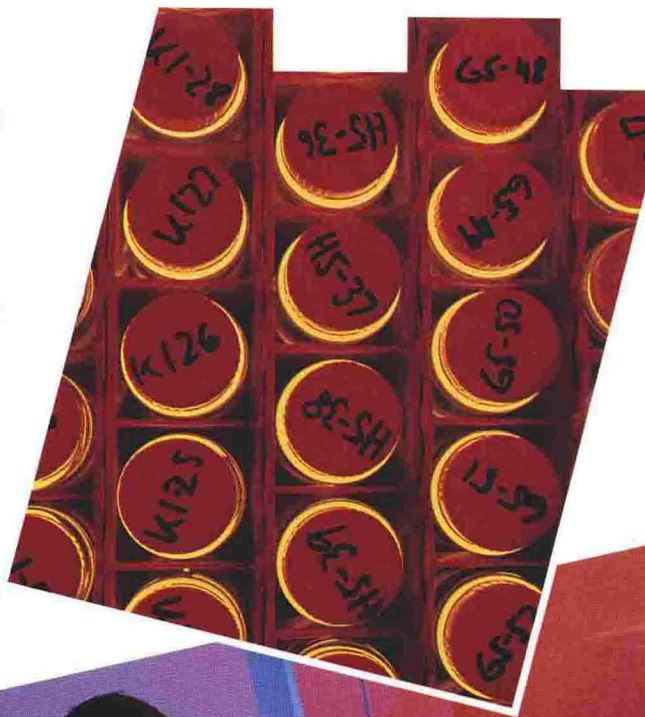
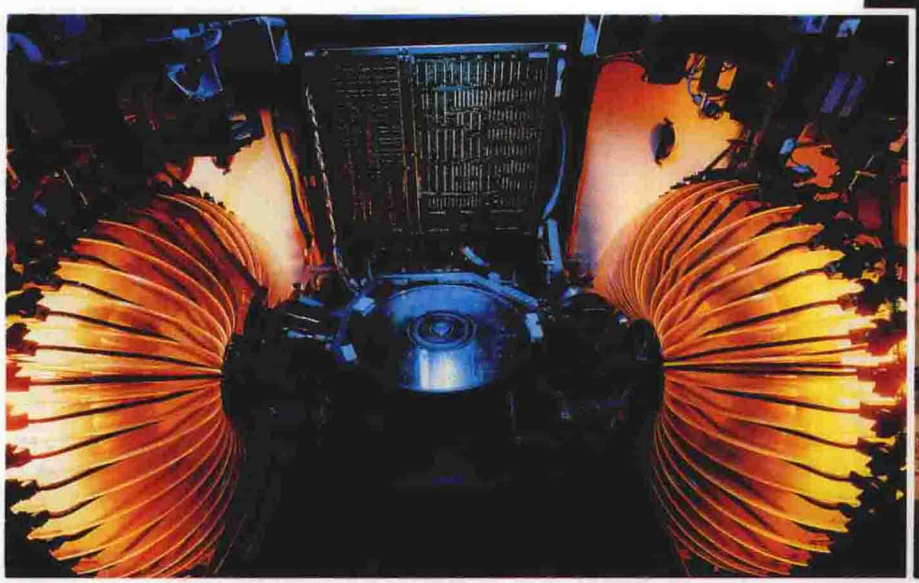
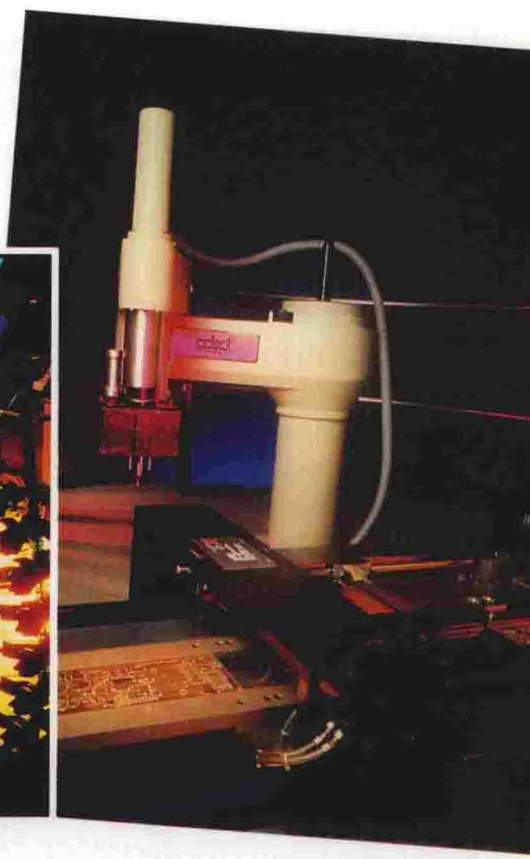
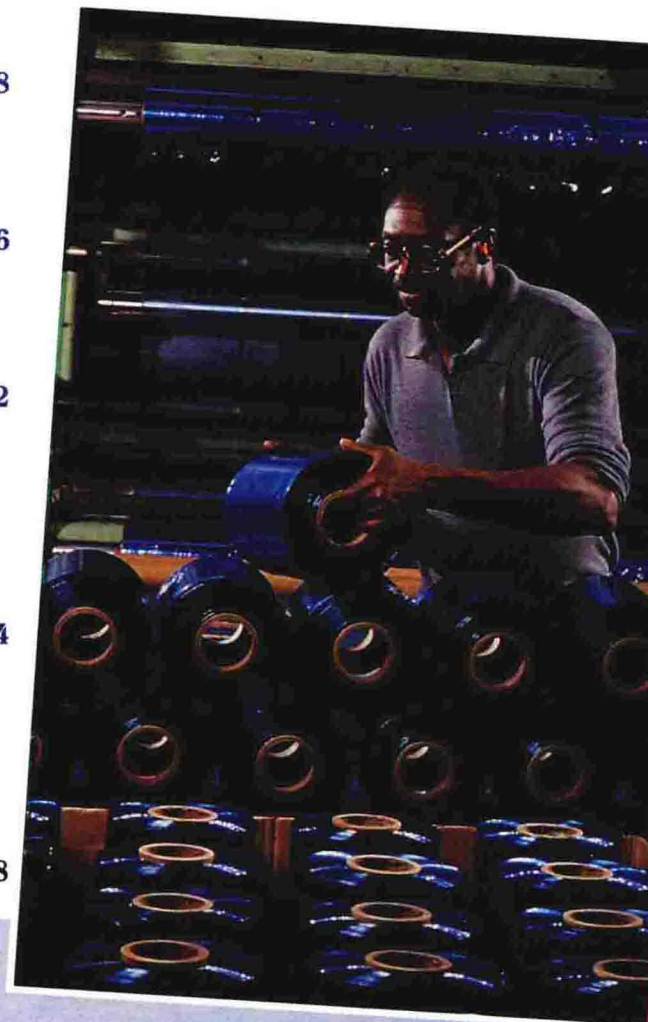
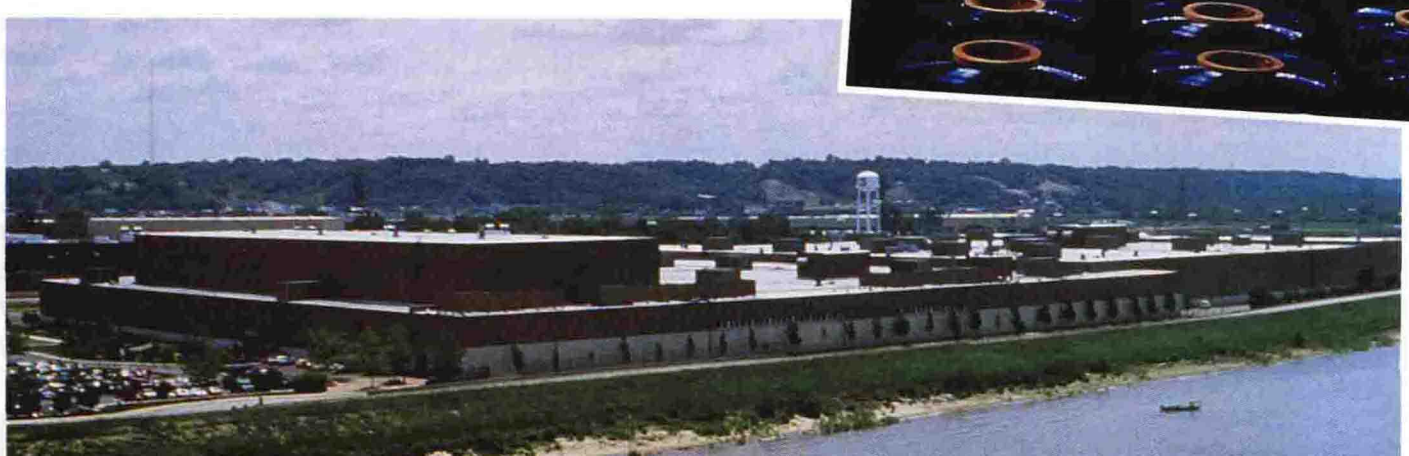
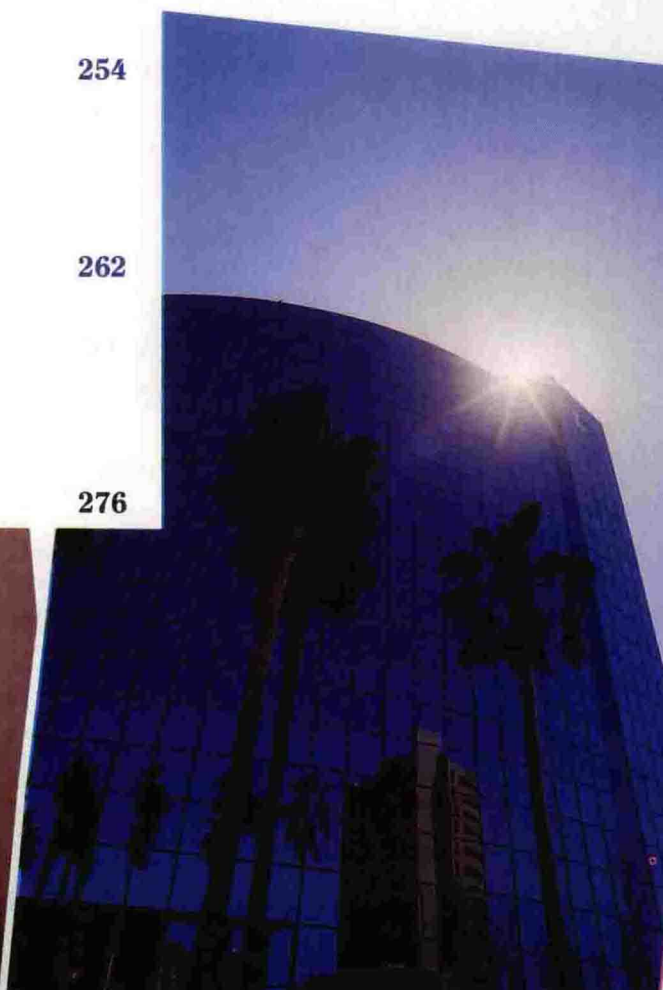


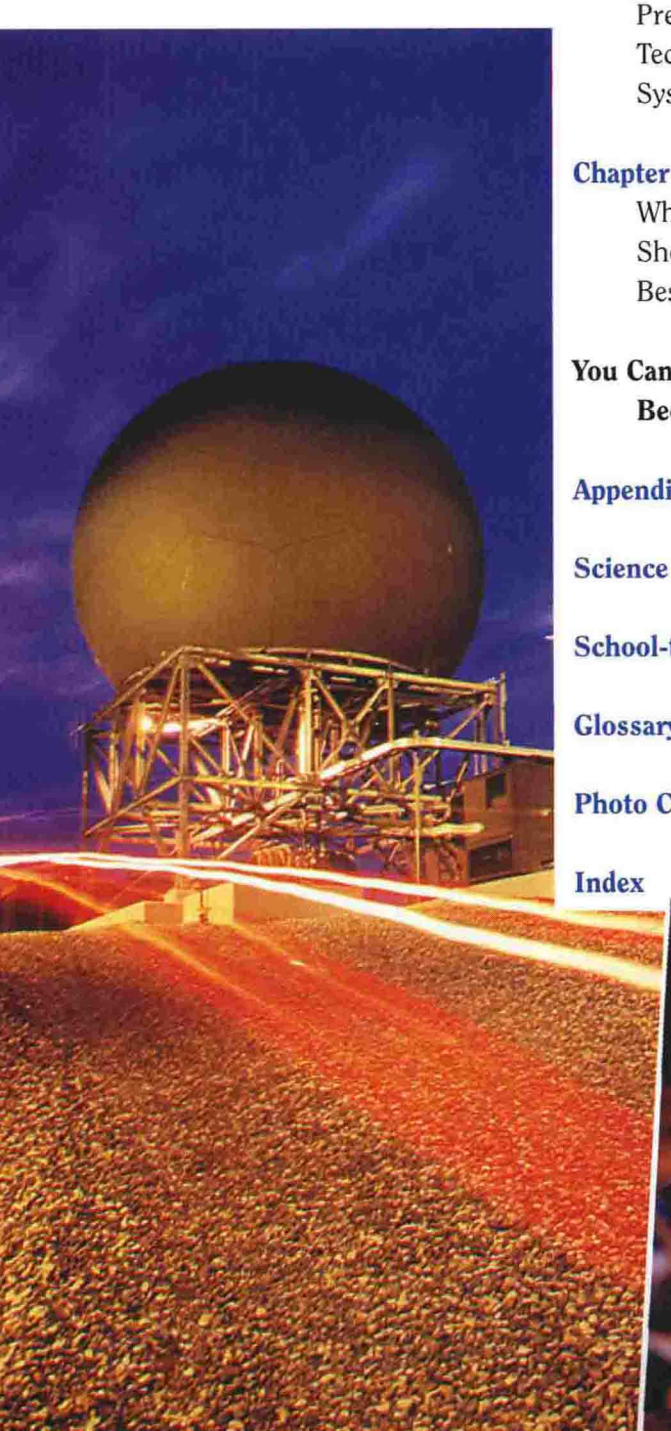












# Getting Acquainted with This Book

You have probably heard it said that experience is the best teacher. This means that we learn best by actually doing something. The title of this textbook is *Experience Technology: Manufacturing and Construction*. Notice the first word in the title — "experience." In this course, you will learn through experience — by "doing." You will not only read, you will also talk with classmates during discussions. You will work with them on many interesting activities.

The next word in the title is "technology." What is technology? Technology is the use of the principles of science to do something. For example, workers on a construction site use scientific principles when they build a house.

The last words in the title are "manufacturing" and "construction." In this course, you will see how technology applies to both.

## How This Book Is Organized

This book is divided into five sections. Sections I and II cover the things that manufacturing and construction have in common. Section III discusses just manufacturing, and Section IV covers construction. Then in Section V the two are brought together again and their future is discussed.

### Section Activities

In most books, the activities are at the end of a section. You have to study the material before you begin to work. This book is different. Each section opens with an activity that you can get started on right away. The activity is described in a brief that outlines the situation and your challenge. Specifications, limits, and a materials list are given. Also included is a list of references you can go to for help. Pictures, charts, and other aids make the activities more interesting and easy to work with.

### Chapters

These come after the section activity. The chapters are easy to read and have a lot of pictures. Some of the pictures fill one or two pages and contain interesting information that you will want to know about.

### Section Closings

Each section closes with a feature called "You Can Make a Difference." These are true stories about young people who have used technology to invent things or to make the world a better place.

### What You'll Find in the Chapters

There are 18 chapters in this book.

#### Chapter Openings

Each chapter begins with an introduction, a list of objectives, and a list of words you will need. The introduction tells you what the chapter is about.

The objectives state what you should be able to do after you've studied the chapter. The "Words you will need" are terms used in technology. Understanding these will help you understand the chapter. These terms can be found in **boldfaced type** within the chapter. They are also defined in the Glossary.

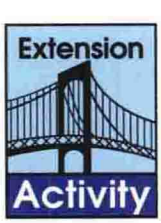

The ways in which technology affects the world and society are its impacts. For example, the "Impact" for Chapter three talks about how we have become part of a larger world because of technology. At least one impact of technology is included in each chapter.

### Discussion Questions

Each major part of a chapter is followed by one or more discussion questions. These help you think about what you have read by discussing the answers with your classmates.


### Company Activities

These appear after the discussion questions. Your teacher will probably lead you in forming your own student company. These activities relate to that company.




### Extension Activities

Extension activities are suggestions of things you can do to apply and expand what you've learned.

### Chapter Review

Chapter review pages include three sections. "Chapter Highlights" list important points to remember from the chapter. "Test Your Knowledge" includes 10 questions that ask you to remember key facts in the chapter. "Correlations" are activities that show how technology can be applied in science, math, language arts, and social studies.

## Appendixes

There are two appendixes. Appendix A is titled "Measuring with the Metric System." It will help you when you want to design in metric measurements or convert customary measures to metric ones. Appendix B is called "How to Conduct a Meeting." It is about the rules used by groups when holding meetings. It may help you if you form a student company.

# Handbooks

## Science and Math Handbook

Technology makes use of science and math principles. The Science and Math Handbook, near the end of this textbook, describes key science and math concepts that relate to the technology topics you will study in this course.

## School-to-Work Handbook

Have you thought about a career? Do you know which school courses will help you prepare for the world of work? In the School-to-Work Handbook, you will learn about choosing a career path and selecting courses that lead to the career you want.

# Glossary and Index

What if you want to know the definition of a term? What if you need to locate all the places in the book where a subject is discussed? The glossary and index can help you find such information.

## Glossary

If you need to know the meaning of a term, look in the glossary. Terms listed at the beginning of each chapter are also listed in alphabetical order in the glossary. You'll find other important words there too.

## Index

If you would like to know where a certain subject is discussed in this book, look in the index. It will give you the numbers of pages that provide information on that subject.

SECTION ONE

# INTRODUCTION TO PRODUCTION SYSTEMS


## Activity Brief

### Developing a Company Philosophy

#### PART 1: Here's the Situation.....

In Section 1, you will get to know production systems. You will learn how they are organized, what they do for us, and how they affect our lives. You will discover what is involved in forming a company. You will also find out why a company chooses to sell one product rather than another.

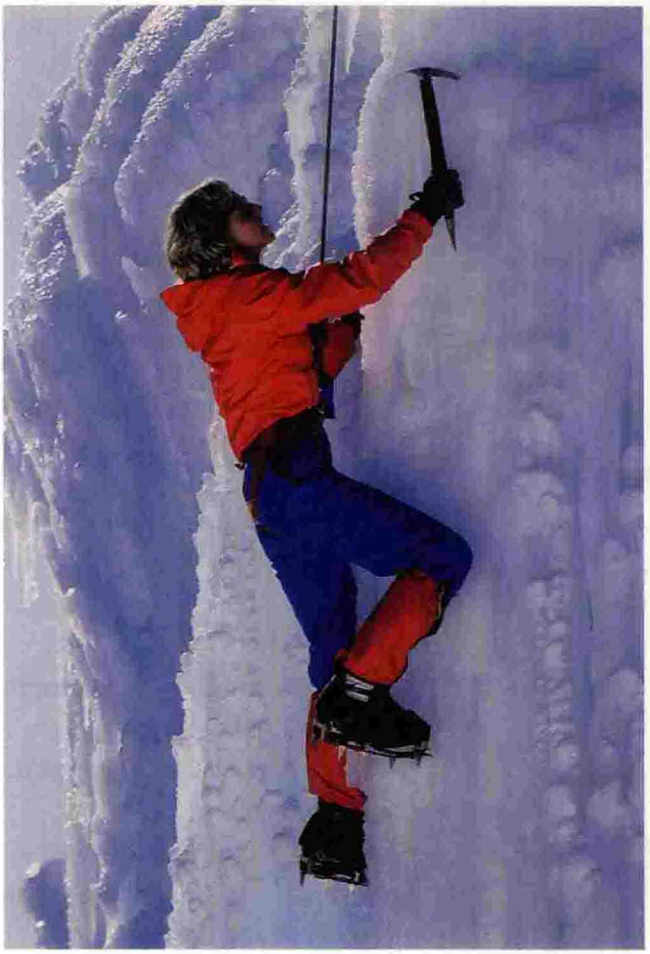
While you are learning these things, your teacher will lead you in forming your own student company. Your company will manufacture and/or build a product that you will then sell or use in some way. This activity will help you in forming that company. It will get you started in thinking about the kind of company it should be.

## PART 2: Your Challenge.....

Every company has a philosophy. A philosophy is a set of thoughts and beliefs. The people who create the company are usually responsible for its philosophy. They have their own ideas about what is important to them and how a business should be run.

For example, Patagonia, Inc., is a real company based in California. It makes outdoor clothing. Its owner believes in making unique, high-quality products. He is also concerned about the environment. His beliefs about these things affect the way the company is run. Since quality is so important, only the best materials are used. Since the environment is also important, the company gives at least 10 percent of its profits each year to saving the earth. You will read more about Patagonia on these pages.

For this activity, you will do three things. Together with your classmates, you will determine the philosophy of your student company and put it into written form. Then you will discuss the effect this philosophy will have on the way you conduct your business. Finally, you will design a package for your product that communicates your company's philosophy.



Patagonia, Inc. got its start when its founder began to make climbing equipment.

## PART 3: Specifications and Limits.....

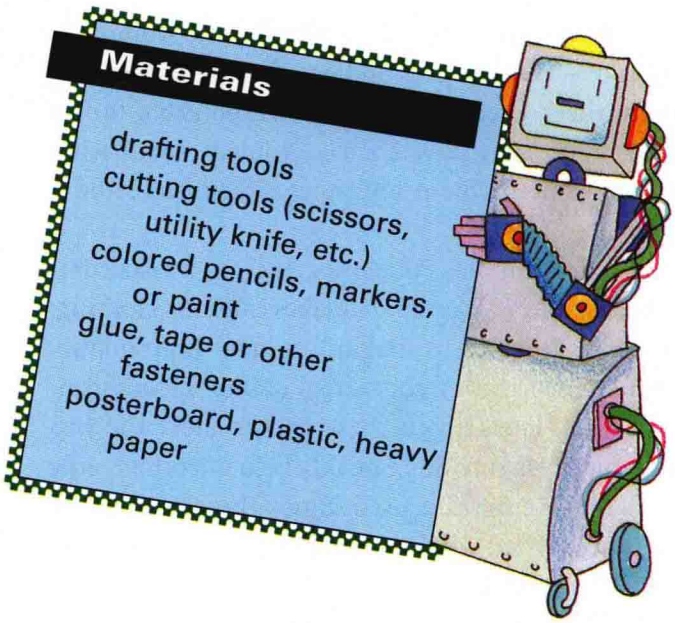
Your work will need to meet certain standards. Read the following specifications and limits before you begin.

1. Your company's philosophy must come to grips with at least three questions:
   - What are your company's most important goals?
   - What is your company's responsibility to its customers?
   - What is your company's responsibility to the community?
2. The way your package is designed and *made* must reflect the company's philosophy. For example, suppose your company believes in conserving natural resources. Would some kinds of packaging be wasteful of these resources? Could you make do with less? You might then want to consider a bag, tag, or label of some kind as your "package."

3. You must hand in the following:
   - a paragraph describing how your package reflects the company's philosophy
   - a log sheet of your work
   - rough sketches of at least 3 designs you considered
   - a finished drawing of the design you like best
   - a mock-up of the package, including any message that would be printed on it; the complete message may be written on a separate sheet of paper

## PART 4: Materials

There are many materials you might use to make a package. Here is a list of basics.




## PART 5: Procedures

How you work will be up to you. Still, there are certain steps to follow that may make your work easier.

1. Each day, keep a log of the work you do. Remember, this log must be turned in with your finished project.
2. Determine your company's philosophy before you do anything else. You may want to work in small groups at first. Then, when you have some good ideas, discuss them as a class. Read "What Makes Patagonia Special?" on page 17. Try to focus on things you really believe in rather than things you *think* you should believe in. Put your own values into the company.
3. When you're satisfied with your philosophy, vote on it as a class. When your philosophy has passed a majority vote, post it in the technology lab.
4. Study your company's product. How should it look in the package? Should the package hold more than one? What materials would work best?
5. Make several sketches of possible packages. Then choose the design you like best. Read "What Do Customers Want?" on page 15 and "What's Your Advertising Strategy?" on page 16.
6. Make a careful drawing of the design, including all measurements. Submit this final drawing to your teacher for approval before going on.
7. Make a mock-up (model) of the package. On the package or on a separate sheet of paper, write the message the package should carry. Be sure your company's philosophy is somehow communicated.

**Safety Notes**

- When using drafting and cutting tools, be careful of sharp edges and points.
- Follow all of the safety guidelines your teacher has explained to you.

### What Do Customers Want?

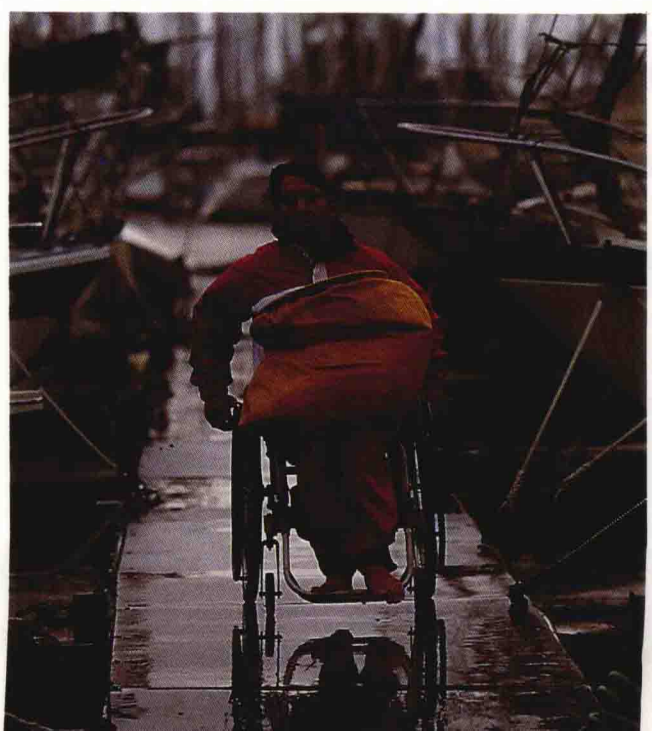
Customers have made the following complaints about some companies or products. How will your company address these problems?

- Companies don't care about customers. They don't give anything back to the community. All they care about is making money.
- Certain products are hurting the environment. Others waste energy.
- Too often, products are of poor value. They do not hold up well under use. They are not guaranteed.
- Companies do not provide enough information about how to use and care for their products. When instructions exist, they are unclear.
- Companies don't want to hear about complaints. Their phone numbers are often unlisted.
- Prices on products are too high.
- Packages are misleading. They make a product look bigger or better than it really is.
- Companies don't care about their employees. They don't care if workers are satisfied or happy. They don't let them get involved in making decisions.

## PART 6: For Additional Help.....

With this activity is information that may be of use to you as you determine a philosophy and make a package. Additional information about the following subjects is found on these text pages:

advertising a product, pp. 191-193
customer needs and wants, p. 21
economy, effects of production on, pp. 29-33
environment, effects of production on, pp. 28-29
forming a company, pp. 36-51
market research, pp. 54-58
packaging, pp. 186-190
society, effects of production on, p. 33



Patagonia specializes in clothing for all kinds of weather.

### What's Your Advertising Strategy?

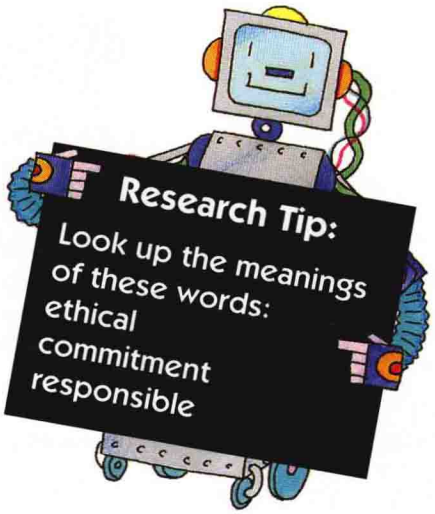
An advertising strategy is a plan for persuading customers to buy your product. It is used when designing labels and packages. Many companies ask themselves the following questions. Then they create their packages around the answers.

- How will a customer benefit from doing business with us?
- What needs does a customer have that our product can fulfill?
- How can we show customers that it is safe to do business with us?

## PART 7: How Well Did You Meet the Challenge?.....

When you've finished, evaluate your work. Does your package do what it's supposed to do? Your teacher and classmates may take part in this evaluation.

1. How well does your package communicate the company philosophy?
2. How well does your package display or protect the product?
3. How could your package be improved?




## PART 8: Extending Your Experience.....

Think about the following questions and discuss them in class.

1. What kinds of effects, or impacts, do you think your company's philosophy will have on customers and on your school?
2. What kinds of impacts did your company's philosophy have on your own work? What might you have done differently if you hadn't decided on a philosophy first?
3. Name several well-known companies. From what you can tell by the way these companies do business, what would you say their philosophies are?