Keep in Mind

1. purchasing
2. processing
3. quality control
4. grading

To prepare a hamburger, all four stages of the production process are required.

The Production Process

What process would you use, from start to finish, to make a hamburger? First, you would have to buy the meat—are you going to choose medium grade, which gives the most flavour, or lean, to avoid extra fat? You would also need to have buns, mustard, ketchup, relish, and pickles—and ensure that they were of the quality you wanted. Then you would have to cook the burger, which is a delicate procedure. Overcooking could ruin the meat, and undercooking could make you very sick. Finally, you would taste the burger itself to find out if you had made a high-quality product. If you cooked your burger following this system, you would have experienced all four stages of the production process: purchasing, grading, processing, and quality control.

Purchasing

In order to have enough raw materials on hand to produce the good or service a business needs to make, someone must be responsible for purchasing. In some firms, the purchasing task is large enough to merit an entire department. Other businesses outsource these duties to purchasing agents who know global markets and can negotiate lower prices. Retailers employ buyers, who search for products to sell in their stores. The retailer might be large enough to have a separate purchasing department to obtain supplies. (See Raw Materials at the beginning of the chapter.)

That is the main job of the purchasing department: to acquire the needed products at the best price. For example, a bread company packages its loaves in plastic bags, that cost 2¢ per bag. The company uses 4 million bags per year. What considerations must a purchaser take into account when buying more bags?

- The quality of the bag: If many bags tear, and bread becomes stale or contaminated, the company loses money and sales. The bags must be strong, not only to protect the bread, but also to survive the printing process, when the label is placed on it.
- The price of the bag: If a purchaser can negotiate a price of 1.5¢ per bag, the company saves 0.5¢ cent on every bag it uses. The total cost for the old bags was 4 million × 2¢ = $80 000. The new price of bags is 4 million × 1.5¢ = $60 000. The renegotiated price saved the company $20 000, which is pure profit.

Table 5.1

Whose Bags Should We Buy?	
Questions to Ask	**Why We Need to Know**
How strong are your bags?	If the bags tear, bread will get stale or contaminated, and the company will lose sales. Cheaper bags won't save money if sales go down.
How much do the new bags cost?	We buy 4 million bags per year, so even a tiny difference in price can make a big difference. If we can buy bags for 1.5¢ instead of 2¢, we can save a lot of money. 4 million × 2¢ = $80 000 per year 4 million × 1.5¢ = $60 000 per year Difference: $20 000 per year
What are the hidden costs?	Hidden costs include shipping, taxes, and duties. If it costs an extra penny to bring each 1.5¢ bag to Canada, then the total cost of each bag is now 2.5¢. In this case, it's cheaper to stay with the old supplier for 2¢ per bag.

- The hidden costs of the bag: transportation costs, taxes, duties, etc. If the 1.5¢-bag was produced in Mexico, for example, and the extra costs worked out to 1 cent per bag, then the old deal is actually better. The total cost of each bag would be 2.5¢ cents and would therefore cost the company more money than before. A good purchasing agent or manager investigates all the possibilities.

Processing

Earlier in this chapter, you read that all non-service businesses convert one thing into another through processing. Consider aluminum, for example.

Aluminum comes from bauxite, an ore that contains aluminum oxide. Canada does not have bauxite mines, so aluminum producers must import the ore from countries such as Guinea, Australia, Brazil, Jamaica, and India. Processing bauxite into aluminum requires large amounts of energy. Canada's supply of cheap hydroelectric power has made it one of the world's leading producers of aluminum.

In the News

In October 2005, the Institute of Packaging Professionals honoured the best packages of the year. The institute judges consumer packages based on innovation, protection, economics, performance, and environmental impact. The top award was presented to the "Hercules," a 128-ounce polyethylene terephthalate (PET) bottle, used for Hawaiian Punch and Mott's juice products manufactured by Cadbury Schweppes Americas Beverages.

The World of Business DVD

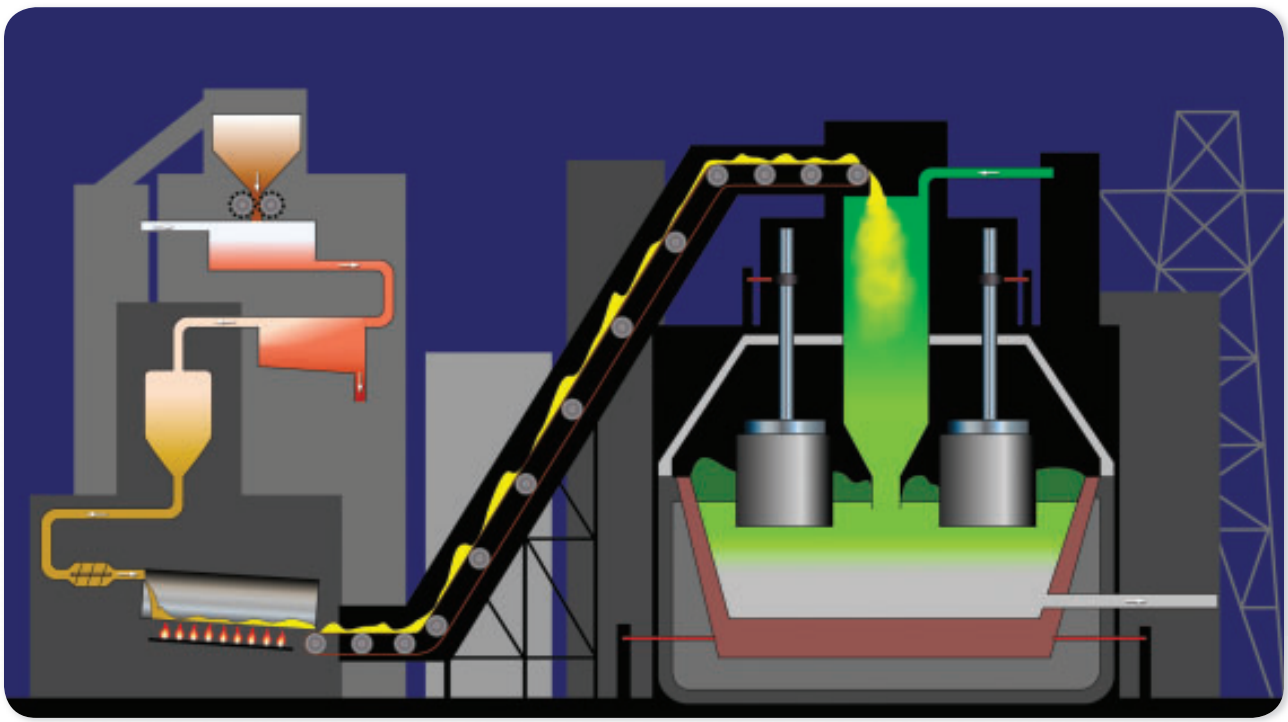
"The Iceland Experiment"
from *The World of Business DVD*

Refining is a processing step used by metal-producing firms, oil companies, and even sugar companies to convert a raw material into a semi-finished or finished product. Refining ore, for example, separates aluminum oxide from the rest of the mineral. It takes approximately 4 tonnes of bauxite to obtain 2 tonnes of aluminum oxide, which will become 1 tonne of aluminum metal.

The aluminum oxide goes through a smelting phase, in which it is heated to remove the aluminum from the refined ore. Smelting is a common process for metal extraction. The aluminum factory then processes the raw metal into bars, ingots, sheets, or wire. Other manufacturers purchase the metal to use in making cars, machinery, cables, and toasters (to name a very few of the thousands of products that use aluminum). As you can see, aluminum goes through a number of processing stages before it is ready for products you may use.

Quality Control

Quality control ensures that the product a company makes conforms to certain standards. In most cases, these standards are set by the company itself, but certain products, such as food,



A schematic diagram that shows the stages of aluminum processing

medicine, and toys, must meet government standards as well. Large companies have quality control departments, which test samples of the finished product for defects. Rejected products are recycled, if possible. Even small firms must take quality control into account so that their customers can rely on them for consistency.

Quality standards are also set by the International Organization for Standardization, or ISO (the name is a short form of *isos*, the Greek word for "equal"). ISO is an organization that sets worldwide standards for numerous industries. Each of the 157 countries that belong to ISO can appoint one member to represent all the national standard institutes of its country. The Canadian member represents the Standards Council of Canada, which is the voice of the 15 000 Canadians who help set standards for Canadian products.

ISO helps businesses, consumers, customers, governments, and trade officials. All these people can be sure that an ISO-certified product meets international standards and expectations in such industries as aviation, automotive, construction, electronics, health care, medicine, telecommunications, and metals.

Ethical, Moral & Legal Considerations

Chicken is a very popular meat, but many feel the chicken production industry can be cruel to the birds. Broiler chickens are the most popular chicken on the market and fast-food menus. These chickens are raised in large, windowless buildings in flocks of between 20 000 and 50 000 birds. Feeding, watering, temperature, and ventilation are all automatically controlled. Most broiler chickens are slaughtered after just six or seven weeks (a chicken's natural lifespan is around seven years). The farm carefully controls the artificial lighting within the broiler sheds. When the chickens first arrive, the lighting is bright so the chicks can find the food and water. This encourages eating and rapid growth. After a time, this lighting is dimmed in order to prevent fighting between chickens. The birds have little space in which to move. The space diminishes even further as the chickens grow.

Free-range chickens are raised in open pastures where they forage during the day for natural foods. They return to their nesting sheds at night. As a result of their daily exercise, the chickens develop good muscle tone and are much more meaty than the farmed chickens (it is the muscle tissue of the chicken that we eat). The chickens are treated better, and the meat is tastier, but these birds are more expensive for the consumer.

If we impose free-range standards on all chicken production, the price of chicken will skyrocket. How important is it to you how chickens are raised? Do you care more about the availability of inexpensive chicken from the supermarket or your favourite fast-food restaurant? What is your standard for the ethical treatment of chickens? Discuss your opinions with others in the class to obtain different points of view.

Business Fact

Each year in Canada, more than 25 million hens lay more than 6.8 billion eggs. About 5.3 billion of these are sold as table eggs, and the rest are processed into a liquid, frozen, or dried form. Canadian egg products are recognized internationally for their superior quality. The most popular breed of chicken for egg production in Canada is the White Leghorn. The average Canadian flock size is 17 000 hens, but five farms in Canada have flocks larger than 100 000 hens. The average laying hen produces about 285 eggs per year.

Products without certification may not meet these international standards. Would you fly on a plane that did not use ISO-certified parts?

Grading

Grading is related to quality control in that graded products are checked for size and quality against fixed standards for the product category. After the product is checked, it is assigned a specific grade: Grade A is better than Grade B, Prime is better than Choice, and so on. The grade is often prominently displayed on or near the product or on the packaging so the consumer can make informed judgments about a purchase. Eggs, fruit, and vegetables are graded (Grade A, Extra Large eggs, for example). So are gasoline, meat, grain, gemstones, and lumber.

Many other products are not formally graded, but the way they are advertised and sold can indicate that the product has not met the manufacturer's own standards. Manufactured products that have slight defects are sold as "seconds." Appliances that have surface damages are sold in "scratch and dent" sales. These products will be safe to use. Frequently, the flaws are cosmetic—that is, they affect only the way the way the product looks. Many consumers take advantage of the lower prices of less-than-perfect grades to save money.

Review Questions

6. What are two stages in metal processing?
7. Name five products that are graded.
8. What is the main role of the purchasing department?
9. Briefly describe the purpose of ISO.

Keep in Mind

1. training
2. capital investment
3. investment in technology
4. new inventory systems

5.3 Improving Productivity

Have you ever needed to get a report or essay done in a very short period of time? You have probably tried to speed up on the keyboard. Did you make mistakes that slowed you down because you were trying to go too fast? That's what often happens in businesses as well. Just because a production line moves faster, it does not mean an increase in productivity.

In the News

McDonald's Corporation trains its store managers in a very special way. It operates a Hamburger University. Each year, more than 5000 managers from any of the 119 countries where McDonald's operates receive training there. The major goal of the university is to be sure every McDonald's manager across the globe is getting the same message and using the same processes. The managers can train their staff, but McDonald's wants to train its managers.

To do this, the company operates a 130 000-square-foot building near the McDonald's corporate headquarters in Oak Brook, Illinois. Built in 1983, Hamburger U, as it's called, offers classes in 28 languages and has 19 trainers on site who teach the fundamentals of McDonald's management systems. McDonald's has also established six satellite universities around the world. Initial training is given to new employees at regional training centres scattered about the globe. When it comes to training, few companies invest as much time and energy in the process as McDonald's does.

This machine increases productivity by filling hundreds of cans of paint very quickly.

The classic television sitcom *I Love Lucy* once aired an episode in which the heroine, Lucy, had to package chocolates from a moving belt. The belt speeds up, and she cannot package fast enough. She tries to solve the problem by eating the chocolates and stuffing them in her uniform and under her hat. Obviously, speeding up the belt did not increase her productivity.

Increasing productivity consists of maintaining quality while increasing speed, increasing quality while maintaining speed, or increasing both quality and speed. For example, if employee A in a local coffee shop serves 100 people per hour, and employee B serves only 50 people per hour, employee A could be considered twice as productive as employee B.

Productivity can always be improved. A faster machine, more employees, or an upgraded inventory system will produce things faster and maintain or improve quality. But improved productivity must also not decrease profitability. New machines, employees, and inventory systems cost money. The increase in productivity must result in more profit to be important in any business.

Stretch Your Thinking

Is it possible that employee B is actually as productive as employee A? Explain.

Lucy covered in melted chocolate.

Training

Employees are productive when they know what they are doing. Training programs are essential for improving productivity. Good trainers, like good teachers, can help employees learn how to do their job better. There are four major types of training (see Table 5.2).

Capital Investment

A new computer, a new machine, a new office building: all these things require an investment of capital, and all of them could contribute to increased productivity. The cost/benefit comparison should be considered here, however. Will the cost of the new capital good increase productivity enough to pay for itself within a fixed period of time? If it takes too long to recoup the costs, the new item will not increase profitability even though it increases productivity.

Business Fact

Many businesses try to increase productivity by encouraging customers to "upsize": to order a larger amount than they had initially planned. For instance, it takes the same amount of time to sell a large drink as it does to sell a small drink, and the large drinks are much more profitable.

Investment in Technology

What do the following have in common: accounting software that produces instant and up-to-date product sales data in any specific territory; import software that calculates taxes, duty, and currency conversions for shipments all over the world;

Table 5.2

Four Major Types of Training
1. Initial Training
New employees often receive paid training during their first few days on the job. Although some businesses try to minimize the training period so the employee will become productive more quickly, longer training can lead to increased productivity over the long run. If the training is too short, the employee may • get frustrated and quit; • make many mistakes, frustrating customers and co-workers; or • damage expensive equipment.
2. Ongoing Training
When new systems or procedures become part of the business, training time must be allocated to help employees learn the new material. Management might also conduct refresher courses in customer relations, safety, and other important ongoing aspects of the job.
3. Retraining
When an employee transfers into a different job, retraining is often needed. The training manager may use techniques similar to those used in the initial training process.
4. Specialized Training
Training that helps workers upgrade their skills is called "professional development." Courses are offered away from the normal workplace and may be provided by specialists in a particular field, sometimes at a professional conference. Specialized training can be very expensive, but often pays off in terms of new ideas and enthusiasm that can greatly increase a person's productivity.

and Research In Motion's BlackBerry: a phone, database, Internet, text-messaging centre, and appointment calendar all in one? These products are all examples of existing information and communication technology that increases productivity. Producers can communicate with suppliers, sales representatives can provide customer service or process orders, and purchasing managers can source cheaper products anywhere in the world, instantly. Retailers know how many size large sweatshirts are needed to replace inventory sold in a store in Flin Flon, Manitoba, within minutes of when they are needed. Technology allows companies to track shipments, research the competition, explore foreign markets, and arrange inventory

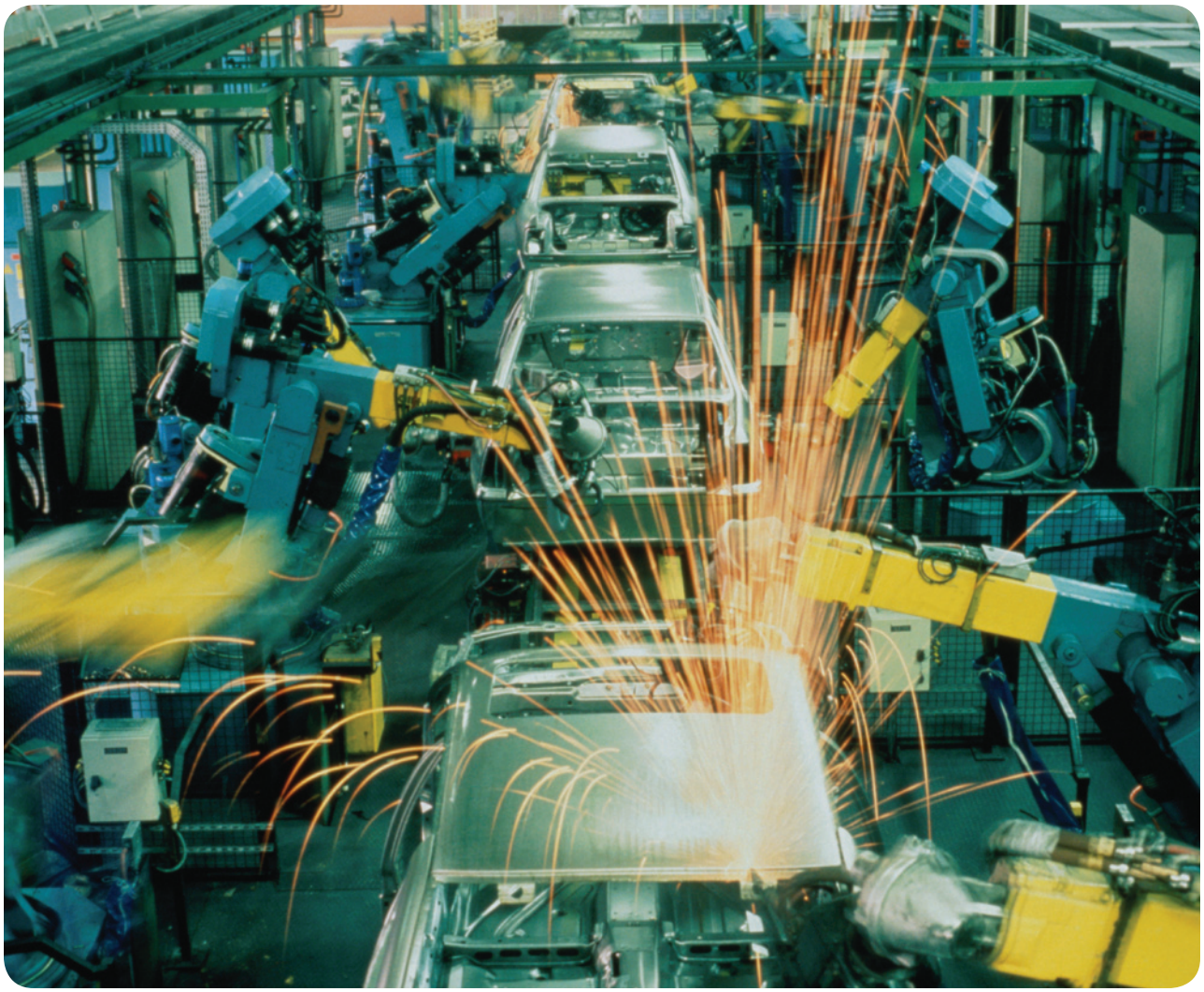
E-ACTIVITY

Visit www.nelson.com/WOB and follow the links to learn how advances in technology can enhance business productivity.

shipments to match the production schedule. Businesses that are not updating their technology are losing a major **competitive edge** in increased productivity.

The World of Business DVD
"Waterslides: Making a Splash"
from *The World of Business DVD*

Another way businesses can invest in applications of technology that will increase productivity is through robotics and automation. More and more production companies are using computer-controlled machinery to perform repetitive tasks. Robots require a major capital expenditure, but they provide a workforce that doesn't get sick or take vacation time, can work in conditions of extreme heat or cold, and work 24 hours a day, seven days a week, without pay.



Without the use of robotics and automation, assembly-line production of automobiles would be next to impossible.

New Inventory Systems

Several young entrepreneurs created a business based on a simple product called the Earth Buddy. The Earth Buddy was made of a leg from a pair of panty hose filled with some sawdust mixed with grass seed. The finished product had googly eyes and a painted nose and mouth. When you watered the Earth Buddy, the grass grew out of its head. It was a novelty product that was popular for a time. So popular, in fact, that the manufacturers kept running out of raw materials and had to stop production until they could get more sawdust, or panty hose, or even eyes. These entrepreneurs (who went on to found the toy company Spin Master Ltd.) learned a lesson: the importance of inventory management.

Production stops if all the raw materials are not there. Conversely, production speeds up if all the needed parts are there precisely when needed. **Just-in-time (JIT)** inventory systems coordinate suppliers, warehouse storage, and factory floor delivery so that no material is on the factory floor that won't be used up in a short space of time. Production statistics are fed from the factory's computer to the various suppliers, who then know how much inventory they need to ship and how much they must have on hand to prevent the type of inventory shortages that Earth Buddy experienced. This saves time, energy, waste, and factory space and increases productivity a great deal. Factory workers no longer have to look for the inventory they need to make the product or their assigned portion of it. The just-in-time inventory system is all about having the right material, at the right time, at the right place, and in the right amount.

Review Questions

10. What are the four types of training?
11. State one way the following could improve productivity in a bakery:
    a) capital investment
    b) investment in new technology
    c) just-in-time inventory system