Mathematical Models with Applications

Entrepreneurship: Keeping Score with Mathematics

Unit I: Introduction to Entrepreneurship

Teacher Notes, Student Activities, and Transparencies

A publication of the
Charles A. Dana Center at The University of Texas at Austin
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Introduction

The Dana Center has developed *Entrepreneurship: Keeping Score with Mathematics* as a module for teachers to use in teaching Mathematical Models with Applications. Mathematical Models with Applications is a high school course with an Algebra I prerequisite that uses mathematics as a tool to model real-world phenomena in science, finance, music, and art. The course is intended to build on the mathematical background of the students yet stretch their knowledge toward topics studied in Geometry and Algebra II. Basic Understandings developed by the TEKS writing teams for the Mathematical Models with Applications course are available on the Dana Center’s Mathematics TEKS Toolkit at [www.mathtekstoolkit.org](http://www.mathtekstoolkit.org).

*Entrepreneurship: Keeping Score with Mathematics* uses business and marketing models, case studies, and financial models to reinforce and clarify the mathematics that underlie everyday transactions in the world of entrepreneurship. This module consists of four units—“Introduction to Entrepreneurship,” “Grape Expectations,” “Finance,” and “Student Business Project.” Each unit includes teacher’s notes, student activities, and transparencies.

A module that focuses on the science TEKS of Mathematical Models with Applications is also available at [www.mathtekstoolkit.org](http://www.mathtekstoolkit.org). For information about other Dana Center resources, or to visit our Web catalog, go to [www.utdanacenter.org](http://www.utdanacenter.org).
Mathematical Models with Applications

Entrepreneurship: Keeping Score with Mathematics

Unit I: Introduction to Entrepreneurship

Teacher Notes, Student Activities, and Transparencies
Section 1: Firms and Their Development in the American Economy
Teacher Notes

Context Overview:
In this lesson, students read two readings about several different entrepreneurs and answer questions about the readings. They are introduced to how an entrepreneur recognizes opportunity, and they learn about the role entrepreneurs have played in the American economy.

Goal:
This section should pique students’ interest in entrepreneurship and provide a framework for the following units.

TEKS Addressed:
There are no TEKS directly addressed by this activity. However, the activity lays the foundation for further study of entrepreneurship.

Materials:
Copies of readings 1 and 2 (1 per student)
Reading focus questions (1 per student)

References:


Procedures:

Reading 1

1. Allow the students to preview the questions prior to doing the reading. This may help them focus during the reading.

2. Ask students to read Reading 1 and answer questions 1A-C on the reading focus questions worksheet.
3. Discuss the students’ answers to the questions, summarize, and define *entrepreneur*.

**Possible Answers:**

A. What did all of the stories have in common?
*Answers will vary. Possible answers are:*

- All the companies were small when they started.
- All the companies were started by one or two people.
- All of the entrepreneurs saw a “window of opportunity” for a certain product or service.

B. What were some differences between the stories?
*Answers will vary. Possible answers are:*

- Some of the businesses started on a part-time basis.
- Some people learned skills in the military.
- Some companies eventually ended while others merged or acquired other companies.

C. How would you define *entrepreneur*?
*After some discussion, the class or groups may decide on a definition. Two of the most widely accepted definitions of “entrepreneur” are:*

- A person who perceives an opportunity, acquires the necessary resources, and creates an organization to pursue it.
- A person who identifies an opportunity and pursues it regardless of the resources available to them. Other definitions seem to convey the same concept and include phrases such as “for long-term personal gain,” “innovative or creative process or products,” or “significant market potential.”

4. You may also want to ask the students, “Are you an entrepreneur if you started or acquired a business?”

*For example, Dave Thomas, the founder of Wendy’s (Reading 1), started his business when he saw an opportunity to provide a moist, juicy fast-food hamburger. Ask the students if they can think of a business which was acquired by someone and developed into a successful business. One example that might be given is Ray Kroc of McDonalds, who saw the opportunity to expand nationwide using the fast-food concept developed by the McDonald brothers.*

**Reading 2**

1. Allow the students to preview the questions prior to doing the reading. This may help them focus during the reading.

2. Ask the students to read Reading 2 and answer questions 2A-C on the reading focus questions worksheet.
3. Discuss and summarize the students’ answers to the questions.

Possible Answers:

A. Does a business need to grow fast to be considered an entrepreneurial firm?
   Not necessarily. The rate of growth and the ultimate size of a business are a function of the entrepreneur’s desire for growth and the ability to manage growth in an expanding market. Not all businesses are intended to be large firms.

B. How did Dave Thomas and Chevrolet get into their respective markets?
   They wanted to produce moist, juicy hamburger patties and colored automobiles, respectively.

C. Give some examples of how opportunities arose for Wayne Huizenga.
   Waste Management System: Customers became dissatisfied with the timeliness and cleanliness of their trash removal.
   Blockbuster: Customers objected to the limited number of videotapes available for rental and the requirements for buying a membership card.
   AutoNation: Customers wanted a no-hassle, one-price approach to buying an automobile.

D. Why are there no new mousetraps on the market today?
   Answers may vary. Perhaps mice are not as common today because we have better sanitation and poisons.
Student Activity
Reading Focus Questions

1. Read Reading 1, and answer the following questions.
   A. What did all of the stories have in common?

   B. What were some of the differences in the stories?

   C. How would you define entrepreneur?

2. Read Reading 2, and answer the following questions.
   A. Does a business need to grow fast to be considered an entrepreneurial firm?

   B. How did Dave Thomas and Chevrolet get into their respective markets?

   C. Give some examples of how opportunities arose for Wayne Huizenga.

   D. Why are there no new mousetraps on the market today?
Reading 1
From Acorns to Mighty Oak Trees

Most new business ventures in the United States do not grow much beyond their initial sales. The reason is that these businesses are often formed to provide temporary income between regular jobs, or they are an extension of a craft or hobby. Frequently, the idea is that the business will be started on a temporary or part-time basis, and if the concept is feasible, it will be expanded to a full-time operation.

Heavenly Potpourri Pies was started to provide a unique craft for household parties and a gift item to enhance the aroma of a house. Cari conceived the idea of filling a baked piecrust with potpourri and covering it with a criss-crossed top crust. The pie could be warmed to enhance its aroma and then set out for a party or other gathering. The owner, her sister, and a friend baked the pies while another friend made the deliveries. Orders came from people at craft shows as well as friends and family members. The concept was well received. The business ceased when the part-time deliverer had to leave because of job pressures, and the owner decided that the venture was not going to grow to the point that it would replace her full-time job.

Bob Evans returned from military service in 1946 and purchased a small 12-stool diner. Unique to the diner was "whole hog" sausage. His truck-driving customers soon began to buy the sausage, uncooked, in 6-pound tubs to take home. The truck drivers spread the word about the sausage throughout Ohio, Indiana, Illinois, Kentucky, Michigan, and West Virginia. By 1989, there were 222 Bob Evans restaurants. Bob retired in December, 1986. In 1987, Bob Evans restaurants acquired Owens Country Sausage of Richardson, Texas.

Colette Fitzpatrick, a high school student, started a lawn cutting business in her neighborhood. Colette offered high-quality cutting, trimming, and clean up for a price that was about half that of a full-time lawn service. She built the business in the second summer to about 15 lawns per week. She decided she was "maxed out" and hired a friend to help. Colette ended the business and gave all her clients to her friend when she left home for college.
Dave Thomas, founder of Wendy's, learned his trade when he was a cook in the military. After leaving the military, he managed a number of restaurants for a chain until he discovered that people buying hamburgers at fast food stores preferred a juicy hamburger. The rest is history. Dave is now retired, but he is the star in Wendy's commercials.

Edward Lowe combined his love for cats with his dislike of cleaning cat boxes. He located a couple of sources of highly absorbent, relatively dust-free dirt. He used this dirt to produce Kitty Litter.

Ewing Marion Kauffman was a successful pharmaceutical salesperson. His commission sales were such that his income was greater than the president of the company's salary. When his commissions were cut, he quit his job and started packing pills from bulk into smaller containers. He sold them to the same drugstores that he had sold to with his original company. He called his new company Marion Labs, and it later merged with Dow Chemical into Marion Merrill Dow. His estate funded the Ewing Marion Kauffman Foundation, which funds, among other things, entrepreneurship education programs in middle and high schools throughout the United States.
Reading 2
Entrepreneurship

In this module, we are going to look at the entrepreneur. We will determine what it takes to start a business, and you will create a business plan of your own. Before we get started, we need to think about a few characteristics of entrepreneurs.

One question to consider is about growth. Does a business need to grow fast to be considered an entrepreneurial firm? Once a business has been started, it needs to grow until the owner is satisfied with the amount of money being created by the firm. Michael Dell, founder and C.E.O. of Dell Computer Corporation, and Bill Gates of Microsoft, have created businesses that have grown rapidly. Other companies, such as Justin Boots and Taco Cabana, have experienced slower, yet substantial, growth. Perhaps the growth and the ultimate size of a business are a function of the entrepreneur's desire for growth and the ability to manage growth in an expanding market. Growth is not automatic. It is controllable and can be managed, nurtured, or pruned.

Not all businesses are intended to become large firms requiring a full-time effort on the part of the entrepreneur. In some of the examples you just read, many of the businesses were established to provide supplemental income. Another example might be a teacher who provides tutoring services part-time in addition to his or her teaching. A business may also be a substitute for a full-time job when a person is between jobs.

Effects of Product Ideas and Marketing on Growth

Businesses with a creative product or marketing process have a greater opportunity for growth if that growth can be achieved before others copy the concept. This type of growth often results from identifying a need in the marketplace. When Dave Thomas started Wendy's, he had to determine how to produce juicy hamburgers without wasting food. Thomas achieved this by removing the hamburger patty from the grill before it became overcooked and using it as the ground hamburger in chili. Years ago, Chevrolet gained a foothold in Ford's essential monopoly by offering automobiles in different colors. Ford offered its Model T in one
color—black. Chevrolet offered several colors, and they were twice as expensive as the Ford automobiles were.

**Opportunity Recognition**

It has been noted that entrepreneurs identify opportunities at a time when they are prepared to convert those opportunities into business ventures. Some call this luck.

Wayne Huizenga is the entrepreneur who built Waste Management, Blockbuster Video, and AutoNation. All three firms are the largest in their industries. He also owns the Miami Dolphins, the Florida Panthers, and Pro Player Stadium. The opportunity for Waste Management arose when customers became dissatisfied with the cleanliness and the amount of time required for trash removal. Wayne started this business with leased trash containers.

The founding of Blockbuster was the result of a friend informing him of a business opportunity in Dallas, Texas. The friend told him that customers objected to the limited number of videotapes available for rental and to the requirements for buying membership cards. Wayne built a chain of large video stores and gave discounts to those with membership cards.

Finally, Wayne built AutoNation to provide customers with a no-hassle, one-price approach to buying an automobile. AutoNation addressed the customers’ frustration with high-pressure salespeople who push options in order to increase their commissions. It is interesting to think about how many others had identified the same needs or frustration but were not prepared to take action.

Consider the often-noted demand for a better mousetrap. At last count, there were about twenty patents for "improved mouse traps" registered with the United States Patent Office. Yet only the standard trap appears on the markets, and its demand has been reduced by other means, such as better sanitation and poisons. Absence of a product in the marketplace does not always indicate an unfilled demand. For example, how many guillotines are sold on a yearly basis?
Section 2: Demographic Profile of U.S. Businesses
Teacher Notes

Context Overview and Mathematical Development:
The driving question of this module is “how do businesses keep score?” First, students look at
growth. They discuss what growth is and how it should be measured. Mathematically, they are
looking at differences verses percentages. Next, they calculate growth rates and compare them as
one year to three and five year averages. They then look at the number of businesses formed each
year graphically by constructing a scatterplot. Based on this information, they look for trends and
make a prediction.

Goal:
Students will formulate mathematical model using business statistics.

TEKS Addressed:
Mathematical Models with Applications: The student is expected to
   1A - compare and analyze various methods for solving a real–life problem;
   1B - use multiple approaches (algebraic, graphical, and geometric methods) to solve
   problems from a variety of disciplines;
   2A - interpret information from various graphs, including line graphs, bar graphs, circle
   graphs, histograms, and scatterplots to draw conclusions from the data;
   2B - analyze numerical data using measures of central tendency, variability, and correlation
   in order to make inferences;
   2C - analyze graphs from journals, newspapers, and other sources to determine the validity of
   stated arguments.

Materials:
Calculator
Activity Sheets
Transparencies

References:
Dun & Bradstreet. 2000. Demographic Profile of U.S. Businesses, Dunhill International,

Dennis, W., and B. Phillips. 2001. The Shape of Small Business. Washington,

Vocabulary:
**Revenue**: money earned from the sale of products or services.

**Profit**: revenue minus the costs associated with the manufacture and sale of the product.

**Refurbished computers**: computers that did not meet specifications when they were assembled. They are then reworked, usually with some parts exchanged until they meet specifications.

### Procedures:

**Student Activity 1: What Is a Business?**

1. Before beginning this lesson, open a discussion with the question, “What is a Business?” Allow time for students to answer, and then relate the following information to the students:

   Zoltan Acs, a noted economist, defined a business as a conscious, willful effort to organize economic activity that consists of a collection of contracts when more than one party is involved. A business is a legal entity, recognized by law, which is permitted to enter into binding contracts with persons or other businesses. It is interesting to note that the definition does not discuss profits or the type of business.

2. Distribute Student Activity 1: What is a Business? Show transparencies 1 and 2. Discuss the following with the students:

   There are three main forms of business organizations in the U.S—sole proprietorships, partnerships, and corporations. To help students gain a better understanding of the differences between these three types of businesses, discuss the definitions, advantages, and disadvantages given on the activity sheet.

   The teacher may also give students this additional information:

   The most interesting aspect of a corporation is the potential separation of ownership from control. This is especially true in large corporations. The owners of the business are stockholders. Businesses are usually managed by a Chief Executive Officer (C.E.O.) and a management team that reports to a board of directors. The board of directors is responsible for representing the interests of the stockholders. Conflicts arise when one group seeks to advance its own interests over the interests of others.

3. Ask the students to work with a partner to examine the two circle graphs and answer the questions. Ask them to share their conclusions with the class.

### Questions and possible answers:

1. Name some examples of each type of business in your community.
   Answers will vary. The teacher should research the names of local businesses before beginning this lesson.
2. What type of business is most common?
   *Sole proprietorship.* Roughly eighty percent of businesses operate as sole proprietorships. The remaining twenty percent is divided equally between partnerships and corporations.

3. Determine the validity of the following statements.

   A. Sole proprietorships contribute more to total sales than do any other type of business.  
      *False.* Actually, *corporations contribute the most to total sales.*

   B. Partnerships are the least common business, and they contribute the least to total sales.  
      *False.* *Partnerships and corporations make up about 20 percent of the business organizations* (10 percent each). *Partnerships do, however, contribute the least to total sales.*

4. Why do you believe the type of business that is the most common does not contribute the most to sales?
   *Answers will vary.* Possible answers: *Corporations are larger and have more inventories to sell. Sole proprietorships are generally smaller with less to sell or produce. Also, corporations, using mass production, can produce products cheaper.*

4. You may end the activity by showing Transparency 3 and discussing the interesting facts about business in the United States.
Student Activity 2— Keeping Score: How Do We Compare Two Businesses?

1. Distribute Student Activity 2, and lead the students through the first three exercises.

2. Discuss student answers, and summarize.

Possible Answers

1. Business growth is key to the U.S. economy. Growth could be measured by an increase or decrease in sales, an increase or decrease in profits, or an increase or decrease in company size (number of employees).

A. Which is the best way to measure growth, and why?

   **Lead discussion about growth. Does an increase in sales constitute growth?**

   Economic development organizations prefer to use an increase in the number of the business's employees as a measure of growth. This is to be expected, since their activities are designed towards producing new jobs for an area. Few businesses share this goal. **Most are interested in creating wealth for the owners and/or stockholders. However, sustainable growth over a period of time can only be achieved when a business has an annual increase in both sales and profits.**

B. Would a growth in profits be a better measure?

   **After-Christmas sales increase the business's sales but generate little or no profit due to reduced selling prices. Profit can be used to repay debt, acquire new equipment, or cover any of the other expenses of a business.**

   Perhaps a combination of growth in sales and growth in profits would be a better measure.

C. A study of the top sales growth businesses in each industry showed that, overall, only 38 percent of the top businesses in sales also were in the top 25 percent in profits. What do you think this means?

   **Very few of the companies that have the highest sales also have the largest profits. To keep up with the population growth, the U.S. economy needs to generate about 10,000 jobs every working day, or about 2.5 million additional jobs each year.**

2. If we look at growth in terms of sales, should it be measured as total sales or as a percentage of total sales? Consider the following examples:

   **Sally’s Small Clothing Store** sells baby clothing. Last year, Sally’s store sold $100,000 in clothing. The year before, her store only sold $75,000 in clothing.

   **Computer Warehouse** sells refurbished computers. Last year, Computer Warehouse sold
$2.5 million in computers. The year before, the warehouse sold $2 million in computers.

Which business would you say grew more? Why?

Engage the students in a discussion about growth rate versus change in profits.

- What is the difference in profits for the stores?
  Sally’s: +$25,000; Computer Warehouse +$5,000,000
- What is the growth rate (percent of increase) in sales for both stores?
  Sally’s: 33.3 percent; Computer Warehouse: 25 percent

Point out that when we look at growth rate, we are looking at a percent increase in sales, not a rate of change over time (slope).

Have students justify which company they believe had more growth.

• (Optional extension question) How do businesses compare their performance to that of other businesses?

Share the following information with the students:

In 1937, a method of classifying businesses was started. The purpose of the classification system was to help various agencies collect data. The list created became the Standard Industrial Classification (SIC) in the United States. The SIC system has been revised periodically to reflect the economy’s changing industrial composition and organization. The latest revision of the SIC was in 1987.

Businesses that manufacture or sell the same items are given the same SIC code. The first two digits of these four-digit numbers represent a broad category. For example, “23” identifies apparel and other textile products. Within SIC code 23 is SIC 233, Women’s and Misses’ Outerwear, which can be sub classified more as SIC 2331, Women’s and Misses’ blouses and shirts. Businesses compare their growth rate to that of others in the same industry (four-digit SIC).

In 1997, in response to the changing nature of businesses, a much broader classification system, the North American Industry Classification System (NAICS), was developed. The NAICS divides the economy into twenty sectors (five goods-producing and fifteen services-producing industries) that include 1,170 industry classifications. This system of classification is incorporated periodically as reports from various organizations are prepared. The complete changeover should be made by 2007.

The development of the new NAICS system was required because there are many new industries that did not exist in 1997. For example, in 1997, all electronic computing equipment was in a single four-digit SIC code. Under NAICS, there are six different four-digit NAICS codes for electronic computer equipment.
3. Many analysts consider growth rate for only the most recent year. Others use a three-year average growth rate. Still others look at the average growth rate over a five-year period. Which seems to be the best method for analyzing growth rate?

Let’s look at an example:

<table>
<thead>
<tr>
<th>Year</th>
<th>Jack &amp; Jill’s Pizza</th>
<th>Pizza by Paul</th>
<th>Pam &amp; Pixy’s Pizza Palace</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>49.4</td>
<td>50</td>
<td>30</td>
</tr>
<tr>
<td>1995</td>
<td>52</td>
<td>47</td>
<td>35</td>
</tr>
<tr>
<td>1996</td>
<td>55</td>
<td>49.2</td>
<td>38.3</td>
</tr>
<tr>
<td>1997</td>
<td>54.6</td>
<td>51</td>
<td>40.3</td>
</tr>
<tr>
<td>1998</td>
<td>52.9</td>
<td>52.3</td>
<td>41.5</td>
</tr>
<tr>
<td>1999</td>
<td>54.8</td>
<td>55.4</td>
<td>43</td>
</tr>
</tbody>
</table>

A. Comparing revenue, which company seems to be most successful? Why?
Answers will vary. Possible answers are: Pizza by Paul, because it has the most revenue in 1999, or Pam & Pixy’s Pizza Palace, because the increase in revenue was $13 million over the 5-year period.

B. Calculate the percent of increase, and complete the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Process</th>
<th>% of Increase</th>
<th>Process</th>
<th>% of Increase</th>
<th>Process</th>
<th>% of Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>94–95</td>
<td>——</td>
<td>.053 or 5.3%</td>
<td>——</td>
<td>.06 or -6%</td>
<td>——</td>
<td>.167 or 16.7%</td>
</tr>
<tr>
<td>95–96</td>
<td>.019 or 1.9%</td>
<td>.047 or 4.7%</td>
<td>——</td>
<td>.094 or 9.4%</td>
<td>——</td>
<td>.052 or 5.2%</td>
</tr>
<tr>
<td>96–97</td>
<td>.03 or 3%</td>
<td>.037 or 3.7%</td>
<td>——</td>
<td>.052 or 5.2%</td>
<td>——</td>
<td>.03 or 3%</td>
</tr>
<tr>
<td>97–98</td>
<td>.031 or -3.1%</td>
<td>.025 or 2.5%</td>
<td>——</td>
<td>.03 or 3%</td>
<td>——</td>
<td>.036 or 3.6%</td>
</tr>
<tr>
<td>98–99</td>
<td>.036 or 3.6%</td>
<td>.059 or 5.9%</td>
<td>——</td>
<td>.036 or 3.6%</td>
<td>——</td>
<td></td>
</tr>
</tbody>
</table>

The formula used to calculate the percent of increase is

\[ \frac{\text{current revenue} - \text{previous revenue}}{\text{previous revenue}} \]
You may need to remind students that we are not comparing a constant rate of growth over time (slope) but, instead, are looking at a percent of increase in growth rate for one year.

C. Comparing the percent of increase for ’98–’99 (1 year), which company is more successful? Pizza by Paul, 0.059, or 5.9%, is the highest percent of increase for that year.

D. Find a three-year average for the percent of increase for each company. Use 1996–1999.

\[ \begin{align*}
\text{Jack & Jill’s Pizza} & = 0.017 \text{ or } 1.7\% \\
\text{Pizza by Paul} & = 0.0 \text{ or } 4\%
\end{align*} \]

\[ \begin{align*}
\text{Pam & Pixy’s Pizza Palace} & = 0.039 \text{ or } 3.9%
\end{align*} \]

E. Using a three-year average, which company is more successful? Pizza by Paul

F. Find a five-year average for the percent of increase for each company. Use all five rates of growth.

\[ \begin{align*}
\text{Jack & Jill’s Pizza} & = 0.021 \text{ or } 2.1\% \\
\text{Pizza by Paul} & = 0.022 \text{ or } 2.2\%
\end{align*} \]

\[ \begin{align*}
\text{Pam & Pixy’s Pizza Palace} & = 0.076 \text{ or } 7.6\%
\end{align*} \]

G. Using a five-year average, which company is more successful? Pam & Pixy’s Pizza Palace

H. After working some examples, which method do you think is the best: one-year, three-year, or five-year averaging?

Answers will vary. Here is some information you may want to discuss with the students:

One-year growth rates tend to change significantly due to short-term changes (e.g., the addition or loss of a major customer or a manufacturing problem that resulted in delays resulting in products not being shipped in the time period).

Three-year average growth rates are considered more reliable because most trends, in general economic conditions, occur during a three-year period.

Most long-term industry cycles occur within a five-year period. The longer-term cycles affect the entire SIC division.

• (Optional extension question) What are some limitations of averaging over five years?

While the five-year level offers the best perspective on growth rate, its limitations are that most businesses need more up-to-date information, and the data are more difficult to gather.

4. Now we can compare businesses by using growth rates. Has there been a general growth trend among entrepreneurship businesses in the U.S. economy?

Allow the students time to work on #4.

In order to answer this question, let’s take a look at the data.
A. What is the independent variable? What is the dependent variable?
*The independent variable is the year. The dependent variable is the number of businesses started.*

B. Make a scatterplot of the data.

```
<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Businesses Started</th>
<th>Year</th>
<th>Number of Businesses Started</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
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<td>153,580</td>
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</tr>
<tr>
<td>1980</td>
<td>169,096</td>
<td>1999</td>
<td>174,593</td>
</tr>
</tbody>
</table>
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C. Do you see any patterns in the data? What do you think would be an appropriate mathematical model for the data?
*The data appear to be modeled by a linear function; however, a case could be made for an exponential model until 1966.*
D. What do you notice about the growth? Can you offer an explanation?
   Answers will vary. One possible answer is that overall growth increases until 1996 but then starts to decrease. This may be due to more businesses ceasing operations than they started, or it could be the result of consolidations (businesses being purchased by other businesses).

E. Which year corresponds with the largest number of businesses started? Why?
   1996, because “smaller is better” had became the management approach. Between 1987 and 1992, the 500 largest U.S. companies reduced their number of workers by 1.3 million. The laid off employees found themselves with managerial skills but little or no opportunities to use them. Hence, a number of them decided to form small companies utilizing new management processes and manufacturing techniques that allowed them to compete on a cost basis in the marketplace.

F. What do you predict will be the number of businesses started in 2005?
   In order to answer this, students will need to find a trend line. Answers will vary. Using linear regression, the prediction is \(430,740\) businesses. Students’ answers should be around this number.

The previous data is from Dun and Bradstreet. There are five major sources of information used to track the number of businesses in the United States:
   1) The Internal Revenue Service (IRS) counts filed Schedule C tax forms.
   2) The Department of Labor (DOL) counts data collected by each state based on unemployment compensation insurance payments.
   3) Another Department of Labor count is based on social security payments.
   4) The Census Bureau compiles payments to the Social Security Administration every five years.
   5) The DUNS Market Identifier File is gathered by the credit rating service of Dun and Bradstreet.

The government reports have a three-to-four-year lag time between their compilation and their publication. The sources of information use differing definitions of a business, and each has limitations in the data collected. The IRS data assumes that anyone who files a Schedule C in a sole proprietorship is a business. However, many sole proprietorships, partnerships, and S Corporations are artificial in that they represent businesses created solely for the purpose of avoiding taxes. The DOL count suffers from inconsistencies in data collection due to the different ways that states count businesses. The Census compilation considers every establishment in a multi-establishment firm to be a separate business. The DUNS Market Identifier file count does not include businesses without office space or those that refuse to answer questions by D&B’s credit rating service.

In 1996, the last year for which government data is available, the IRS count of non-farm business tax returns showed 23.3 million businesses; D&B data showed 8.5 million; and Department of Labor data showed 6.2 million businesses. The Dun & Bradstreet data is...
considered to be the most comprehensive micro-data set in the U.S. In addition, the data is published yearly with less than a one-year lag time.

Each year, not only do new businesses begin, but some existing businesses grow. Others decline in sales, and still others cease doing business. Most businesses experience growth rates at or near four percent per year. This is approximately the same rate as inflation! At this growth rate, the increase in sales is primarily due to price increase and not to the sale of additional products and/or services. Businesses that rank in the top growth in their industries have growth rates of 35 percent to 70 percent per year.
Student Activity 1
What Is a Business?

Background Information

There are three types of businesses defined for tax purposes: sole proprietorship, partnership, and corporation.

A sole proprietorship is a business owned by a single individual that is not incorporated. The life of the organization is limited to the life of the individual who started it.

**Advantages:**
- It is easy and inexpensive to form, and, once operating, it is subject to few government regulations.
- It pays no corporate income taxes, and its earnings are taxed at the owner’s tax rate.

**Disadvantages:**
- The business usually has difficulty obtaining large sums of capital (money).
- The proprietors have unlimited liability for business debts.

A partnership exists when two or more persons associate to conduct a non-corporate business. Partnerships may operate under different degrees of formality ranging from informal (oral understandings) to formal agreements.

**Advantages:**
- Low cost
- Ease of formation

**Disadvantages:**
- Unlimited liability of the partners
- Limited life of the organization
- Difficulty of transferring ownership
- Difficulty in obtaining large sums of capital (money)

A corporation is a legal entity recognized by the state. A corporation by law must display Inc.

**Advantages:**
- It permits limited liability for the owners since they only own
shares of stock of the corporation.

- It permits easy transfer of ownership since there are rarely conditions placed on buying or selling stock.
- It has unlimited life. It can continue to operate long after the original owners have departed.

Disadvantages:
- The legal costs of forming and maintaining the corporation can be substantial.
- The formation may require substantial legal effort and a fair amount of government regulation.

Franchises may be set up as any of the above types of businesses.

Questions

1. Name some examples of each type of business in your community.

2. What type of business is most common?

3. Determine the validity of the following statements.
A. Sole Proprietorships contribute more to total sales than do any other type of business.

B. Partnerships are the least common business, and they contribute the least to total sales.

4. Why do you believe the type of business that is the most common does not contribute the most to sales?
Student Activity 2
Keeping Score

How do we compare two businesses?

1. Business growth is key to the U.S. economy. Growth could be measured by an increase or decrease in sales, an increase or decrease in profits, or an increase or decrease in company size (number of employees).

   A. Which is the best way to measure growth, and why?

   B. Would a growth in profits be a better measure?

   C. A study of the top sales growth businesses in each industry shows that, overall, only 38 percent of the top businesses in sales also were in the top 25 percent in profits. What do you think this means?

2. If we look at growth in terms of sales, should it be measured as total sales or as a percentage of total sales? Consider the following examples:

   Sally’s Small Clothing Store sells baby clothing. Last year, Sally’s store sold $100,000 in clothing. The year before, her store only sold $75,000 in clothing.

   Computer Warehouse sells refurbished computers. Last year, Computer Warehouse sold $2.5 million in computers. The year before, the warehouse sold $2 million in computers.

   Which business would you say grew more? Why?
3. Many analysts consider growth rate for only the most recent year. Others use a three-year average growth rate. Still others look at the average growth rate over a five-year period. Which seems to be the best method for analyzing growth rate?

Let’s look at an example:

<table>
<thead>
<tr>
<th>Year</th>
<th>Jack &amp; Jill’s Pizza</th>
<th>Pizza by Paul</th>
<th>Pam &amp; Pixy’s Pizza Palace</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>49.4</td>
<td>50</td>
<td>30</td>
</tr>
<tr>
<td>1995</td>
<td>52</td>
<td>47</td>
<td>35</td>
</tr>
<tr>
<td>1996</td>
<td>53</td>
<td>49.2</td>
<td>38.3</td>
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<td>1997</td>
<td>54.6</td>
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<td>40.3</td>
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<td>1998</td>
<td>52.9</td>
<td>52.3</td>
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<tr>
<td>1999</td>
<td>54.8</td>
<td>55.4</td>
<td>43</td>
</tr>
</tbody>
</table>

A. Comparing revenue, which company seems to be most successful? Why?
B. Calculate the percent of increase, and complete the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Jack &amp; Jill’s Pizza</th>
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<tbody>
<tr>
<td></td>
<td>Process</td>
<td>% of Increase</td>
<td>Process</td>
</tr>
<tr>
<td>94–95</td>
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<td>95–96</td>
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<tr>
<td>98–99</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
C. Comparing the percent of increase for ’98–’99 (1 year), which company is more successful?

D. Find a three-year average for the percent of increase for each company. Use 1996–1999.

E. Using a three-year average, which company is more successful?

F. Find a five-year average for the percent of increase for each company. Use all five rates of growth.

G. Using a five-year average, which company is more successful?

H. After working some examples, which method do you think is the best: one-year, three-year, or five-year averaging?
4. Now we can compare businesses by using growth rates. Has there been a general growth trend among entrepreneurship businesses in the U.S. economy?

In order to answer this question, let’s take a look at the data.

<table>
<thead>
<tr>
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A. What is the independent variable? What is the dependent variable?

B. Make a scatterplot of the data.
C. Do you see any patterns in the data? What do you think would be an appropriate mathematical model for the data?

D. What do you notice about the growth? Can you offer an explanation?

E. What year corresponds with the largest amount of businesses started? Why?

F. What do you predict will be the number of businesses started in 2005?

Each year, not only do new businesses begin, but some existing businesses grow. Others decline in sales, and still others cease doing business. Most businesses experience growth rates at or near four percent per year. This is approximately the same rate as inflation! At this growth rate, the increase in sales is primarily due to price increase and not to the sale of additional products and/or services. Businesses that rank in the top growth in their industries have growth rates of 35 percent to 70 percent per year.
Types of Businesses:
- Sole Proprietorship
- Partnership
- Corporation
Transparency 2

1. Name some examples of each type of business in your community.

2. What type of business is most common?

3. Determine the validity of the following statements.

   A. Sole proprietorships contribute more to total sales than do any other type of business.

   B. Partnerships are the least common business, and they contribute the least to total sales.

4. Why do you believe the type of business that is the most common does not contribute the most to sales?
Transparency 3
Interesting facts regarding business starts and stops in 1997:

- Three out of every four new businesses in 1997 were new starts. The remaining were businesses purchased with name changes.
- One in five new businesses involved two family members.
- 16% of the new owners had started a business previously.
- Unemployed people started 6% of the businesses.
- For 35% of the owners, the reason was to supplement existing income or to provide income until they found another job.
- Less than 10% of the business starts were by persons younger than 25 years of age.
- Most of the business stops were simply "fade always." Only one in five were sold.
- Median life span of the stop/terminating businesses was between three and five years. Only one in ten had survived twenty years or more.
- Roughly 20% of the new business starts close within one year, 40% survive to five years, and 20% survive to ten years.

Section 3: Case Studies
Teacher Notes

Context Overview:
In this section, students read three business case studies and answer questions related to each business.

Dell Computers: The students will read about how Michael Dell started his company and the changes that Dell Computer Corporation has undergone since that time.

Justin Boots: The students will read about how H. J. (Joe) Justin started his company and the changes that Justin Boots has undergone since that time.

Taco Cabana: The students will read about how Felix Stehiling started his company and the changes that Taco Cabana has undergone since that time.

Goal:
The goal of this section is to provide examples of the modeling process while peaking students’ interest in entrepreneurship.

TEKS Addressed:
These activities do not provide specific TEKS that give students the necessary background for further study of entrepreneurship.

Materials:
Dell Case (How Fast Is Fast Growth?)
Justin Boots Case (The Standard of the West)
Taco Cabana Case (A Texas Institution)

References:


Taco Cabana, Inc., http://www.tacocabana.com
Procedures:

Note: Three different case studies are included in this section. You may choose one case for the students to study, or assign the cases to different groups to read. Ask them to share their information about the different businesses.

Student Activity 1: Dell Computer Corporation Case

1. Allow the students to preview the questions prior to reading the Dell case. This may help them focus during the reading.

2. After reading the case, discuss the questions and some possible answers with the students.

Questions and possible answers:

1. Does Michael Dell fit your description of an entrepreneur? Why, or why not?
   Yes. He saw the opportunity to sell newspapers to those who were recently married and those who had recently moved into new houses or apartments, and he pursued the opportunity by sending personalized letters to their homes. When the computer craze hit, he capitalized on the idea of selling directly to the customer.

2. What problems or constraints did Michael Dell identify and act upon in order to enter the market?
   Michael Dell asked himself the question, “Why not sell computers directly to the customer and pass along the dealer and wholesaler savings to them?” This is the founding idea behind Dell Computer Corporation.

3. List some examples of how Dell Computer Corporation analyzed or changed its model in order to sustain growth.
   The company’s approach was to learn from each mistake. People were hired who had a sense of adventure and versatility. The sales force set up their own computers, which accomplished two things: It gave the sales team a sense of what a customer would go through to set up a system and an understanding of the products they were selling. It also marked the start of a reputation for great service.

   Dell Computer Corporation produced the industry's fastest performing computer; they introduced the industry's first thirty-day, money-back guarantee; and they were the first PC company to offer next day, on-site product service.

   Michael Dell made three golden rules: (1) decrease inventories; (2) always listen to the customer; and (3) never sell indirect.

   In 1993, Dell suffered the pains of extremely rapid growth. The new focus became “Liquidity, Profitability and Growth.”
4. What background experiences did Michael Dell have that made him successful?
   *He learned from selling stamps that “if you have got a good idea, it pays to do something about it.” A few years later, at age sixteen, he got a summer job selling newspaper subscriptions to the Houston Post. His idea to send a personalized letter offering a subscription to the newspaper was not only new and unique, but also extremely effective.*

5. Where did he get his idea?
   *His new concept was to enhance PCs in the same way that people soup up their cars so that they can sell their PC for enough money to purchase another PC and the upgrade components.*

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**Student Activity 2: Justin Boots Case**

1. Allow the students to preview the questions prior to reading the Justin Boots case. This may help them focus during the reading.

2. The following may help clear up any confusion about the companies, so you may wish to share this after the students have read the case.

   *At one time there were four companies: Nocona, Justin Industries, Justin Leather Goods Company, and Justin Belt Company. John Jr., who managed Justin Industries in 1952, moved to acquire Nocona Boot Company in 1954. In 1955 he bought Justin Leather Goods Company and Justin Belt Company. Justin Leather Goods made purses and billfolds from scrap leather from the boot company. Justin Belt Company had been formed by John Jr. and W. D. Barton and was a very successful business.*

3. After reading the case, discuss the questions and some possible answers with the students.

---

**Questions and possible answers:**

1. Does H. J. (Joe) Justin fit your description of an entrepreneur? Why, or why not?
   *Yes. Joe Justin saw the opportunity, while patching boots, to make money by making and selling boots to cowboys. He seized this opportunity.*

2. What problems or constraints did H. J. (Joe) Justin identify and act upon in order to enter the market?
   *When a cowboy asked Joe Justin to make a pair of boots for him, he decided to try making boots. He expanded the business when Annie, Joe’s wife, developed a self-measuring kit so cowboys could order the boots by catalog.*

3. List some examples of how H. J. (Joe) Justin analyzed or changed his model in order to sustain growth.
   *In 1908 Joe took his two oldest sons, John and W. E. (Earl) Justin, into the business as full partners and changed the name of the business to "H. J. Justin & Sons."*
In 1894 Annie developed a self-measuring kit, which included a tape measure and a chart with instructions on how to measure your feet, for ordering Justin’s handmade boots. The self-measuring kits were carried north and south by the cowboys. This began the mail-order approach.

They moved the business to Fort Worth for the convenience of better banking facilities, better railroad service, and a larger labor force.

Justin Boots added dress shoes but later eliminated them, along with boots other than the basic style, until 1951. Justin then did market research and found a demand for exotic leathers and colors in addition to pointed toes.

4. What background experiences did Joe Justin have that made him successful? 
   He had experience working for his father’s cigar-making business.

   Joe Justin also had courage traveling west on his own.

5. Where did he get his idea? 
   He got his idea when a cowboy asked Joe if he could make him a new pair of boots.

**Student Activity 3: Taco Cabana Case**

1. Allow the students to preview the questions prior to reading the Taco Cabana case. This may help them focus during the reading.

2. After reading the case, discuss the questions and some possible answers with the students.

**Questions and possible answers:**

1. Does Felix Stehiling fit your description of an entrepreneur? Why, or why not? Yes
   He saw an opportunity when he bought the vacant space across the street, and he opened a taco stand. He expanded his business to meet the needs of the area.

2. What problems or constraints did Felix Stehiling identify and act upon in order to enter the market? 
   When he was faced with the problem of having all the patio furniture stolen, he decided the taco stand needed to be open 24 hours a day. He kept the stand open all night to avoid the theft of the furniture.
   The company closed several restaurants in April, 1995.
   Taco Cabana revised the development criteria and performed market research.

3. List some examples of how Felix Stehiling analyzed or changed his model in order to sustain growth.
He recognized that he needed help to accomplish his goals, and he hired his brothers as business partners. He hired an executive vice president to help expand the company.

*Taco Cabana makes most items fresh daily.*

4. What background experiences did Felix Stehiling have that made him successful?
Felix Stehiling was a prominent businessman who owned bars and restaurants throughout the San Antonio area.

5. Where did he get his idea?
He bought the Dairy Queen and vacant space across the street to use as a building and parking lot. Felix decided that since the property had been a restaurant, he would use it to open a taco stand.

The first night, after closing the stand, the patio furniture was stolen. To solve that problem, Felix decided to stay open all night, thus creating the first 24-hour taco operation: Taco Cabana.

3. You may share the following information about Taco Cabana with students if you wish to have a discussion about stocks and share prices.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue (sales)</td>
<td>59.2</td>
<td>96.9</td>
<td>127.2</td>
<td>138.6</td>
<td>132.2</td>
<td>132.2</td>
<td>143</td>
<td>159.2</td>
</tr>
<tr>
<td>Net income before taxes</td>
<td>5.2</td>
<td>10.9</td>
<td>13.3</td>
<td>-6.1</td>
<td>1.6</td>
<td>-74.7</td>
<td>13.7</td>
<td>13.1</td>
</tr>
<tr>
<td>Net income after taxes</td>
<td>3.1</td>
<td>7.1</td>
<td>8.5</td>
<td>-3.8</td>
<td>7.0</td>
<td>-73.2</td>
<td>13.7</td>
<td>13.1</td>
</tr>
<tr>
<td>Net income per share</td>
<td>0.4</td>
<td>0.55</td>
<td>0.55</td>
<td>-0.24</td>
<td>0.04</td>
<td>-4.78</td>
<td>0.96</td>
<td>0.99</td>
</tr>
<tr>
<td>Total assets</td>
<td>42.5</td>
<td>118.7</td>
<td>152.2</td>
<td>148.6</td>
<td>142.7</td>
<td>72.3</td>
<td>90.2</td>
<td>101</td>
</tr>
<tr>
<td>Stockholders equity</td>
<td>35.4</td>
<td>101</td>
<td>115.7</td>
<td>112.3</td>
<td>113.2</td>
<td>36.4</td>
<td>40.8</td>
<td>43</td>
</tr>
</tbody>
</table>

Stock Prices

Taco Cabana's stock prices increased from about $10 per share in 1993 to about $20 at the end of 1994. Since then, the prices have ranged as follows:

\[
\begin{array}{ccc}
1995 & 1996 & 1997 \\
\frac{5}{8} \text{ to } 9 & \frac{3}{16} & \frac{5}{16} \text{ to } 7 \frac{3}{8} \\
\end{array}
\]


*Mathematical Models with Applications / Entrepreneurship: Keeping Score with Mathematics*
\[
\frac{7}{8} \text{ to } \frac{3}{4} \\
\frac{7}{8} \text{ to } \frac{9}{16} \\
6 \\
\frac{15}{16}
\]
Student Activity 1
Dell Computer Case

Read “How Fast Is Fast Growth? Dell Computer Corporation” and answer the following questions.

1. Does Michael Dell fit your description of an entrepreneur? Why, or why not?

2. What problems or constraints did Michael Dell identify and act upon in order to enter the market?

3. List some examples of how Dell Computer Corporation analyzed or changed its model in order to sustain growth.

4. What background experiences did Michael Dell have that made him successful?

5. Where did he get his idea?
Reading 1
How Fast Is Fast Growth? Dell Computer Corporation

Dell Computer Corporation is the world’s largest computer systems company. Revenues for the fiscal year ending January 28, 2000 were $25.3 billion. The firm had approximately 36,500 full-time employees, including 13,000 in other countries.

How Dell started, how it grew, and how it overcame the problems of growth is the story of a young man who identified an opportunity and pursued it.

Dell Computer Corporation was not Michael Dell’s first venture. His first venture was selling stamps consigned to him by collectors via a trade journal advertisement. The lesson he learned on this venture was, "If you have got a good idea, it pays to do something about it."

A few years later, at age sixteen, he got a summer job selling newspaper subscriptions for the Houston Post. On this job he learned that there were two kinds of people who bought subscriptions: those who were recently married and those who had recently moved into new houses or apartments. He obtained lists of names and addresses from the marriage license bureau and from companies that compiled lists of people who had applied for mortgages. He sent out personalized letters offering a subscriptions to the newspaper—an idea that was not only new and unique, but was also extremely effective. His income of about $18,000 a year was significant for a high school student with a part-time job in 1981. When he left home to attend college at the University of Texas at Austin a couple of years later, he drove to college in a white BMW he had bought from his newspaper sales earnings. At that time, the computer craze had hit him and a new venture was beginning to emerge.

Michael Dell’s new concept was to enhance PCs in the same way that people soup up their cars so that they can sell their PC for enough money to purchase another PC and the upgrade components. At that time, an IBM PC sold in a store for about $3,000. The components to build a computer could be purchased for about $700. The PC stores were making about $1,000 profit on each computer, and the employees knew very little about PCs. Hence, little or no support was provided to the customer. In addition, PC stores were popping up all over Houston. This presented an exciting opportunity. It also raised a couple of questions in Michael Dell’s mind.
First, what did he already know that he could use in this business opportunity? Second, what did he need to learn, and how could he learn it?

At the University of Texas, Michael Dell began upgrading computers for students in his dorm room. He soon expanded this business to upgrading PCs for businesses. He next applied for a vendor’s license and began bidding on state contracts. While his computer business flourished, he allowed his attendance and grades to suffer. His parents began to argue that he should stop the "computer stuff" and get serious about his studies. This was a big decision for an eighteen-year-old.

The opportunity to soup up existing computers or to build them completely was still in his mind. However, the concept became clear when he asked: "Why not sell computers directly to the customer and pass along the dealer and wholesaler savings to them?"

In January, 1984, his business was registered in the state of Texas as "PC's Limited." At that time, sales of upgraded PCs, upgrade kits, and add-on components to people in the Austin area were between $50,000 and $80,000 a month.

Coping with growth and change was not easy, but Michael Dell’s approach was to learn from each mistake. The growth of his business was phenomenal. He hired people who had a sense of adventure and versatility. This reduced the possibility of a bureaucracy, while providing opportunities for the employees to learn about computers. The sales force set up its own computers, which accomplished two things: It gave the sales team a sense of what a customer would go through to set up a system and an understanding of the products they were selling. This also marked the start of Dell’s reputation for great service.

The "direct model" used by Dell is based on customer needs. A benefit of the “make-to-order” system is that it avoids the space and capital required to support a large inventory. Products are not made until ordered, so enhancements can be made immediately rather than waiting until the end of a production run or until existing inventory has been sold.

The direct model also eliminates the need for a network of wholesale and retail dealers. This, in turn, prevents dealer markups and higher inventory costs. In addition, it reduces the risk of out-of-date products associated with
a rapidly changing technological market. Dell Computer Corporation started in 1984. By the time of the initial public offering in 1988, the company had accomplished several things. They produced the industry’s fastest performing computer, they introduced the industry’s first thirty-day money-back guarantee, and they were the first PC company to offer next day, onsite product service. They had also established their first international subsidiary in the United Kingdom.

The initial public offering (IPO) sold 3.5 million shares at $8.50 each, providing $85 million for the firm. A share of stock purchased at that time, after a series of stock splits, was valued at $4,131 after the last stock split in March 1999. Dell currently has manufacturing facilities in Texas, Tennessee, Brazil, Ireland, Malaysia, and China. It has sales offices in thirty-four countries.

When the 1990s began, Dell Computer Corporation was the twenty-fifth ranked computer company in the world, behind such companies as Mitac, Tandon, and Commodore. These companies are no longer in the computer business.

One key to Dell’s success has been Michael Dell's emphasis on learning from mistakes. This has resulted in his three golden rules: (1) decrease inventories; (2) always listen to the customer; and (3) never sell indirect.

In 1989, the firm was investing in a new product with the code name "Olympic." This product was based on "bleeding edge technology." At the time memory chips were in short supply. To meet anticipated demand, Dell purchased all the chips they could acquire at the peak of a cyclical market. After the peak, prices plunged almost overnight, primarily due to a change in chip technology. To make matters worse, when the product was introduced, the market was not interested. Dell was stuck with significant development costs and an inventory of product and chips that could not be sold. There were many lessons learned from this mistake. Dell decided to decrease inventory, talk to customers, reduce inventory-carrying costs, and improve performance a little at a time.

In 1990, Dell became the first Computer Company to sell through consumer retail stores. Dell quickly left this market in 1993, again learning to never sell indirect, and to avoid the inventory carrying costs of wholesalers and retailers.
In 1993, Dell felt the pains of extremely rapid growth and suffered their first and only quarterly loss. From this, they realized they had been emphasizing growth, growth, and more growth. Therefore, Dell—shifted the focus to "liquidity, profitability, and growth." The new rules became:

1) Don't believe your own press;
2) Performance and time to market are the key components of all product development efforts;
3) Provide the best support for service in the industry; and
4) Under-promise and over-deliver on all products.

Overall, Dell has achieved its competitive edge by producing a line of high-performance products compatible with accepted IBM standards; by implementing direct relationship marketing; and by maintaining an efficient and flexible manufacturing operation resulting in a streamlined asset base.

Computers are in roughly 60 to 70 percent of U.S. households. Therefore, sales to new households will most likely decline. Future sales can be expected to be based on replacement sales as older models become obsolete and are replaced with faster, more powerful systems. General economic conditions have resulted in a slowing of the overall growth rate in the United States to near zero. The failure of many dot com companies has also had an impact. In addition, layoffs by U. S. firms in the last two weeks of January 2001 amounted to roughly 200,000 jobs. The stock market dropped significantly in the beginning of 2001, and the consumer confidence level declined for the fourth consecutive month to the lowest level in four years in January 2001. Further, the Conference Board's Expectations Index, a gauge of consumer's outlook for the next six months, was at a level normally seen before a recession.

Computer manufacturers react to slower demand by reducing prices. This results in consolidations (reductions in the number of firms via mergers or discontinued operations). Given the strength of Dell, it might be expected that, while suffering a reduction in sales and revenue during the period, Dell could emerge in a stronger position in the industry.
Student Activity 2
Reading Focus Questions

Read Reading II, “Justin Boots: The Standard of the West,” and answer the following questions.

1. Does H. J. (Joe) Justin fit your description of an entrepreneur? Why, or why not?

2. What problems or constraints did H. J. (Joe) Justin identify and act upon in order to enter the market?

3. List some examples of how H. J. (Joe) Justin analyzed or changed his model in order to sustain growth.

4. What background experiences did Joe Justin have that made him successful?

5. Where did he get his idea?
Reading 2
Justin Boots Case

At 20 years of age, H. J. (Joe) Justin decided that his father’s cigar-making business in Lafayette, Indiana was not for him. He headed west, boarding a train bound for Texas. The end of the line for the train was Sherman, Texas. He then traveled to Spanish Fort, Texas, a frontier settlement on the great Eastern Cattle Trail. The Eastern Cattle Trail stretched from South Texas to cross into Indian Territory at Red River Station. There it became the Chisholm Trail that carried Texas beef into cities such as Caldwell, Wichita, Newton, Ellsworth, and Abilene.

Joe initially worked as a handyman in a barbershop while patching boots on the side. He learned the cobbler’s art quickly and was impatient to start his own business. Things changed when a cowboy asked him, "If I get you some leather, can you make me a pair of boots?" Joe responded, "I can sure try." Repairing boots became his livelihood, and he soon began to make boots for the cowmen going up the trail. He would have them ready for pickup on the return trip to their home range. The need for inventory resulted in an investment of $35 from a local merchant. The investment quickly paid off.

In 1879, when Joe Justin had set up business in Spanish Fort, many changes were taking place in the west. Less than three years earlier, Custer had given his last order, "Charge!" Now Sitting Bull, the leader of the Sioux war party that massacred Custer, was a fugitive in Canada. Closer to home, the fierce Kiowa war chief, Lone Wolf, who had spread terror across Texas, died on a government reservation in Indian Territory just across the Red River. Geronimo was still on the warpath; the bloody Lincoln County War, which produced Billy the Kid and Pat Garrett, was in full swing; and the railroads were moving west. By the end of 1879, his first year in business, Justin had sold $1,000 worth of boots at $8.50 a pair.

The railroads brought about the next change in Justin’s business. A new railroad track was to be laid 18 miles south, near the town of Nocona. All the residents, including Joe and his wife of three years, Annie, moved from Spanish Fort to Nocona. In 1889, Spanish Fort became a memory.

In 1894, Annie developed a self-measuring kit, which included a tape measure and a chart with instructions on how to measure your feet, for
ordering Justin's handmade boots. The self-measuring kits were carried North and South by the cowboys. Justin's mail order business had begun. Not only did the mail order approach revolutionize Justin's business, but his reputation as a quality boot maker quickly spread throughout the west. Business was looking up.

In 1908, Joe took his two oldest sons, John (named after the reigning world heavyweight boxing champion, John L. Sullivan) and W. E. (Earl) Justin, into the business as full partners and changed the name of the business to "H. J. Justin & Sons." At this time, Justin boots were being sold in twenty-six states, Canada, Mexico, and Cuba.

Joe became a salesman, traveling around the country taking orders. In those days, a cowboy would spend a month's wages for a pair of boots and a hat.

In 1911, the average price of a pair of boots was $11, and Justin was doing $180,000 worth of business a year. Justin's average payroll was $500 per month. In 1916, Justin's health began to fail. He turned the business over to John and Earl. Joe Justin died in 1918.

Justin's reputation for quality was not the only thing that had grown in the boot world. In 1920, boot sizes four and five were common, six and seven were standard, eight was considered large, and the top limit of the Justin size range was a nine. Today's boot sizes start at six, with ten as a standard, and go up to sixteen.

Sales had reached an all-time high in 1920 as the post-war economy began to heat up. Justin Boots's balance sheet showed total assets of $127,218. However, 1921 was a disappointing year. Sales declined, and the company suffered a net loss of $256,000. However, in the rapidly changing economic conditions, sales rose sharply again in 1922, and optimism prevailed. The Justin plant in Nocona employed 36 people and produced 9,000 pairs of boots. The boots were selling at $16 to $22 a pair, and some fancy boots went for as much as $68.

In 1923, Justin developed a catalog and used direct mail to build the company's dealer network. This action resulted in sales of $200,000 in 1924. At that time, H. J. Justin & Sons was restructured as a corporation. John Justin, Sr., Earl Justin, and Avis Justin were elected to the firm's initial
board of directors. In 1925, John, Earl, and Avis moved the business to Fort Worth for the convenience of better banking facilities, better railroad service, and a larger labor force. Enid, their sister, stayed in Nocona, and immediately after the move to Fort Worth, she started Nocona Boot Company.

The west had changed. People were now driving automobiles instead of riding horses, and the Justins felt that boots were soon to be outmoded. They saw the future to be in the shoe business and entered the field with a high-quality dress shoe. There was one problem with this; the shoes cost $4.50 each to make but wholesaled for $3.25.

Work shoes were selling in greater volume than cowboy boots, and it appeared that a major change in focus from boots to shoes was essential to the company's survival. The end of the "roaring twenties" was in sight, and the Great Depression of 1929 was around the corner. But in 1928, sales topped $300,000, net income was at an all time high, and the future looked rosy. Justin Boots managed to keep its head above water during the Depression, and in 1934, dude ranches came into being and brought with them an increased demand for boots. The new demand for style gave rise to square toes, fancy stitching, and . . . women's boots.

In 1938, John Justin, Jr. joined forces with W. D. Barton and formed the Justin-Barton Belt Company. The company grew until World War II, when John Jr. joined the service and Mr. Barton decided to retire. Barton sold out to John Jr., and the name of the firm was changed to Justin Belt Company.

In 1950, John, Jr. was out of the service and had his belt company in good shape at $500,000 in sales, and a square dance craze had swept the country. At the same time, H. J. Justin & Sons was floundering and losing ground in the marketplace. Internal bickering and backbiting had become a tradition in the company. No one was in charge, and no one had the final word. Earl Justin had become increasingly concerned over the lack of direction at the top and approached John Jr. about taking over the company. John Jr. agreed to run the company only if he had absolute authority except by unanimous vote of the board. Avis Justin objected, sold his stock in Justin & Sons to John Jr., and resigned from the board.

John Jr. made a number of changes in the business in 1951. These included eliminating the shoes, cavalry boots, English boots, and all the
various lines other than the cowboy boots. He then traveled around the country, asking the dealers what they liked and did not like about the business. He found a demand for something other than the old standby style. This led to more stylish, exotic leathers and colors, in addition to pointed toes.

By 1952, sales, which had been dipping since 1948, were back on pace to exceed $1 million. Tony Lama and Nocona were Justin’s major competitors in their market, and Acme controlled the low-priced boots. Also in 1952, John Sr. was elected chairman of the board, and John Jr. was elected president.

In 1954, Enid Justin, owner of Nocona Boot Company and a stockholder in Justin & Sons, began to have problems with John Jr., and a family feud developed. The feud finally ended in 1981 with the purchase of Nocona Boot Company by Justin Industries for $8.9 million.

The year 1954 also saw the birth of a new, low-heel boot, the Roper. Although the Roper almost became a victim of the cowboy-western craze that hit the country in the early 1960s, today it represents a large portion of Justin’s boot sales.

In 1955 Justin purchased the controlling interest in Justin Leather goods Company and became profitable again as a result of the introduction of many new styles. In 1956 and 1957, sales soared to an all-time high.

After an acute attack of appendicitis in 1968, John Jr. began to think about what would happen to the company if something happened to him. His soul-searching led him to his attorney, who suggested a merger with First Worth Corporation and its wholly owned subsidiaries, Acme Brick and Ceramic Cooling Tower. First Worth had plans for a new stock issue that would pave the way for listing on the New York Stock Exchange. This would give Justin stock a value, since it would be publicly traded.

The merger that united Justin with First Worth soon began to turn sour. First Worth’s public offering did not develop; there were a number of other problems, and Justin felt the deal had been misrepresented to him. His attorney advised him to sue to nullify the merger agreement. Justin was prepared to sue, but before the suit was filed, the attorney for First Worth advised that First Worth was prepared to give the management of the
company to Justin if he would agree to drop the lawsuit. Justin accepted the offer and became president and chief executive officer of First Worth. Justin's election was announced in 1969.

Justin had his hands full. Acme Brick's success was tied to housing development, and First Worth had acquired many companies that were not brick but concrete companies. The president of Acme Brick Company decided to go into business for himself, and to make matters worse, the company was strapped for cash.

In late 1970 the company's brick production was at a standstill due to the problems in the housing industry. Justin decided to build brick inventory in anticipation of an economic turnaround. It was a good decision, because in 1971 housing starts jumped to a record high. Sales rose, and profits soared. The firm's name was changed from First Worth to Justin Industries, Inc., with John Justin firmly in control.

In 1973 John Justin Jr. began to relinquish control over operations. He gave up responsibility for Acme Brick, appointed a president and chief operating officer of Justin Industries, and turned over his position as president of the boot, belt and leather goods operations. He then concentrated on expansion activities. He acquired the Sanford Brick Company in 1974 and announced the expansion of brick operations in Oklahoma City and Tulsa.

The western wear boom that had brought sharp increases in boot sales in 1980 and 1981 declined sharply in 1982, leaving many Justin dealers over-extended and with excessive inventory. Further, the boot operation was losing money. Nocona Boot Company faced similar problems. A new president for Justin Boot Company was hired. A number of changes were made, one of which was the rebirth of the Roper, which had been dropped. It was resurrected in the line with lace-ups, in color, for men and for women. Justin Ropers for children were also introduced. A successful turnaround was made, and sales and profits soared in 1984 in both the brick and footwear operations.

By 1988 Justin Industries stock remained lukewarm on the stock market despite increased sales and earnings. In December 1991 it began a steady upward climb from $10 to $27 a share. The company's record-setting pace
continued through 1993 as sales increased for the seventh consecutive year to a new high.

In August 1994 John Justin Jr. was diagnosed with leukemia and admitted to the isolation ward at the University of Texas M. D. Anderson Cancer Center in Houston for chemotherapy. During Justin's illness, J. T. Dickenson was appointed Justin Industries' acting chief executive officer and continued in that position until his retirement in 2000. John Justin Jr. served as chairman of the board until he retired in 2000.

In June 2000, Berkshire Hathaway and Justin Industries agreed to a merger offer of $22 for each share of Justin Industries stock.

Perhaps now John Justin, Jr. can kick off his Justin boots and relax, knowing that the firm started by his grandfather and built further by his father is in good hands.
Student Activity 3
Taco Cabana Case

Read “Taco Cabana: A Texas Institution,” and answer the following questions.

1. Does Felix Stehiling fit your definition of an entrepreneur? Why, or why not?

2. What problems or constraints did Felix Stehiling identify and act upon in order to enter the market?

3. List some examples of how Felix Stehiling analyzed or changed his model in order to sustain growth.

4. What background experiences did Felix Stehiling have that made him successful?

5. Where did he get his idea?
Reading III
Taco Cabana: A Texas Institution

In 1978 Felix Stehiling was a prominent businessman who owned bars and restaurants throughout the San Antonio area. One of his establishments was the Crystal Pistol Bar located near Trinity University. The Crystal Pistol was such a popular place that Felix had a parking problem. He bought the Dairy Queen and vacant space across the street to use as a building and parking lot. Felix decided that since the property had been a restaurant, he would use it to open a taco stand. The first night, after he had closed the stand, the patio furniture was stolen. To solve that problem, Felix decided to stay open all night; this created the first twenty-four hour taco operation—Taco Cabana.

Taco Cabana was a very successful venture. It grew from a taco stand in 1978, with only a handful of people, to a company that owns 113 restaurants with over 4,000 employees. Taco Cabana has developed as an alternative to high-priced, traditional Mexican restaurants and other fast-food establishments. In San Antonio's 31 restaurants alone, Taco Cabana serves 10 million guests annually. It features fresh, premium quality Mexican-style food, in restaurants that provide interior and patio dining areas with a festive Mexican theme. Unlike many of its competitors, Taco Cabana makes most items fresh, daily, in each restaurant.

When the company first started, Felix Stehiling recognized that in order to expand, he needed help to reach his goals. He brought two of his brothers into the business as partners. Under the direction of the new partnership, the chain grew to nine restaurants. However, by 1986, management disagreements sent the partners in different directions.

In 1987 Felix hired Richard Cervera as executive vice president; he was instrumental in helping the company expand its operations. In 1990 Cervera was named president of the company, and Taco Cabana experienced explosive growth, starting with a private placement in 1991 and the acquisition of Sombrero Rosa's four restaurants. In 1992, another private placement and acquisition followed, and by October of 1992, Taco Cabana, which had expanded to 41 restaurants, went public. The following year, the company had two more offerings and acquired Two Pesos, a Houston-based chain with thirty restaurants. In 1995, sales in the
company's core markets turned negative in the first and second quarters, so Cervera left the company to pursue other opportunities.

In April 1995, Stephen Clark was hired as President and chief operating officer of Taco Cabana. Mr. Clark led a comprehensive review of the company's operations. Based on the review, the company instituted the following changes:

- Closed several restaurants.
- Increased the number of supervisory positions in order to increase the effectiveness of such positions.
- Redirected its marketing program to increase focus on local store marketing efforts and promotional-based advertising.
- Performed market research to enhance the effectiveness of the company's marketing efforts and to help determine the location of future restaurants.
- Revised its development criteria, including construction costs, design factors, and menu strategy, and began reviewing the possibility of alternative development—for example, in-line and other nontraditional construction versus stand-alone restaurants.

The company began constructing its new prototype restaurant in 1996. The prototype incorporated several new and different features that set it apart from Taco Cabana restaurants previously constructed. The prototype was designed to reduce overall construction costs, improve functional efficiency, allow for better guest service, and enhance Taco Cabana's unique patio cafe image. Since November 1996, the company has opened 17 restaurants under this new design.

During 1997 the company initiated a re-image program for existing restaurants, which incorporated many of the features of the new prototype design. As of January 3, 1999, 41 restaurants were re-imaged or converted to the new prototype design, bringing a system wide total of 57 restaurants with the new design. An additional 30 to 35 restaurants were scheduled for re-imaging in 1999.

1999 was the best year in Taco Cabana's 21-year history. All the financial indicators were positive: a 12 percent increase in sales to $159.2 million over 1998, a 30 percent increase in cash flow, and 10 restaurant openings, for a total of 119 locations in 5 states and 3,500 employees. The 119
owned and franchised restaurants included 33 in San Antonio, 31 in Houston, 15 in Austin, 20 in the Dallas/Fort Worth area, and 6 in El Paso.

Taco Cabana announced plans to open another 15 new restaurants in 2000, with the majority outside of Texas, in the Phoenix, Tulsa, and Oklahoma City markets.

On October 6, 2000, Taco Cabana announced that it had agreed to merge with Carrols Corporation, under which all of the outstanding shares of Taco Cabana would be purchased for cash by Carrols at a price of $9.04 per share.

On December 18, 2000, Taco Cabana's stockholders approved a merger agreement that provided for the merger of Spur Acquisition Corp. (a wholly owned subsidiary of Carrols Corporation) into Taco Cabana, Inc. As a result of the merger, each outstanding share of Taco Cabana common stock was converted into the right to receive $9.04 in cash per share. The value of the transaction was approximately $153 million.

Carrols Corporation, which is privately owned, is one of the largest restaurant companies in the United States, operating 520 restaurants in 17 states. It is the second largest franchisee of Burger King restaurants with 355 Burger Kings located in 13 northeastern, midwestern and southeastern states. It also owns and operates 49 Pollo Tropical restaurants in south and central Florida and franchises 22 Pollo Tropical restaurants in Puerto Rico and Ecuador. The acquisition of Taco Cabana adds 116 restaurants in Texas, Oklahoma, and Arizona, as well as 10 franchised restaurants.