Lesson 4: San Diego's Economy

Focus Question: What are the largest industries in San Diego's economy?

The top four industries in San Diego County are **manufacturing, defense, tourism, and agriculture**.

In addition, the City of San Diego focuses on six main industry clusters:

Biotechnology/Biosciences | Financial and Business Services
Defense and Space Manufacturing | Software
Electronics Manufacturing | Telecommunications

San Diego's economy, once dominated by military and defense endeavors is led by **manufacturing**, particularly in the areas of shipbuilding and repair, industrial machinery and computers, metals production, and the manufacture of toys and sporting goods. International trade is an important part of San Diego's economy. The border between the San Diego area and Tijuana is the busiest in the world.

Since the founding of San Diego, the city's economy has been tied to San Diego Bay. Today, it is an important link in the nation's international shipping trade and the port also has a growing cruise ship operation, with more than 180 cruise ships docking annually. San Diego's harbor has had the most significant impact on the local economy, however, through the Eleventh Naval District Headquarters, the base for the U.S. Navy Pacific fleet, which is located on the bay. San Diego is the Navy's principal location for West Coast and Pacific Ocean operations. The **military/defense industry** is the city's second largest economic sector. It includes high-technology research, development, and engineering in satellite communications systems, electronic systems, unmanned aerial vehicles, propulsion systems, deep space cameras, satellites, rugged military computers and displays, and robotic roving vehicles.

With the San Diego Zoo and Sea World, a variety of historical and cultural attractions, and year-round good weather, San Diego is a top destination for tourists. San Diego's **tourism industry** is the third largest segment of its economy. Service industries have seen continued growth in recent years, specifically in areas such as dining, lodging, shopping and recreation services. San Diego regularly ranks as a top-10 U.S. vacation destination for international travelers.

The fourth largest segment of the economy is **agriculture**. San Diego County is the 20th largest agricultural producer in the nation. It is a top producer of nursery products, flowers, foliage plants, and avocados.

Also, San Diego is a center for **high technology and biotechnology**. High technology growth areas include the biomedical, software, telecommunications and security sectors. Among all U.S. metropolitan areas, San Diego has the third largest concentration of biotech companies, with more than 32,000 biotech jobs at 499 companies. *Items and goods produced:* acoustical materials, adhesives, airplane parts, bamboo, dairy products, electronics transmission and distribution equipment, plastic, rubber products, awnings, beverages, paper, clothing, dental products, detergents, computers, televisions.

Activity # 1 San Diego's Economy

Provide students with an overview of the top 4 industries located in San Diego. As you introduce each industry, ask students to predict the types of products the industry produces and then share the information in the 3rd column of the chart.

Rank	Industry	Products
1	Manufacturing	shipbuilding and repair, industrial machinery and computers, metals production, and the manufacture of toys and sporting goods
2	Military/ Defense	important link in the nation's international shipping trade and the port also has a growing cruise ship operation; the base for the U.S. Navy Pacific fleet; high-technology research, development, and engineering in satellite communications systems; electronic systems; unmanned aerial vehicles; propulsion systems; deep space cameras; satellites; rugged military computers and displays robotic roving vehicles
3	Tourism	San Diego Zoo and Sea World, a variety of historical and cultural attractions, and year-round good weather
4	Agriculture	top producer of nursery products, flowers, foliage plants, and avocados.

Also, San Diego is a center for **high technology and biotechnology**. High technology growth areas include the biomedical, software, telecommunications and security sectors.

Activity #2 Manufacturing in San Diego

Materials needed: For each student, a copy of the **Circle Book Writing Template Handout # 3.3** (Note using a light-colored paper will make the final project more vibrant.)
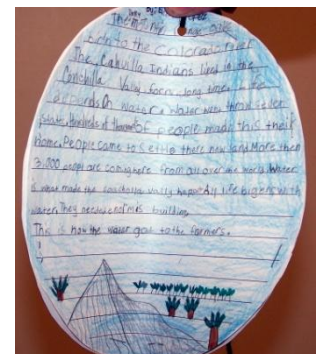
Procedure:

Step 1: Explain to students that to **manufacture** is to make something with machines. Manufacturing is the use of machines, tools and labor to make things for use or sale. To manufacture a product, it takes natural resources, human resources and capital resources. Manufacturing may refer to a range of human activity, from handicraft to high tech, but it most commonly means industrial production, in which raw materials are transformed into finished goods on a large scale.

Today, many items – from shipbuilding and repair, industrial machinery and computers, metals production, and toys and sporting goods - are manufactured in factories in San Diego.

Many of the products produced by the defense industry are also manufactured in San Diego. Telecommunications, software and biotech are among San Diego's fastest growing industries, and San Diego has become the nation's center for wireless industries with the city being dubbed "Telecom Valley."

Step 2: Using the **Circle Book Writing Template (Handout # 3.3)**, have each student write and illustrate information learned about manufacturing in San Diego. Keep this copy of the circle page. Two more pages will be written during this lesson and then the circle book will be assembled.

Activity # 3 The Military/Defense Industry in San Diego

> Materials needed: For each group of students, a map of *San Diego County* and a copy of the **Circle Book Writing Template** (Handout # 3.3) Note using a light-colored paper will make the final project more vibrant.

Procedure:

Step 1: Explain to students that San Diego is the site of one of the largest naval fleets in the world, and San Diego has become the largest concentration of Naval facilities in the world.

Ask students what they know about the military in San Diego. Do you know anyone who is a member of the military? Who? What branch of the military? What rank? Do you know the names of any military bases?

Step 2: Distribute copies of a map of *San Diego County* to each group of students. Have students study the map to identify the names of any military facilities located in the county. With the students help, create a master list.

Military Industry - Bases in San Diego include U.S. Navy ports, Marine Corps bases, and Coast Guard stations. One of the Marine Corps' two Recruit Depots is located in San Diego. Four Navy vessels have been named USS *San Diego* in honor of the city.

Ships that are home-ported in San Diego include:

- Two of the U.S. Navy's Nimitz class supercarriers (the USS *Nimitz* and the USS *Ronald Reagan*)
- five amphibious assault ships
- several *Los Angeles*-class "fast attack" submarines
- the Hospital Ship USNS *Mercy* carrier submarine tenders
- destroyers, cruisers, frigates and many smaller ships

Military Institutions in the San Diego area - Marine Corps institutions in San Diego include Marine Corps Air Station Miramar and Marine Corps Recruit Depot San Diego; north of San Diego is Marine Corps Base Camp Pendleton.

The Navy has several institutions in the city, including Naval Base Point Loma, Naval Base San Diego (also known as the 32nd Street Naval Station), Bob Wilson Naval Hospital, and the Space and Naval Warfare Systems Center San Diego.

Close by San Diego but within San Diego County is Naval Air Station North Island (which operates Naval Auxiliary Landing Facility San Clemente Island, Silver Strand Training Complex, Outlying Field Imperial Beach) and the Naval Amphibious Base Coronado, which are consolidated into Naval Base Coronado.

Defense Industry - The San Diego region is sixth in the nation for defense contracts. In the past, the majority of defense dollars were spent on aerospace, missiles, and aircraft manufacturing. The trend has now shifted towards high-technology research, development, and engineering in communications systems and computers.

Step 3: Ask students what products they think are currently manufactured by San Diego by the defense and space industry. Share the following examples of defense and space products manufactured by San Diego-based companies:

- satellite communications systems
- electronic systems
- unmanned aerial vehicles
- propulsion systems

- deep space cameras
- satellites
- rugged military computers and displays
- robotic roving vehicles

Step 4: Using the **Circle Book Writing Template** (Handout #3.3), have each student write and illustrate information learned about the military/defense industry in San Diego. Keep the copy of the circle page. One more page will be written during the next activity and then the circle book will be assembled.

Activity # 4 Tourism in San Diego

Materials needed: For each pair of students, a copy of *San Diego's Top 20 Tourist Locations* (Handout # 4.1) and a copy of the **Circle Book Writing Template** (Handout #3.3). Note using a light-colored paper will make the final project more vibrant.

San Diego's **tourism industry** is the third largest segment of its economy, with more than 26 million visitors to the county bringing more than $5.6 billion per year. Service industries have seen growth in recent years, specifically in areas such as dining, lodging, shopping and recreation services. San Diego regularly ranks as a top-10 U.S. vacation destination for international travelers.

Step 1: **Note: Step 1 and 2 (San Diego's Top Tourist Attraction) are a repeat of an activity in Unit 3, Lesson 4.** Ask students, "What tourism locations can be found in San Diego?" Working in groups, have students brainstorm a list of what they think are the Top 20 tourist locations found in San Diego. Once they have their list, have students rank them in order of attendance from the largest attendance down to the smallest.

Step 2: Provide each pair of students with a copy of *San Diego's Top 20 Tourist Locations* (Handout #4.1) Have students review the list and compare the order of attendance figures to their list.

Step 3: Using the **Circle Book Writing Template** (Handout #3.3), have each student write and illustrate information learned about tourism in San Diego.

Activity #5 Construct a Circle Book

Materials needed: Each student's completed copies of the **Circle Book Writing Template** (Handout) #3.1 for agriculture, manufacturing, military/defense, and tourism; Scissors and glue. Refer to the Prompt and Rubric listed on page 22 of this unit.

Procedure:
Assemble the circle books following the steps below:
- Following the dotted lines, cut out each circle. Fold each circle in half.
- Glue the right back side of #1's circle to the left back side of #2's circle.
- Glue the right back side of #2's circle to the left back side of #3's circle.
- Glue the right back side of #3's circle to the left back side of #4's circle.
- Glue the remaining half of #4's circle to the last side of #1's circle.

The completed circle books can be arranged into a mobile and hung from the ceiling - attach mobiles to the bottom of wire hangers. Tie varying lengths of thread from the hanger. Tie a paper clip to the end of each piece of thread and hang the circle book from the paper clip. Add a sign that reads *Economy of San Diego*. **Rubric Indicator: Historical Interpretation and Analysis of Significance**.

Activity #6 Investing in Yourself

Materials needed: A copy for each student of **My School Plan** (Handout #4.2); Vocabulary card for *human capital;* Harcourt's *Reflections: Communities*.

Step 1: Display a vocabulary card for the following term: **human capital** *is the decision made about how to use your energy and your time.* Explain to students that the way you use your personal human capital now can help you plan for the future.

Step 2: Read together *Reflections* Unit 6, Lesson 4 "Investing in Yourself," pages 468-471 and "Make a Thoughtful Decision" pages 472-473.

Step 3: Ask students, "What can you do to invest in your human capital?" One answer to this question is to develop a plan for your schooling. Distribute copies of **My School Plan (Handout #4.2)**. Help students complete their plan. If desired, the school plan may be completed at home.

San Diego: Education and Research
Elementary and Secondary Schools
The San Diego Unified School District is the second largest school district in the state and eighth largest urban school district in the country. Its nonpartisan five-member board is elected every four years, and the superintendent is hired by the board. The district operates 24 magnet schools offering in-depth studies in areas ranging from science and research to journalism and telecommunications.

Colleges and Universities
Major universities in San Diego include the University of California at San Diego (UCSD), San Diego State University (SDSU), and the University of San Diego (USD), which is a Catholic university.

Libraries and Research Centers
San Diego is served by two major library systems. The San Diego Public Library operates 34 branches in addition to the main library. The San Diego County Library system consists of a main branch and 31 branches, two bookmobiles, and an adult literacy site. More than 30 other public, private, and research libraries serve the metropolitan area. A large number of specialized research centers functioning in such subject areas as oceanography, nuclear energy, astronomy, and biological sciences are scattered throughout San Diego. Among the most prominent research centers are the Salk Institute for Biological Studies, which focuses on molecular biology, genetics, neuroscience, and plant biology, and the Palomar Observatory, a center for astronomy research, located atop San Diego county's Mount Palomar.

Assessment:
- Write and illustrate information learned about agriculture, manufacturing, military/defense, and tourism in San Diego and assemble the four pages into a circle book titled *Economy of San Diego*.
- To invest in your human capital, develop "My School Plan" using (Activity # 6, Handout #4.2).

San Diego's Top 20 Tourism Locations

Rank	Attraction	2006 Attendance Figures
1	Gaslamp Quarter	9,300,000
2	SeaWorld San Diego	4,500,000
3	Seaport Village	4,000,000
4	San Diego Zoo	3,200,000
5	San Diego Wild Animal Park	1,400,000
6	Belmont Park's Rides	1,000,000
7	Cabrillo National Monument	886,620
8	USS Midway Museum	805,000
9	Reuben H. Fleet Science Center	531,565
10	Birch Aquarium at Scripps	372,793
11	San Diego Museum of Art	323,625
12	San Diego Natural History Museum	284,300
13	Hornblower Cruises	259,361
14	San Diego Model Railroad Museum	244,652
15	Maritime Museum of San Diego	191,388
16	UltraZone--The Ultimate Laser Adventure	168,669
17	Museum of Photographic Arts	126,718
18	Museum of Contemporary Art	123,157
19	Timken Museum of Art	115,522
20	San Diego Automotive Museum	94,761

My School Plan

Name:_____ Date:_____

My birth date was: (Month, Day, Year) _____

Level of School	The school I attended or the school I will attend	Year of Entering	Graduation Date (Year)	My Age at Graduation
Pre-School (Optional)				
Kindergarten				
Elementary School				
Middle School/ Junior High				
High School				
College				
Graduate School (optional)				

List some of the different jobs that interest you. _____

_____

Choose a job. Write some of the kinds of skills and knowledge you need in order to have that job one day. _____

_____

The Economy of the San Diego

Major Industries and Commercial Activity

San Diego's economy, once dominated by military and defense endeavors (now the city's second largest economic sector) is led by **manufacturing**, particularly in the areas of shipbuilding and repair, industrial machinery and computers, metals production, and the manufacture of toys and sporting goods. In 2002, manufacturing contributed $25 billion to the county's economy. International trade is an important part of San Diego's economy, accounting for 37 percent of its manufacturing dollars. In 2001, goods moving through San Diego customs totaled $33.6 billion. The border between the San Diego area and Tijuana is the busiest in the world.

Since the founding of San Diego, the city's economy has been tied to San Diego Bay, a natural harbor which today is one of California's five major ports. It is an important link in the nation's international shipping trade; the port's two marine cargo facilities are the National City Marine Terminal, which is a primary port of entry for Honda, Acura, Volkswagen, Isuzu, Mitsubishi Fuso, and Hino Motors vehicles; and Tenth Avenue Marine Terminal, which handles a wide variety of commodities. The port also has a growing cruise ship operation, with more than 180 cruise ships docking annually.

San Diego's harbor has had the most significant impact on the local economy. San Diego is the Navy's principal location for West Coast and Pacific Ocean operations. The Eleventh Naval District Headquarters, the base for the U.S. Navy Pacific fleet, is located on the bay. Increases in military and homeland defense spending during the early 2000s have contributed to economic growth in San Diego. The **military/defense industry** is the city's second largest economic sector, bringing more than $13 billion into the economy annually. The Marine Corps Base Camp Joseph H. Pendleton, the Marine Corps Recruit Depot, Marine Corps Air Station at Miramar, Naval Air Station North Island, Naval Station San Diego, and Naval Submarine Base, San Diego, are San Diego military installations.

With the San Diego Zoo and Sea World, a variety of historical and cultural attractions, and year-round good weather, San Diego is a top destination for tourists. In 2004, *Travel and Leisure* magazine ranked it America's second favorite city (behind Honolulu). San Diego's **tourism industry** is the third largest segment of its economy, with more than 26 million visitors to the county bringing more than $5.6 billion in annual revenues. Service industries have seen continued growth in recent years, specifically in areas such as dining, lodging, shopping and recreation services. San Diego regularly ranks as a top-10 U.S. vacation destination for international travelers.

The fourth largest segment of the economy is **agriculture**. San Diego County is the 20th largest agricultural producer in the nation. It is a top producer of nursery products, flowers, and avocados.

San Diego is a center for **high technology and biotechnology.** Nearly 160,000 high-technology workers are employed at 1,400 companies throughout San Diego. High technology growth areas include the biomedical, software, telecommunications and security sectors. Among all U.S. metropolitan areas, San Diego has the third largest concentration of biotech companies, with more than 32,000 biotech jobs at 499 companies. Items and goods produced: acoustical materials, adhesives, airplane parts, bamboo, dairy products, electronics transmission and distribution equipment, plastic, rubber products, awnings, beverages, paper, clothing, dental products, detergents, computers, televisions.

Development Projects

Recent development highlights in San Diego include the expansion of the San Diego Convention Center, completed in 2001, and the construction of PETCO Park, which opened in 2004. PETCO Park, home of the San Diego Padres, is located downtown and has 42,000 seats. The new 1.7 million square foot Convention Center features 615,701 square feet of exhibit space. In 2002, a $312.3 million program to build or improve 24 San Diego libraries was approved. As of 2004, more than 100 residential, commercial, retail, and entertainment development projects in San Diego's downtown area were underway or on the drawing board. *Economic Development Information:* City of San Diego Economic Development Division, 600 B Street, Suite 400, San Diego, CA 92101; telephone (619)533-4233; fax (619)533-5250; email sdbusiness@sandiego.gov

Commercial Shipping

The Port of San Diego handles hundreds of merchant ships each year; nearby Tijuana, Mexico, is also a duty-free port. The Burlington Northern Santa Fe (BNSF) railroad connects San Diego to major market areas. More than 80 trucking companies are established in metropolitan San Diego, providing freight, hauling, or equipment services. Air cargo services are maintained at San Diego International Airport, which handles more than 70,000 tons of cargo annually.

Labor Force and Employment Outlook

A large portion of the San Diego work force is derived from in-migration, creating a diverse population. In 2002, San Diego added nearly 20,000 jobs, while the nation as a whole experienced an economic recession. Among the three occupations expected to see the most growth in San Diego in the near future, all are in the information technology field. A 2005 report by the San Diego Workforce Partnership indicates that the occupations with the highest growth rate between 2001-2008 are expected to be computer support specialists (57.9 percent growth), network and computer systems administrators (51.9 percent), and network systems and data communications analysts (50.0 percent). According to the same report, occupations forecasted to have the most opportunities for job seekers—the most job openings between 2001 and 2008—include janitors and cleaners, security guards, laborers, stock clerks, computer support specialists, bookkeepers, and elementary school teachers.

The following is a summary of data regarding the San Diego/Carlsbad/San Marcos area labor force, 2004 annual averages.

Size of non-agricultural labor force: 1,258,600
Number of workers employed in . . . natural
resources and mining: 400
construction: 87,300
manufacturing: 104,200
trade, transportation, and utilities: 214,400
information: 36,400
financial activities: 81,500

professional and business services: 205,100
educational and health services: 121,300
leisure and hospitality: 145,200
other services: 47,600
government: 214,700
Average hourly earnings of production workers
employed in manufacturing: $13.70

Employers

Largest employers	Number of employees	Largest employers	Number of employees
Federal Government	44,200	County of San Diego	17,700
State of California	32,400	City of San Diego	11,085
San Diego USD	25,230	Qualcomm Inc.	10,431
UC California San Diego	21,444	Sharp HealthCare	8,111

Military/Defense Industry in the San Diego Region

The military/defense industry has played a big role in the San Diego economy and community for nearly a century. San Diego's "defense connection" began in 1908 when President Theodore Roosevelt's Great White Fleet - an armada of twenty-seven naval warships - anchored off the shore of Coronado. During a later visit to San Diego during the Panama-California exposition, future President Franklin D. Roosevelt, who was serving as Undersecretary of the Navy at the time, was similarly with San Diego as a location for a Pacific Fleet. **William Kettner** was elected to Congress with a mandate to bring federal defense dollars to San Diego to dredge San Diego Bay to accommodate the Navy's modern warships and to build a destroyer repair facility.

San Diego also became the birthplace of naval aviation. In 1911, Glen Curtiss - a pioneer in early aviation - opened a flight school in Coronado and launched the world's first successful seaplane flight from San Diego Bay. A naval base was created on North Island in 1912. The Naval Training Center and Marine Corps Recruit Depot was created in 1923.

In 1925, Claude Ryan formed Ryan Airlines. He purchased an abandoned tuna cannery on San Diego Bay and began to manufacture aircraft. The most notable aircraft manufactured by Ryan was the Spirit of St. Louis piloted by **Charles Lindbergh** on the world's first trans-Atlantic flight.

As World War II approached, Reuben H. Fleet relocated Consolidated Aircraft from Buffalo, NY to San Diego and began the production of seaplanes and Liberator bombers for sale to the U.S. government and its allies. Consolidated Aircraft later acquired Vulcee Aircraft to become Convair - San Diego's largest defense employer during the boom years.

World War II transformed the San Diego economy and landscape. Tens of thousands of defense workers came from around the nation. In 1940 alone, fifty thousand workers and their families moved to San Diego in search of employment in the defense industry. Between 1940 and 1950 San Diego's population more than doubled.

Following the end of World War II, the United States and Soviet Union entered into a forty-five year Cold War with a race for nuclear arms and superiority in space. The Cold war arms race between the two superpowers poured tens of billions of dollars into the San Diego defense-manufacturing machine.

The production of aircraft changed to missile systems like the Intercontinental Ballistic Missile, Tomahawk Cruise Missile, and space craft booster rockets.

Between the end of World War II and the early 1990s, boom and bust periods became a regular feature of the local economy. Nonetheless, San Diego became one of - if not the largest military and defense complex in the world.

Between 1983 and 1990, San Diego was one of the fastest growing metropolitan areas in the United States. Over 300,000 new jobs were created and the population grew by nearly 500,000. Over 44,000 San Diegans were employed in the defense industry with aerospace jobs accounting for one-half.

The Cold War ended in 1989 with the crashing of the Berlin Wall and the crumbling of the Soviet empire. Also, in 1990, the nation entered into a bad recession. The San Diego defense and space industry - as well as the entire economy - was affected. Federal spending on defense was greatly reduced. Between 1990 and 1993, the region lost over 58,000 jobs. Two out of every three defense jobs disappeared. The local aerospace industry- once the flagship of the local economy - lost 18,400 or three of every four aerospace jobs.

Private industry has also undergone big changes in the attempt to reduce costs. Once there were fifty large prime defense contractors in the late 1980s, now there are five. This has resulted in far fewer contracting opportunities for small and mid-sized defense and space technology companies.

Many defense companies have chosen to stop defense work entirely and focus on other technologies. In fact, a strong case can be made that the dwindling San Diego defense and space industry has helped create San Diego's new technology-based economy in telecommunications, multimedia, software, electronics, computer hardware, and recreational products.

Despite the cutbacks in federal defense spending and industrial restructuring, San Diego's defense industry is the second leading economic sector in the local economy. In 1999, defense expenditures in the region reached nearly $10 billion. This number includes defense contracts, military payrolls, and base expenditures. The San Diego region is sixth in the nation for defense contracts. In the past, the majority of defense dollars were spent on aerospace, missiles, and aircraft manufacturing. The trend has now shifted towards high-technology research, development, and engineering in communications systems and computers.

Science Applications International Corporation (SAIC) is the largest San Diego-based defense contractor, by far. General Atomics remains one of San Diego's top contractors. Other leading local defense contractors include Computer Sciences Corporation, Cubic Defense Systems, Advanced Communications Systems, Anteon, Titan, Planning Research Corporation, Orincon Industries, TRW, and Booz, Allen & Hamilton. It has been estimated that there are 2,263 small to medium-sized defense and space contractors. One-half of these are thought to be micro-businesses with 10 or fewer employees. The remaining defense companies include 100 to 150 large companies. Total employment in the local defense and space industry is at least 30,000.

The range of products currently manufactured by San Diego defense and space companies are diverse reflecting the rich heritage and legacy in the region. Examples of defense and space products manufactured by San Diego-based companies include:
- satellite communications systems
- electronic systems
- unmanned aerial vehicles
- propulsion systems
- deep space cameras
- satellites
- rugged military computers and displays
- robotic roving vehicles

Leading the city's economy is manufacturing in aerospace, electronics, ship building, apparel, food, oceanics and biomedical equipment. Much of the valued $11 billion in manufacturing products produced in San Diego are directly related to federal defense spending contracts.

Military employment is holding steady, but the fastest growing major employment categories have been construction, and finance/real estate and services.