INSTRUCTOR RESOURCES

Answers to Chapter Review Questions

FBO Management

Operating, Marketing, and Managing as a Fixed-Base Operator

C. Daniel Prather, PhD, DBA, AAE, CAM

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FBO Management: Operating, Marketing, and Managing as a Fixed-Base Operator
Instructor Resources—Answers to Chapter Review Questions
by C. Daniel Prather, PhD, DBA, AAE, CAM

Additional resources for instructors using the *FBO Management* textbook in their classrooms are available at **asa2fly.com/fbomgt**.

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Preface

This document provides answers to the chapter review questions contained in the *FBO Management* textbook, by C. Daniel Prather. The chapter review questions are also available in a separate document, formatted with blank space for student responses. This resource is intended for instructors as a tool to support their teaching when used in conjunction with the *FBO Management* textbook in their classrooms.

Review questions, scenarios, chapter exams, and additional resources for instructors are available at **asa2fly.com/fbomgt**.

General Aviation: A Historical Perspective

1. **How did Glenn Curtiss get started in manufacturing aircraft?**
   Glenn Curtiss was a bicycle and motorcycle maker. Curtiss developed air-cooled engines that were coveted by budding aviators. Curtiss was hired by Alexander Graham Bell in 1905 to head up a group of aviation experimenters known as the Aerial Experiment Association. This sparked his involvement in manufacturing aircraft.

2. **To what degree did the barnstormers contribute to the development of general aviation?**
   Barnstormers were true trailblazers in the development of general aviation. Many of the barnstormers were ex-World War I pilots who could not get aviation out of their systems. After returning from WWI, many of these ex-pilots toured the country using war surplus aircraft. Barnstormers would perform aerial shows, give rides to curious townspeople, and perform stunts such as wing walking and plane changes. As time went on, these pilots needed better-performing airplanes. The Air Mail Act of 1925 as well as the Air Commerce Act of 1926 helped to establish the aviation industry for general use.

3. **How did Wichita become the home for many of the light GA aircraft manufacturers?**
   A man named Jake Moellendick was a wealthy oilman who lived in Wichita, Kansas. He gambled in aviation and put up $15,000 to back several barnstormers who needed three new planes to replace their worn-out Curtiss Jennys. Billy Burke was sent to the 1919 Chicago Air Show to find the new aircraft. He approached an aircraft builder by the name of Matty Laird. Burke realized that Laird's aircraft could easily become the country's first successful commercially sold private plane. Burke wired Jake about the new plane and suggested that, instead of forming the flying circus, they get into the airplane-building business. The idea appealed to Jake with the one stipulation that the company be moved from Chicago to Wichita.

4. **What successful aircraft was developed in 1932 that brought the Beech name into prominence?**
   The Beech Aircraft Corporation Model 17 Staggerwing.

5. **Cessna gained prominence in 1935 with the development of which aircraft?**
   The Cessna Aircraft Company C-34 high-wing, four-place cabin monoplane.

6. **Piper's Cub developed out of which aircraft?**
   The E-2 Cub.

7. **Why did the manufacturers have such a feeling of optimism concerning market potential during the post-WWII period?**
   Even during the darkest days of World War II, the general aviation aircraft manufacturers were aware of the ordinary citizen's desire to fly and were preparing for the postwar period.

Surveys, polls, questionnaires, and other marketing studies conducted for and by the industry and the government were the basis for highly optimistic predictions of a staggering potential need for light aircraft after the war. There were also many trained army and navy pilots returning from the war and some of them planned to continue flying in some capacity.

8. **What were some of the developments that took place during the 1950s that helped general aviation grow?**

   The 1950s began a period of introspection and review by the general aviation aircraft manufacturers. There was a higher demand for aircraft to be developed for public use, and cross-country navigation was made simpler and more efficient through very high frequency omni-directional radio ranges—the VORs. VHF radios—static free and easy to navigate by—became factory options on more and more airplanes. In 1950, general aviation airplanes were awarded their own frequency, 122.8, called UNICOM. In 1952, Max Conrad flew a Piper Tri-Pacer to Europe and back, which again demonstrated the capability and reliability of light aircraft. Growth was solid as the industry emerged from a period of readjustment. In 1954, Cessna and Piper introduced their four-place light twins—the 310 and the Apache, which would start a long line of descendants. By the mid-1950s, aircraft production hovered around the 4,500 per year mark and the need for instrument flight rules (IFR) capability increased.

9. **Why can it be said that general aviation really matured during the 1960s?**

   In the 1960s, general aviation had become a major part of the nation's transportation system. There was an inventory of light aircraft that were fully capable of flying people in comfort 1,500 miles in one day to thousands of places not served by commercial air carriers. Expansion, modernization, and increasing complexity characterized the aviation world of the 1960s.

10. **Describe some of the new aircraft that were developed during the 1960s, including the first jet designed specifically for the general aviation market.**

    The Cherokee marked Piper's break from its traditional tube-and-fabric, high-wing design approach to light singles. It became the template for all of the piston-powered models Piper would develop over the next 20 years, with the exception of the Tomahawk and Navajo.

    Beech entered the 1960s with a pair of piston-powered, cabin-class executive transports in the Model 18 and the Queen Air. In December 1962, Beech unveiled a mock-up of a turboprop-powered, pressurized Model 120, an all-new design. At the same time, Beech was working on a new pressurized version of the Queen Air 80. Details of the forthcoming King Air 90 were revealed in August 1963. Two 500-shaft horsepower Pratt & Whitney turboprop engines would provide the power to cruise at 270 miles per hour at 16,500 feet, with the cabin pressurized to an altitude of 8,000 feet.

    Lear Jet Corporation's Lear 23 launched corporate aviation into the jet age. The Learjet had its roots in a European private-venture military jet that never went into full production. The P-16 was a ground-attack warrior that a Swiss firm hoped to sell to the Swiss Air Force. The Lear 23 and Lear Jet Corporation had several unexplained accidents, and Bill Lear had to sell his shares in Lear, Incorporated. Gates Rubber bought Lear Jet Corporation and certified the Model 25, which was a longer version of the Lear 23/24. Later, the turbofan-powered Lear 35 and 55, an enlarged, stand-up cabin version, would be certified.

11. **Describe some of the major events during the 1970s that impacted general aviation.**

    Manufacturers of light aircraft established a strong and effective lobbying and public relations organization in Washington called the General Aviation Manufacturers Association (GAMA). Additionally, the National Business Aircraft Association (NBAA), later renamed National Business Aviation Association, was established. The Aircraft Owners and Pilots Association (AOPA) developed, and the Federal Aviation Administration (FAA) appointed a deputy administrator for general aviation. Despite an economic recession during the first two years of the 1970s and an oil embargo in 1973, general aviation continued to grow, reaching a high point in 1978 with 17,808 units produced.

12. **What are some of the reasons for the decline in general aviation aircraft sales during the 1980s?**

    Soaring interest rates and a depressed economy during the early 1980s affected sales. Aircraft shipments dropped from 11,877 in 1980 to 9,457 in 1981 and 4,266 in 1982. By 1985, the number had reached a record low of 2,032 units. A number of factors are cited for the sales decline, including costs, airline deregulation, product liability claims, taxes, foreign aircraft manufacturers, and other factors such as changes in income, increases in air space, restrictions on VFR aircraft, reductions in leisure time, and shifts in personal interests.

13. **Why did Cessna stop production of single-engine training aircraft?**

    While production of the larger business aircraft had remained steady for Cessna, sales of single-engine piston aircraft and even the twin turboprops continued to decline in the first half of the 1980s. There was a lack in demand.

14. **Why did the light aircraft manufacturers begin concentrating on turbine aircraft?**

    Product liability claims, which caused the light aircraft manufacturers to concentrate on their higher-priced line of turbine equipment, impacted GA aircraft production and sales.

15. **Discuss the reasons for the downturn in the number of pilots from the late 1970s through the early 1990s.**

    The decline in the number of pilots and student pilots coincided with the end of the chain of great economic programs and the beginning of a natural life cycle. Beginning in 1939, the United States government provided virtually free flight training for approximately the next 40 years, until the late 1970s. The World War II GI Bill (officially the Servicemen's Readjustment Act of 1944) and its subsequent extension, the Korean War GI Bill, continued this trend of providing government-subsidized flight instruction and flight training for those who were interested in flying as "career development." Many of the pilots that took advantage of these flight training benefits started to retire in the late 1970s through the 1990s.

16. **How did the government agencies, manufacturers, and the general aviation community respond to industry challenges?**

    During the 1990s, there was a growing climate of partnership between the FAA and the general aviation community. The FAA streamlined its certification process for new entry-level aircraft (primary category rule), for example, which should lead to increased production of new light, affordable aircraft. These conditions suggested continued improvement in the general aviation industry in 1998 and beyond. New manufacturing facilities opened to support expanded production.

17. **How was the general aviation industry revitalized during the 1990s?**
    Passage of the General Aviation Revitalization Act (GARA) of 1994 ushered in a new wave of optimism in the general aviation industry. In 1997, the optimism so prevalent in the industry since the passage of GARA was evidenced by the release of new products and services, expansion of production facilities, increased student starts, increased aircraft shipments, and record-setting gains in aircraft billings. These conditions suggested continued improvement in the general aviation industry in 1998 and beyond.

18. **What was the purpose of the General Aviation Revitalization Act (GARA) of 1994?**
    GARA imposed an 18-year statute of repose, limiting product liability suits for aircraft having fewer than 20 passenger seats not engaged in scheduled passenger-carrying operations.

19. **Describe the role that fractional ownership has played in revitalizing the industry.**
    During the 1990s, fractional ownership programs offered by NetJets, Bombardier's Flexjet, Raytheon's Travel Air, Flight Options, and TAG Aviation grew at a rapid pace. Once introduced to the benefits of corporate flying, some users of fractional programs found it more cost effective to start their own flight departments instead of incurring the costs of a larger share in a fractional ownership program. As a result, the fractional ownership community may be partially responsible for the increase in traditional flight departments since 1993.

20. **What are the advantages and disadvantages of the very light jet category of aircraft?**
    Some advantages of very light jets are that they can fly into smaller airports, are certified for single-pilot operations, have slower approach speeds than a typical jet, have a range of 1,000–1,400 miles, and contain advanced flight automation systems. They typically cost one-fourth the initial purchase price of a standard corporate jet and have one-third the operating cost. Specifically, VLJ prices range from $1–3 million, with operating costs around $1,700 per flight hour. Some disadvantages to the VLJ category are that they can carry fewer passengers and have a 10,000 pounds or less maximum certified takeoff weight.

21. **Discuss the highlights of the 2000–2010 period.**
    More than 900 turbine aircraft were delivered in 2000 as production capacity soared to keep up with record backlogs in manufacturers' order books. Piston aircraft shipments grew by almost 11 percent, buoyed by an infusion of new technology from Lancair and Cirrus Design as well as increased piston deliveries from Cessna's plant in Independence, Kansas. The business jet section, though, is where major changes were occurring. Many improvements were made industry wide with aircraft development, including the light-sport aircraft and very light jets.

22. **Why is 2011–2020 considered a period of transformation?**

    The second decade of the twenty-first century was characterized by significant transformation. During this decade, numerous advances were made for the industry, possibly none more exciting than electric and urban air mobility. The National Transportation Safety Board (NTSB) added "general aviation safety" to the agency's "Most Wanted List." The International Civil Aviation Organization (ICAO) developed the first-ever standard to limit the emission of carbon dioxide (CO_2) from aircraft. Normal category aircraft certification rules (14 CFR Part 23) were revised in 2018, allowing aircraft manufacturers to quickly implement new and cost-saving technologies.

23. **In what ways has the industry recovered from COVID impacts?**

    Fortunately, by fall 2022, the recovery from COVID was mostly complete. All states had dropped restrictions on large gatherings and dining indoors. The federal mandate on wearing facial coverings on airline flights was lifted in April 2022. Commercial air travel had returned in earnest during summer 2021, with the TSA screening record numbers of passengers on June 30 and July 1 in advance of the July 4 weekend. According to Honeywell's 31st Annual Global Business Aviation Outlook, up to 8,500 new business jet deliveries worth $274 billion are forecast for 2023 to 2032. This is a 15% increase for the same 10-year forecast issued in the 30th Annual Global Business Aviation Outlook.

The Scope of General Aviation

1. **Define "general aviation."**
   All civil aviation operations other than scheduled air services and nonscheduled air transport operations for remuneration or hire.

2. **What are the primary use categories of GA aircraft?**
   There are several use categories of GA aircraft: personal, business without paid flight crew, business with paid flight crew, instructional, aerial application agriculture, aerial observation, aerial application other, external load, other work, sightseeing, air medical, and other (public use).

3. **What are some examples of public-use aircraft?**
   Public-use aircraft includes owned or leased aircraft operated by federal, state, or local governments. Public-use aircraft may be used for firefighting, law enforcement, scientific research and development, flight inspection, surveying, search and rescue, drug interdiction, and transport of government personnel.

4. **Provide several reasons why businesses may use aircraft.**
   Businesses may use aircraft to further the business and utilize either a paid or unpaid flight crew. Business meetings can be held on aircraft while traveling from destinations, and business aircraft can fly to 10 times the number of airports than the airlines. Personal aircraft can also be used for business and are flown by doctors, lawyers, accountants, engineers, farmers, and small business owners.

5. **Personal flying is primarily for wealthy individuals who want aircraft for recreation. Do you agree? Why?**
   Answers will vary but may include a general opinion statement and justified reasoning.

6. **Discuss the importance of instructional flying to the industry.**
   Instructional flight is dominated by training leading to the Private Pilot Certificate, and close to 90 percent of the aircraft used for instruction are single engine. Only 8.5 percent of the active fleet are used for instruction. However, 25 percent of total flight hours are instructional. Obtaining a Private Pilot Certificate for business or personal reasons is the primary goal for some students. Others use it as a stepping-stone to an airline or military aviation career.

7. **What are some examples of aerial application flying activity?**
   Aerial application agriculture includes any use of an aircraft for work that concerns the production of foods, fibers, and timber production and protection. This category primarily includes aircraft that distribute chemicals or seeds in agriculture and reforestation. Aerial services include the use of aircraft for weather modification, firefighting, and insect control. Weather modification includes efforts by ski resorts to create snow and by governmental

authorities in arid regions to create rain. Additionally, air-dropping chemicals and fire retardant by aircraft is a major weapon in the control of forest and brush fires.

8. **What are the most significant advantages to chartering an aircraft?**

   Charter and air taxi services allow passengers to step from a long-distance, wide-body, commercial aircraft into a single-engine or twin-engine air taxi for swift completion of their travel to cities and towns hundreds of miles from airline hubs. Charter operations may also save time and money for passengers as they can skip waiting for scheduled air carrier flights, hotel expenses, meals, and rental car expenses.

9. **Describe several uses of helicopters for carrying external loads.**

   External load flying has many different uses, such as hoisting heavy loads and hauling logs from remote locations. Heavy-lift helicopters can also transport heavy, expensive drilling equipment, transport wind turbine blades, and lift commercial air-conditioning units on top of high-rise buildings. There are times when external load operations are the only way to complete a task.

10. **Describe the important economic role played by general aviation airports.**

    The general aviation airport has become vital to the growth of business and industry in a community by providing access for companies that must meet the demands of clients, cope with competition, and capitalize on expanding market areas. Communities without general aviation airports place limitations on their capacity for economic growth and generally have a difficult time attracting business and the subsequent job opportunities created.

11. **Why is the growth in the number of student and private pilots so important to the continued health of the general aviation industry?**

    Many pilots who start off as weekend pilots upgrade to high-performance equipment and obtain higher ratings and pilot privileges and eventually become business, as well as pleasure, air travelers in light aircraft. Others start out to obtain their Commercial and Airline Transport Pilot Certificates with the intention of making a career in aviation. Many pilots that now fly for the airlines, business aviation, or the military once began in general aviation.

12. **Discuss the types of flight services provided by the FAA (or designated contractor) to pilots.**

    Today's sophisticated air navigation network has its roots in the 1920s, when pilots relied on scattered radio stations and rotating light beacons to hop from one landing field to the next. During periods of poor visibility, however, the usefulness of light beacons was severely limited. The federal government eventually introduced the four-course radio range, a device that transmitted radio signals in four directions. The government installed a network of these facilities to guide pilots to their destinations. The original radio range was eventually replaced by very high frequency omnidirectional range (VOR), a device developed during WWII. Today, the FAA has transitioned to performance-based navigation (PBN), which is satellite (GPS) based. VOR infrastructure now has a backup infrastructure known as VOR MON (very high frequency omnidirectional range Minimum Operational Network). NAVAIDs help during GPS outages and may help a pilot descend from cruising altitude to land on an airport runway, even in poor weather conditions. The air traffic control system is crucial to civil aviation, keeping airplanes safely separated from each other and regulating their flow into and out of airport terminal areas. The air traffic control system has four parts: air traffic control towers (ATCT), terminal radar approach control (TRACON), air route traffic control centers (ARTCC), and automated flight service stations (AFSS). Each of these facilities performs different tasks to help conduct flight operations.

13. **How has the internet positively changed general aviation, from a pilot's perspective?**
    The aviation industry, like most industries, has been affected dramatically by the digital evolution. Prospective customers for various GA products and services often begin with a quick internet search. Social media outlets such as Instagram, Twitter, Facebook, and TikTok have made aviation's presence known.

14. **Why is it important for an FBO to have a digital presence?**
    There is now less risk than ever in applying resources to a strong online presence. In some ways, the risks are higher for those few companies who have not implemented a digital presence strategy. In other words, effective digital marketing requires a digital presence. This is no different for FBOs, as they can use digital presence to advertise their services to aviators and the communities that they serve.

The Fixed-Base Operator

1. **How was the term "fixed-base operator" coined?**

   Originally, barnstormers did not have a fixed base of operation and were not highly regarded from the standpoint of dependability or business knowledge. Some, however, became successful aviation businesspeople and established airport facilities to base their aviation service operations. These became known as fixed-base operators, or FBOs.

2. **What are FBOs similar to?**

   FBOs are to aviation what service stations, repair garages, engine specialists, body and fender shops, paint shops, tire sales outlets, driver training schools, taxicabs, new and used automobile dealers, and auto supply stores are to the automobile industry.

3. **Approximately how many FBOs are there in the United States?**

   Recently, according to 2020 data from the National Air Transportation Association (NATA), there are currently 3,384 FBOs.

4. **How are FBOs categorized?**

   There are four types of FBO ownership, which are publicly owned, independent, small network, and large network. FBOs are also categorized into three major categories according to their size. These categories are major fixed-base operators, medium-sized fixed-base operators, and small fixed-base operators.

   Student's responses may also include details about the categorizations and how the FBO categories are determined.

5. **Discuss some of the problems experienced by small fixed-base operators.**

   About two-thirds of FBOs fall into the small category, which means that they began with minimal investment and may have grown organically from a small aircraft maintenance shop or small flight school. However, there can be issues with small fixed-base operators, as small FBO operators may not have any business training.

   Extra credit option: Students may mention lack of planning, busy FBO managers, lack of financial resources, and lack of prioritization mentioned in chapter 12.

6. **What are specialized aviation service operations?**

   A SASO is a provider of extremely specialized aviation services that does not qualify as a fixed-base operation. Examples include aircraft flying clubs, flight training, aircraft airframe and powerplant repair/maintenance, aircraft charter, air taxi or air ambulance, aircraft sales, avionics, instrument or propeller services, or other specialized commercial flight support businesses.

7. **Discuss some recent trends affecting FBOs.**

   Present, but not visible in new aircraft delivery statistics, was a growing trend on the part of airframe manufacturers to seek after-market work such as repair, overhaul, and maintenance including refurbishing, painting, interior, and avionics work. Complying with the myriad federal, state, and local regulations has also added to the cost structure of many FBOs. Some of these costs include those arising from security requirements, fuel flowage fees, and Superfund. Many FBOs also incur costs in order to conform to Environmental Protection Agency (EPA) underground storage tank regulations. These trends may add enough incremental costs to smaller or marginally profitable FBOs that they will fail. The entry of airframe manufacturers has impacted those FBOs that in the past had derived significant income from completions, modifications, maintenance, and parts. Another trend is the move toward corporate self-fueling. Airports are required to permit self-fueling and the fire fuel safety standards must be adhered to.

8. **In establishing an FBO, what are the advantages and disadvantages of the four main forms of legal structure?**

Although the four main types of organization are discussed below, it is prudent to discuss any business start-up issues with competent attorneys and tax advisors. A business can be organized using one of four main forms: (1) sole proprietorship, (2) partnership, (3) corporation, or (4) LLC.

Sole proprietorship:

- Advantages:
  - Ease of formation and dissolution
  - Sole ownership of profits
  - Control and decision-making vested in one owner
  - Flexibility
  - Relative freedom from regulation and special taxation
- Disadvantages:
  - Unlimited personal liability for business debts and liabilities
  - Unstable business life, solely dependent on the health of the sole owner
  - Difficult to acquire capital
  - Relative lack of additional expertise and alternative perspectives

Partnership:

- Advantages:
  - Relative ease of organization
  - Minimum capital required
  - More capital available
  - Broader management base and continuity
- Disadvantages:
  - Conflicts between partners
  - Less flexibility due to need for agreement among partners
  - Unlimited liability, as with sole proprietorship
  - Size limitations
  - Capital restrictions
  - Firm bound by actions of only one partner
  - Difficulty of transferring partnership interest

Corporation:

- Advantages:
    - Limitation of stockholder's liability to amount invested, with respect to business losses
    - Readily transferable ownership
    - Separate legal existence, even with the demise of all current owners
    - Relative ease of obtaining capital
    - Tax advantages
    - Permits large size
    - Easy expansion
    - Delegated authority
    - Potentially broad management base
- Disadvantages:
    - Close government regulation
    - Cost and complexity to set up
    - Activities limited by charter
    - Manipulation of minority stockholders
    - Double taxation—corporate income and again on individual salaries and stock dividends

LLC:

- Advantages:
    - Much less administrative paperwork and recordkeeping than a corporation.
    - Avoid double taxation.
    - Limited liability (owners of the LLC are protected from some liability for acts and debts of the LLC but are still responsible for any debts beyond the fiscal capacity of the entity).
    - An LLC can elect to be taxed as a sole proprietor, partnership, S corporation, or C corporation, providing much flexibility.
- Disadvantages:
    - Many states levy a franchise tax or capital values tax on LLCs for the privilege of that company having limited liability.
    - It may be more difficult to raise financial capital for an LLC (investors may be more comfortable investing funds in the better-understood corporate form with a view toward an eventual IPO).
    - LLC is a relatively new form of organization, and some states do not fully treat LLCs in the same manner as corporations for liability purposes.
    - The principals of LLCs use many different titles (e.g., member, manager, managing director, chief executive officer, president, partner, etc.). It can be difficult to determine who has the authority to enter into a contract on the LLC's behalf.

9. **Describe the importance of analyzing the market and selecting a location.**

   Information sought in a market analysis for a fixed-base operator includes the number of potential customers, where they are located, and what kind and what quantity of business they are likely to bring to the firm. In studying the potential market, it is necessary to recognize that the aviation industry has been undergoing tremendous and rapid change. Staying up to date with monitoring these changes is very important in developing an FBO location. Other important market factors to consider in selecting a location are population, weather conditions, income levels, the social and economic nature of the community, ground facilities to support efficient use of the aircraft, industrial developments and trends in the community, agricultural activities, traffic problems, and other ground transportation problems in the area.

10. **What is market analysis?**

    The process of studying the market is called market analysis.

11. **Discuss the importance of the community in locating an FBO.**

    The characteristics of the community will greatly affect an operation. The market for an FBO is not just one group but consists of many segments, and each requires a separate analysis. Major segments include, but are not limited to, the following: business and corporate market, private or pleasure market, agricultural market, government aircraft sales and service market, transient potential, and other operations or airline markets.

    Students may also discuss other factors regarding economics and demand.

12. **Describe the factors that must be considered in selecting a site for an FBO.**

    The process of site selection should start with the choice of a geographical area. Having decided on a general area, the next step involves the selection of a specific airport. In making this choice, it is important to survey the competition of other FBOs and find out how well they are doing. A firm must think in terms of the entire airport and its future development plans. Moving into an existing facility has good and bad points. Choosing an established facility is certainly beneficial, but if the airport master plan calls for relocation of the center of activities, leaving the FBO isolated, the result could be disastrous. The location on the airport has a significant effect on business both immediately and in the future, and key factors to consider may include the distance to fueling facilities (if fuel service is not provided by the FBO), distance to the main terminal area, distance from the nearest competitor, and ease of access to and from public roads.

13. **Where can a prospective FBO get assistance?**

    Informational assistance can be obtained from several sources including local chambers of commerce, airport boards and local airport advisory committees, the Aircraft Owners and Pilots Association (AOPA), Federal Aviation Administration (FAA), Internal Revenue Service (IRS), National Air Transportation Association (NATA), National Association of State Aviation Officials (NASAO), and the Small Business Administration (SBA).

14. **List the basic equipment needed to establish an FBO.**

    Necessary equipment may include fueling trucks; other vehicles such as courtesy cars, utility trucks, scooters, and trailers or carts; housekeeping equipment; shop tools; supplies for resale and operations; and office equipment.

15. **What specific facilities and equipment are needed for an FBO?**

    Facilities and equipment may include:

    - *Aircraft storage areas*—outdoor tie-downs, T-hangers, community hangars.
    - *FBO terminal*—pilot/crew sleeping quarters, restrooms, waiting lounge, classroom(s), conference room, recreational facilities, display cases/rooms.
    - *Employee/work areas*—offices, line crew ready room, maintenance shops, parts and supplies storage, fueling facilities, wash ramp, vehicle storage, employee locker rooms.
    - *Equipment*—trucks, vehicles, housekeeping supplies, shop tools, supplies for resale and operating supplies, and office equipment.

16. **Why have many independent FBOs joined a chain?**

    FBOs may join a chain because of the following:

    - The desire to operate with the support of a larger organization and to have access to a variety of resources and expertise.
    - Limited advertising budget and the need to gain national exposure to increase market share and sales volumes.
    - Being located in an underexposed geographical area, resulting in a need for national marketing and networked transient clientele, with additional high cost/benefit exposure to the marketplace to develop a larger customer base.
    - Desire to work with other FBOs with similar interests and operating objectives who are also affiliated with the franchise organization through an advisory council approach.

17. **What are some advantages and disadvantages of joining a chain?**

    Some advantages in joining a chain include greater organizational structure, access to a variety of resources and expertise, more benefit exposure to develop a larger customer base, and opportunity to work with others who have similar objectives. Some disadvantages of joining a chain include required sharing of market and sale volumes, and a high cost for exposure, with required share of revenues.

18. **Why would an FBO choose to remain independent?**

    Some considerations that might apply in deciding whether to remain independent include the following:

    - A desire to continue to operate as a totally independent business, thereby ensuring control when making marketing, management, and operational decisions.
    - Operating an FBO that already has a sound reputation for quality services and support, and a highly established and recognizable identity/image.
    - An established and profitable FBO that would have little or no potential incremental revenue impact from increased marketing exposure or networking with affiliated organizations.
    - Operating an FBO in a strong geographical location, or established destination marketplace, which would not benefit from increased network exposure.

19. What are some advantages and disadvantages of remaining independent?

Some advantages of remaining independent include full independence; ensuring marketing, management, and operational control; operating an FBO that already has a good reputation; an FBO may be more profitable on its own with no shared marketing costs; and the FBO may already have a good location and not need extra exposure. Some disadvantages of remaining independent include more responsibility and not as many shared duties, no access to other FBO marketing for exposure, and limited growth in the customer base.

Line Service

1. **What is the most visible aspect of an FBO?**
   The most visible and important aspect of an FBO's operation can be characterized simply as line service.

2. **What is the role of the line service specialist?**
   The role of the line service specialist cannot be overstated. These individuals are typically the first contact a flight crew has with an FBO. As such, these individuals must be well-trained and act with professionalism and a safety mindset at all times. If the FBO is not operated in a safe manner, financial difficulty will likely result. Additionally, the line service specialist must display positive work habits and treat everyone, whether the pilot of a Cessna 152 or a Gulfstream G650, with courtesy and respect.

3. **What makes up the knowledge base for a line service specialist?**
   It is imperative that line service specialists possess the knowledge necessary to successfully perform their job, including knowledge in areas such as directional terminology, coordinated universal time, phonetic alphabet, aircraft components and tail numbers, fire safety, aircraft refueling, fuel farm management, ground services and handling, guidance and parking, and FOD management. Commonly, on-the-job training is provided to all line service employees to ensure standardized job performance and safe operating practices. In this way, individuals in these positions feel more competent and are able to positively contribute to the safety and success of the FBO.

4. **Why is fire safety important for the line service specialist?**
   Fire safety is so important for line service specialists because they are frequently dealing with fuel and other flammable materials on the ramp. Prior to handling any fuel, the line service specialist must be taught the importance of proper handling of these fuels and of fire safety.

5. **What are the four classes of fires?**
   Class A, composed of ordinary combustibles such as wood or paper.
   Class B, composed of flammable and combustible liquids such as grease and gas.
   Class C, composed of energized electrical equipment.
   Class D, composed of combustible metals such as magnesium and sodium.

6. **What principles are used in extinguishing a fire?**
   Water, which has cooling effect, is used only on Class A fires. Carbon dioxide, which smothers the fire as it displaces oxygen, is effective on Class B or C fires. Dry chemical, which is a mixture of specially treated sodium bicarbonate, also deprives the fire of oxygen and is effective on Class B and C fires. For Class D fires, only specialized agents such as METL-X and G-1 powder are effective. Foam, also known as aqueous film

forming foam (AFFF), is a blend of bicarbonate of soda and aluminum sulfate. AFFF effectively blankets a fire with a layer of foam, thus cooling the fire and starving it of oxygen. It is primarily used on Class B fires, such as on-airport fuel fires, but may also be effective on Class A fires.

7. **What measures should be taken by FBOs to minimize the risk of fire?**

   An FBO should ensure that it has all of the correct fire-fighting equipment and supplies on hand in preparation for emergencies. FBOs should also ensure that their line service specialists have sufficient training in response to fire emergencies and that all employees are compliant with safety regulations. In the case of a fuel fire, fighting the fire can begin with interrupting the fuel source with an emergency fuel shutoff or the releasing of a deadman control.

8. **What are the three types of aircraft fuel filler caps?**

   First, with a simple twist-off, surface-mounted cap, the grip must remain parallel to the airflow. A second type has an inner cap located under a secure access door. A pop-up lever releases the cap for removal. The most common type involves a flush-mounted filler cap with a pop-up tab that must be rotated counterclockwise for removal. Regardless of the type, the line service specialist must ensure that the cap is properly secured at the completion of fueling.

9. **What are the proper steps in refueling an aircraft?**

   Aircraft can be refueled by one of two primary methods—over-the-wing and single point. Over-the-wing refueling is most common on piston-engine aircraft. In this method, after bonding the fuel vehicle to the aircraft, the line service professional uses a step ladder to access the fuel cap, removes the fuel cap, and inserts the fuel nozzle into the filler opening, depressing the handle to begin the flow of fuel. Single-point refueling uses a pressurized, closed system to deliver fuel. In this method, after bonding the fuel vehicle to the aircraft, the line service professional removes the adaptor cap (using a step ladder for access as needed on large jets), inserts the refueling nozzle into the receptacle, turns it clockwise to latch it into place, and then opens the nozzle to start the flow of fuel. A line service professional is not needed in all refueling situations. Indeed, fuel can be delivered through two primary methods: full-serve or self-serve. Full-serve does require a line service professional to fuel the aircraft, similar to full-service gas stations requiring an attendant to fuel the automobile. Self-serve, however, does not.

10. **Explain the three different types of aircraft engines that a line service specialist would expect to service.**

    The three types of engines typically encountered at an FBO include (a) reciprocating piston engine, (b) turboprop engine, and (c) jet engine. Common to a large majority of single-engine aircraft and light twin-engine aircraft, the reciprocating piston engine is similar to an automobile engine and operates by moving pistons, which in turn move a crankshaft, which then in turn spins the propeller. The turboprop engine, which is found in many large twins and commuter aircraft (such as the Beechcraft 1900), is actually a small turbine or jet engine that drives a propeller. Lastly, the true jet engine, which can be found in all corporate jet aircraft and many commercial air carrier aircraft, operates by compressing air, igniting it, and thrusting it out the back.

11. **Describe the types of fuel contamination.**

Different types of contaminants may exist in fuel, including water, particulate, microbial organism growth, surfactants, and improper fuel mixing. Water, which appears as a cloud, haze, or droplets at the bottom of the fuel sample, must be eliminated by draining, extracting with a sump pump, or using monitor elements and filter separators. In contrast to free water, if fuel contains dissolved water, this refers to water occurring in such trace amounts that fuel is not considered contaminated. Next, particulates such as sand, fiber, particles, and metal shavings can contaminate fuel and may result from damaged filters and rust and scale from storage tanks, hatches, pipes, and nozzles. Microorganisms, including bacteria, fungi, and yeast, are another form of contamination. These can damage or obstruct fuel filters, corrode engine components, and cause fuel deterioration. Surfactants, such as soap, can enter the fuel system through inadvertent chemical contamination, such as improperly cleaned tanks or motor gasoline residue. Finally, mixing different types and grades of aviation fuels is also a form of contamination. This can be prevented by segregating each type and grade of fuel and properly marking tanks and fueling trucks.

12. **What are the different types and colors of aviation fuel?**

Avgas may be in 80/87 octane (red in color), 100/130 (green in color), or 100 Low Lead (blue in color). Jet fuel, most commonly in the form of Jet A, is clear or occasionally straw in color. Additionally, each fuel has a universal marking and coding system. Avgas has white letters on a red background. Additionally, 100LL has a blue band, 80 octane has a red band, and 100 octane has a green band.

13. **What are the procedures to follow in towing an aircraft?**

First, the preferred route of travel must be determined. This should be the safest and most direct route available. After performing a vehicle safety check (including making sure the correct towbar is available), the tug is started, and the brakes are tested as the front of the (tricycle gear) aircraft is approached. Once in position, the engine is turned off and the parking brake is set. Next, the towbar is attached to the aircraft. Be sure to check for any turning limit markers on the nose gear. Next, the towbar is connected to the tug. Prior to towing the aircraft, an aircraft walk-around should be performed. Are chocks removed? Are the aircraft tie-down cables removed? Is the aircraft parking brake off? As the tug is started, check for clearance around the aircraft and in the intended direction of travel, slowly and smoothly beginning to move the aircraft. While towing, the driver must stay alert and keep their eyes moving. When pulling the aircraft into position, the driver must slowly and smoothly come to a stop. The tug is placed in park, the engine is turned off, and the parking brake is set. Chocks are positioned to secure the aircraft and the towbar is disconnected first from the tug and then from the aircraft. Safe line service specialists know to never remove the towbar without first securing the aircraft with chocks; otherwise, the aircraft may roll into the tug.

14. **What are the safety procedures typically utilized by marshallers?**

Marshallers use the following procedures to promote safety in their environment: always remain visible to the pilot; use standard aviation hand signals; fully extend arms and provide clear signals; when directing arriving aircraft to a parking position, establish and remain in the proper position prior to the aircraft arriving on the ramp; be aware of the pilot's reaction and adjust hand signals if necessary; use additional personnel to assist in congested areas or provide additional clearance guidance; never position a small aircraft where it will be in danger of jet blast; remain clear of propellers and rotors; and secure the aircraft using appropriate chocks and tie-downs.

15. What are two categories of aircraft storage?

The two categories of aircraft storage are outdoor tie-downs or hangar storage.

16. What services, in addition to fueling, may a line service specialist be expected to carry out?

The line service specialist may be expected to provide customer service, receive fuel deliveries, manage the fuel farm, tow and marshall aircraft (to include wing walking), connect ground power units, deice aircraft, service aircraft lavatories, service potable water, add aircraft lubricants, clean aircraft, and mitigate FOD. The safety posture exhibited by line service specialists leads to a safer FBO, fewer incidents, and lower insurance premiums. Additionally, line service specialists are the front door to most FBOs, which allows these individuals to single-handedly make a positive or negative first impression on customers flying into the facility. In short, line service specialists must be experts in safe operations of the facility and customer service experts.

1. **Why is maintenance necessary for aircraft?**

   The proper maintenance of aircraft is necessary so that aircraft can be maintained in an airworthy condition, as required by the Federal Aviation Regulations (FARs).

2. **Explain what FARs concern aircraft maintenance.**

   14 CFR Part 1: Definitions and Abbreviations
   14 CFR Part 21: Certification Procedures for Products and Articles
   14 CFR Part 23: Airworthiness Standards: Normal Category Airplanes
   14 CFR Part 39: Airworthiness Directives
   14 CFR Part 43: Maintenance, Preventive Maintenance, Rebuilding, and Alteration
   14 CFR Part 65: Certification: Airmen Other Than Flight Crewmembers
   14 CFR Part 91: General Operating and Flight Rules
   14 CFR Part 145: Repair Stations

3. **What are the privileges and limitations of aircraft mechanics under 14 CFR Part 65?**

   A certificated mechanic may perform or supervise the maintenance, the preventive maintenance, or an alteration of an aircraft, appliance, or part for which the technician is appropriately rated. A Mechanic Certificate with an Airframe Rating allows a mechanic to approve and return to service an airframe, or any related component or appliance, after performing, supervising, or inspecting its maintenance or alteration. An airframe-rated mechanic can perform 100-hour inspections on airframes and related parts or appliances and approve them for return to service. However, a technician with an Airframe Rating may not inspect or return to service an airframe or related part or appliance that has undergone a major repair or alteration.

   A mechanic holding a Powerplant Rating can approve and return powerplants, propellers, and accessories to service after performing, supervising, or inspecting their maintenance or alteration. A powerplant-rated mechanic can perform 100-hour inspections on powerplants and propellers and return them to service. However, like the Airframe Rating, a Powerplant Rating does not permit a mechanic to inspect or return to service a powerplant, propeller, or accessory that has undergone a major repair or alteration.

4. **What is an A&P mechanic? What is required to become one?**

   Mechanics that possess both Airframe and Powerplant Ratings can perform minor repairs and alterations to airframes, powerplants, propellers, and components and approve these items for return to service. In addition, an A&P can perform major repairs and alterations to airframes, powerplants, and components, but cannot perform major repairs or alterations to propellers or perform any type of repairs or alterations to instruments. An A&P can perform 100-hour inspection procedures on airframes, powerplants, propellers, accessories, and instruments and approve them for return to service. However, an A&P cannot perform annual inspections.

   For a combined Airframe and Powerplant (A&P) Rating, at least 30 months of practical work experience concurrently performing the duties appropriate to both the airframe and powerplant ratings is required. Applicants must be at least 18 years old and able to read, write, speak, and understand English. In addition, they must pass a series of written and oral tests as well as a practical examination to demonstrate that they can perform the work authorized by the A&P certificate.

5. **What is an IA? What is required to become one?**

   Technicians who have held a Mechanic Certificate with both an Airframe and Powerplant Rating for a minimum of three years and who have been actively involved in maintaining general aviation aircraft for at least two years can apply for an Inspection Authorization (IA). In addition to all the privileges of an Airframe and Powerplant Rating, an IA permits a technician to perform an annual inspection on aircraft and approve it for return to service.

6. **Explain why an annual inspection and 100-hour inspection are necessary.**

   The FAA requires aircraft and their associated components to be inspected regularly. The frequency of these inspections depends on the type and use of the aircraft or component. 14 CFR Part 91 states that all general aviation aircraft must go through an annual inspection to remain airworthy. General aviation aircraft operated for flight instruction or hire must also be inspected every 100 flight hours. For most types of general aviation aircraft, this 100-hour inspection is in addition to the annual inspection check and often covers the same parameters as the annual inspections. The annual inspection and 100-hour inspections are necessary in order to ensure that everything in the aircraft is working properly and mostly to ensure safety.

7. **Why would a progressive inspection program or a continuous airworthiness inspection program be adopted?**

   A progressive inspection program is an option for aircraft owners or operators routinely flying more than 400 hours and who do not wish to have their aircraft out of service for several days to complete a 100-hour or annual inspection. It must be approved by the FAA.

8. **What avionics require regular inspections?**

   The altimeter and pitot-static system, the transponder, and the emergency locator transmitter (ELT).

9. **Explain the difference between 14 CFR Part 61 and Part 141 flight programs.**

   A Part 61 flight school operates under 14 CFR Part 61, which is the regulation that outlines certificate and rating requirements for pilot certification through non-FAA-certificated schools and individual flight instructors. A Part 61 flight school can begin offering flight instruction on day one without needing FAA inspections or FAA approvals. An advantage of pilot training in the Part 61 flight training environment is flexibility—flight lessons can be tailored to individual students as long as minimums are met for flight experience and knowledge areas.

   A Part 141 flight school operates under FAA approval and provides a structured flight training environment. To obtain a Part 141 certificate, the flight school undergoes an FAA inspection and must meet stringent requirements for personnel, equipment, maintenance, and facilities. It must also create a training course outline (TCO) that the FAA approves and which then serves as a guide for all flight instruction.

There are advantages and disadvantages to each, but the main difference is flexibility versus a more structured training approach.

10. Explain why the addition of an aircraft sales department to an FBO can be beneficial.

The addition of an aircraft sales division to an FBO can create many new and different opportunities for enhancing revenue. A sales department can benefit an FBO by functioning as its own profit center and through its activities that are able to feed the other FBO divisions. There is no need for a large staff or expensive equipment and materials. The salespeople are typically all commission-based, and basic office supplies and some initial marketing money are the main costs involved with the startup. This allows an FBO to grow a sales department from one current employee performing the task on the side to a department that moves millions of dollars in inventory per year.

11. What are typical commissions charged by aircraft brokers?

Depending on the price of the aircraft, the commission price will vary. On the less expensive end, the brokerage fee will be from 8–10%, whereas on the more expensive end, the commission charge will be 1–2%.

Students may explain each and include the price brackets from Table 5-1.

12. What must be considered in assisting a buyer with purchasing an aircraft?

There are several questions that a broker may ask when they are assisting a buyer. These questions include:

- What is the primary purpose for the aircraft?
- Do you have an aircraft in mind?
- What is your mission?
  - › How many passengers will you typically take?
  - › How far will you fly?
  - › To which cities/airports will you fly?
  - › How long will you stay?
  - › How often will you use the aircraft?
- Will the aircraft you're considering work on 80–90 percent of your missions?
- What is your budget?
- Will you be the pilot or the passenger?
- Will you hire your own crew and manage your own aircraft or hire a professional management firm to manage the aircraft for you?
- If the aircraft will be used for both business and pleasure, what percentage for each?
- Are you trading an aircraft?
- When would you like your new aircraft to be in service?

Customer Service

1. **What are the differences between internal and external customers? Are both groups important? Why?**

   An internal customer group includes the individuals working within the company—more specifically, those working by your side and in other departments. Internal customers are as important as external customers, because if the business does not communicate effectively, with all departments working toward the same goals and objectives, the business will suffer. External customers are the typical customers for which the FBO operates. The two main customer groups of an FBO are pilots (or flight crews) and their passengers. These external customers serve as the core customer base for an FBO and are an extremely important group at an FBO.

2. **What are some considerations in effectively answering the telephone?**

   As with many businesses, the first point of contact with an FBO may be via a telephone call. Thus, it is extremely important for those answering the phone to do so in a professional and courteous manner. Proper telephone procedures require a positive mental attitude, good listening skills, an enthusiastic and knowledgeable employee, and a customer focus.

3. **What are some considerations when communicating via the radio?**

   The key to effective radio communication is to relay information with a minimum number of words. Lengthy requests only create frequency congestion, which only interferes with others attempting to speak on the same frequency. Prior to speaking, it is important to listen momentarily to avoid "stepping on" another conversation. General radio courtesy is important because several people may be listening to one frequency at a time, and it can reflect positively or negatively on a company and or its employees.

4. **What are some considerations in handling complaints?**

   Inevitably, regardless of the superior level of customer service being provided, customers may complain about something. These complaints, no matter how trivial, must be treated seriously and with utmost professionalism. By listening to customer needs and striving to satisfy those needs, the employee can effectively resolve complaints and maintain high levels of customer relations.

5. **What does it mean to "go above and beyond?"**

   It means doing more than what is expected of you, either by your manager or the customer. This is not easy to teach, as employees will likely feel that doing the minimum is all that is expected. Therefore, the wise FBO manager will create a corporate culture that supports going above and beyond in all situations. Managers and supervisors must model this high level of customer service for both internal and external customers.

6. **What are non-income services? Discuss their importance.**

   In addition to positively interacting with customers and effectively addressing customer concerns, customer service at an FBO can be enhanced by offering non-income services. Some of these services include clean restrooms and showers, pilot lounges and sleeping quarters, preflight planning rooms, pilot supplies, recreational facilities, vending machines and restaurants, rental or courtesy cars, in-flight catering, hotel accommodations, and tourist or visitor activities. Clearly, these services cost the FBO money, but not all of these services bring in revenues. These non-income services create convenience and enhance the well-being and happiness of customers.

7. **Summarize what makes a high-quality FBO.**

   A high-quality FBO is one that has outstanding customer service and accommodations for their customers.

   Students may include quotes or themes from the Aviation International News 2021 FBO Survey discussed in the text.

8. **Summarize what makes a low-quality FBO.**

   A low-quality FBO is one that does not have good customer service and/or accommodations for its customers. Although many complaints about FBOs concern high jet fuel prices, high ramp fees, and outdated and unclean facilities, most of the complaints stem from poor customer service. Clearly, it is a challenge for FBOs to hire and retain top-notch personnel. Yet, it is imperative if the FBO wants to experience success and high customer satisfaction.

9. **Discuss some recent customer service initiatives adopted by FBOs.**

   As indicated in the *Aviation International News* survey results discussed in the *FBO Management* text, amenities are important among pilots, but service remains the most important factor among FBO customers. As any FBO manager would know, employees do not automatically begin providing excellent customer service the day they are hired. It is imperative for FBO managers to provide training for excellence in customer service. In addition to providing employees with the resources they need to provide excellent customer service, it is imperative that an FBO gauge the level of customer satisfaction on a regular basis. There are several ways to test customer satisfaction, which may include the use of undercover customers.

10. **What can an FBO do to improve efficiency and customer service in the ramp area?**

    A well-thought-out ramp area will not only enhance the appearance of an FBO, but it will also reduce the possibility of ramp accidents and increase the utilization of equipment. A ramp area checklist should include the following:

    1. Training aircraft should be parked for easy access from the flight office. Parking should be arranged to place the most active aircraft in the most accessible spots. There should be adequate room for students to taxi safely in and out of parking areas.
    2. When possible, one-way, flow-through taxi routes should be provided. Lead-in stripes to guide aircraft into parking spots should be painted brightly. All obstructions close to taxi routes should be marked with high-visibility caution signs or symbols, according to standard airport markings and signage.

3. One-way, flow-through traffic paths to fuel islands should be used. A refueling parking spot for fuel truck operations should be designated so that it does not conflict with normal traffic flow.
4. If flood lighting is impractical or causes glare, a series of low (below wing level) ground illuminating lights should be considered. Warning lights on all obstructions close to taxi routes should be used. The refueling area should be well lit.
5. To attract transient aircraft, high-visibility signs should be positioned to be seen from taxiways, announcing transient fuel service. Lead-in signs and/or taxiway markings with lead-in stripes should indicate the route to refueling and parking areas.
6. The following items of ramp equipment should be provided in sufficient number, in good repair, and conveniently located: tugs, tow bars, ladders and stands, power units, jacks, nitrogen, oxygen, and air tanks, deicing equipment, lavatory flush carts, survival gear (life rafts, radios, etc.) at ports of debarkation, avionics and component repair equipment, windshield cleaner and cleaning cloths, oil wipe cloths, chocks numbered to tie-down spots, equipment lockers at strategic points on the flight line, and covered trash containers.

11. Describe some of the areas that ground personnel should be responsible for in carrying out their duties efficiently.

Ground personnel should have a complete understanding of company rental policies and agreements; FAA certificates, medical certificates, and Federal Communications Commission (FCC) radio license; FARs; company insurance policies; student enrollment procedures; Part 141 student record requirements; FAA, FCC, and Veterans Affairs (VA) forms; flight training and services fee schedule; and information regarding rental car service and hotel facilities. Ground personnel should also be familiar with all UNICOM procedures and responsibilities, be able to reschedule customers after each flight, call customers who have become inactive, be skilled in professional telephone sales techniques, regularly use an inquiry form to record the maximum amount of data from incoming phone inquiries, assume duties that relieve flight instructors from routine tasks and allow more time for training, and monitor student progress. Line personnel are often the first interaction customers have with an FBO. As a result, they must be professional and well-qualified to perform their jobs. Line personnel should be thoroughly trained in all aspects of line service *(see Chapter 4)*.

12. Explain some of the little things that can be done to make aircraft look better.

A clean and polished exterior finish, a clean engine compartment, tires in good condition and properly inflated, windows clean inside and out, a clean interior (trash removed, seat belts straightened, etc.), all interior panels in good repair, carpeting clean and in good repair, instrument panel and anti-glare shield finish in good repair, upholstery clean and in good repair, all knobs, levers, and switches in place and functioning, all unused instrument cutouts properly covered or blanked out, all loose equipment properly stowed and secured, all checklists and reminders professionally printed and durable, and all manuals and required paperwork on board and properly stowed.

13. The demands of flight instructors should go far beyond pilot skills. Explain.

Flight instructors should maintain a professional attitude about teaching and should be current with all applicable FARs, all FAA-recommended flight procedures and techniques, and the latest teaching techniques. Flight instructors also must adhere to standards in teaching methods, flight procedures and maneuvers, student evaluation, and flight and ground curriculum. Flight instructors must ensure there is no conflict between student instruction and charter flights, continue upgrading the instructor's image and prestige, create an incentive for instructor wages, and understand sales and customer relations.

14. Describe some of the responsibilities of the chief pilot.

The following chief pilot responsibilities apply to most operations:

1. Maintain a close liaison with local FAA personnel.
2. Develop flight and ground school curricula.
3. Conduct standardization flights for staff instructors.
4. Conduct student phase check flights.
5. Conduct regular instructor meetings to maintain standardization, review problem areas, and develop new methods.
6. Provide written information for instructors and students on operational techniques and procedures.
7. Maintain student records and FAA reports.
8. Provide monthly status reports to management.
9. Maintain a list of available local CFIs.
10. Maintain an open-door policy to listen to student or instructor problems.
11. Make regular checks on student attitudes.
12. Conduct introductory flights and tours of the facility.
13. Establish a program to recruit new students and improve attrition.

The Role of Marketing

1. **Define marketing and explain the three periods in the evolution of marketing.**

   Every day throughout the world, immeasurable goods and services trade hands. This is called marketing. Marketing is responsible for creating demand, goods and services, and jobs in many related fields like research, advertising, wholesaling, retailing, and transportation.

   The evolution of marketing can be traced through three distinct periods of development. The first period, known as the *production era,* covered the period from about 1870 to 1930. This era was characterized as a seller's market, where demand for products exceeded the supply. During the *sales era,* manufacturers focused on aggressively selling the oversupply of their products. Their philosophy was to "sell what the firm could efficiently make, rather than making what the firm could sell." The third and current era is best known as the *marketing concept era* and emphasizes customer need fulfillment and customer satisfaction. The marketing concept is a customer-oriented, integrated, goal-oriented philosophy for the firm.

2. **Why is the ability to create utility the economic justification for a firm to be in business?**

   Utility is the want-satisfying ability of a good or service. For a firm to be in business, they have to be able to meet the market demands of the product that they are responsible for making. As long as a firm is able to keep up with the demands of the market, it is good justification for a firm to be in business.

3. **What is meant by segmenting the market?**

   Market segmentation is the process of breaking down the total market into smaller, more homogeneous groups with similar needs that the firm can satisfy. A market segmentation approach aims at a narrow, specific consumer group (market segment) through one specialized marketing plan that caters to the needs of that segment.

4. **Why would it be helpful for a firm to compare its strengths and weaknesses against its immediate competitors?**

   A firm may compare its strengths and weaknesses against its immediate competitors for many reasons. Some of those reasons are recognizing what products or services a firm offers in comparison to its competitors. Recognizing even small differences may allow a firm to have a greater customer base and allow price planning, products, promotional planning, marketing, and execution to be well thought out and have a better influence on increasing revenues.

5. **Do different target markets have different needs?**

   A target market is a segment that is the object of a firm's marketing mix. A single target market approach means that there is one primary market segment selected as the firm's target market. This concentrated marketing is a cost-effective way to market because there are no expensive variations of the marketing mix. A firm may also market their products and services without focusing on a single market. Known as multiple, or combined, target market approach, this can be seen in the use of a billboard advertising flight training, for example. Everyone driving past the billboard is exposed to the marketing. With this approach, individuals who may never consider flight training are reached, as well as those who would consider flight training. Generally, companies expect less refined reach with a combined approach. With market segmentation, the unique needs of each segment can allow for a more tailored marketing program.

6. **Why is it preferable to express objectives in quantifiable terms?**

   It is preferable to express objectives in quantifiable terms as it makes the process of organizational objectives simpler. It allows greater marketing control and gives more insight into analyzing marketing results. Control is the process that attempts to reconcile the performance of the marketing plan with marketing objectives.

7. **A product may include more than a physical item. Explain.**

   A product is a combination of benefits, physical features, and services, designed to satisfy the needs/wants of identified target markets. This includes both tangible products and intangible services. Therefore, a product is not always physical and can be sold to generate revenue.

8. **Name and explain the four I's of services.**

   Services are *intangible*, which means the buyer must purchase a service on faith because it is often only after the sale that the quality, benefits, and dimensions can be evaluated. Services are *inconsistent*, which means that services depend on the people who provide them. Services are *inseparable*, which means that the provider of the service cannot be separated from the service itself. Lastly, services have an *inventory* problem, meaning that no inventory can be maintained for services.

9. **What are the major factors affecting price?**

   Price represents the exchange value of a good or service. Since customers perceive price as the sacrifice or cost they must pay, marketers must maintain the price level equal to or less than utility (satisfaction level). Price planning, price competition, elastic demand, inelastic demand, monopolistic competitive market, and product characteristics all influence price.

10. **Define elastic and inelastic demand.**

    Elastic demand occurs if relatively small changes in price result in large changes in quantity demanded. Numerically, price elasticity is greater than one. With elastic demand, total revenue increases when prices are lowered and decreases when prices rise. Inelastic demand takes place if price changes have little impact on quantity demanded. With inelastic demand, price elasticity is less than one. Total revenue increases when prices are raised and decreases when prices decline.

11. **Differentiate between an oligopolistic market and a monopolistic competitive market.**

    An oligopolistic market has only a few firms that offer homogeneous products and have limited control over market pricing. A monopolistic competitive market contains many sellers and is characterized by a moderate level of competition, well-differentiated product-service areas, and strong control over price by individual firms. Oligopolistic markets are mainly smaller, whereas monopolistic markets have more sellers.

12. **Discuss the three types of cost-oriented pricing.**

    The three types of cost-oriented pricing are: mark-up pricing, cost-plus pricing, and rate of return pricing. Mark-up pricing is appropriate when the seller is not the manufacturer. A reseller will add a percentage of the invoice cost to determine the selling price. Manufacturers of tangible products use cost-plus and rate of return pricing methods. Total unit costs are determined, and then a profit dollar amount or a desired rate of return percentage is added to arrive at the selling price. Cost-oriented approaches have a major disadvantage in that they give little or no consideration to customer demand. The price determined using this method only looks at internal factors.

13. **What is meant by customer service level?**

    Customer service level is a measure of how rapidly and dependably a firm can deliver what customers want.

14. **Define the four major tools in the promotional mix.**

    The four major tools in the promotional mix are advertising, sales promotion, personal selling, and publicity. Advertising is any paid form of nonpersonal presentation and promotion of ideas, products, or services by an identified sponsor. Sales promotion involves short-term incentives to encourage the purchase or sale of a product or service. Personal selling is oral presentation with one or more prospective purchasers for the purpose of making sales. Publicity is nonpersonal stimulation of demand for a product or service by placing commercially significant news about the firm in a publication.

15. **Implementing marketing plans involves delegation, communication, and motivation. Describe the importance of these functions.**

    Delegation is necessary in organizations to spread out responsibilities among staff. Communication is necessary to coordinate the firm's objectives through written or verbal means. Ideally, information should flow throughout the firm—not just down the organizational hierarchy. Motivation is important as it sets up a firm for success. Delegation and communication will be to no avail unless someone in a leadership position takes the responsibility to motivate people to perform the tasks expected of them.

16. **How can workers be motivated?**

    Perhaps the most succinct method of motivating people is to reward them for a job well done. An aircraft salesperson can be rewarded with a bonus or week of vacation once a certain number of aircraft are sold each quarter or year. The salesperson on commission, for example, will devote more time to making new sales than to handling old complaints. A flight instructor can be rewarded for a good student retention rate by giving the instructor the next charter flight. Prizes can be given to the line person of the month.

17. **How does control differ from implementation?**

    Control differs from implementation as marketing control is the process of translating organizational objectives into quantifiable standards, periodically analyzing marketing results, and taking actions that will correct the deficiencies affecting the FBO's ability to reach stated marketing objectives. Marketing implementation is the process that turns the marketing plan into action assignments and ensures that such assignments are executed in a manner that accomplishes the plan's stated objectives. The marketing objectives differ in that control seeks to correct deficiencies, whereas the main goal of implementation is to create an action plan.

18. **Describe several ways in which a firm can set standards.**

    The first step in marketing control is to translate organizational objectives into standards against which performance can be measured. In general, there are three bases for performance standards—industry norms, past performance, and managerial expectations. Industry norms can be obtained from manufacturers, trade publications, and industry organizations. Past performance standards can be set by looking at how a month's or year-to-date sales compare to those of the previous month or year. Lastly, managerial expectations such as forecasts, budgets, schedules and policy decisions can set standards for a firm.

19. **What are the so-called uncontrollable variables that can affect a firm's marketing efforts?**

    Uncontrollable variables are those factors affecting a firm's performance that cannot be directed by marketing efforts. Uncontrollable variables that must be monitored and their trends analyzed are consumer demographics, competition, government regulations, the economy, technology, media, and public interest groups.

20. **Why should a firm be aware of consumer demographics?**

    Although a firm has control over the selection of a target market, it cannot control the characteristics of the population. Firms can react to, but not control, these consumer demographics: age, income levels, marital status, occupation, race, education, and place and type of residence. Since most marketers use age groups as one of the criteria in selecting homogeneous target markets, the change in the percentage of the population in different age groups will affect marketing strategies.

21. **Discuss several social trends that affect the marketing process.**

    Social trends that connect with demographics affect the marketing process. Baby boomers account for a large percentage of the population, and they have been extremely important to marketers. Millennials have the highest education level, with one-fourth of those between the ages of 25 and 35 having college degrees; they have high incomes and are commonly responsible for about half of all consumer expenditures. Many companies are designing products and developing marketing strategies to target this very important group. Another significant trend is the increasing number of women in the workforce and the types of jobs they are performing. Women are entering many nontraditional career paths, and income levels for this target group are rising, which gives them independence and purchasing power. Although only 6 percent of the total number of pilots in the country were women in 2006, by 2021, 8.5 percent were women.

22. **Explain the three types of competition faced by an FBO.**

    The three types of competition faced by an FBO are direct competition, indirect competition, and replacement competition. Direct competition is between two companies offering similar products and services. Indirect competition is between companies that offer products or services that can be substituted for one another. Replacement competition occurs when customers have limited financial resources.

Promotion and Sales

1. **What is the promotional mix?**

   The promotional mix is the combination of one or more of four promotional activities: advertising, sales promotions, publicity, and personal selling.

2. **Distinguish between advertising and sales promotion.**

   Advertising is any paid form of nonpersonal communication about an organization, product, or service by an identified sponsor; it is a form of mass selling that attempts to make potential buyers aware of and interested in a firm's products and services. Sales promotion involves marketing activities other than advertising, publicity, or personal selling that stimulate customer purchases and company effectiveness. Sales promotion is not usually directed at as large of an audience as advertising but at much larger groups than a typical personal selling effort. Activities include trade shows, exhibits, coupons, trade allowances, demonstrations, and dealer incentives.

3. **Why do firms use advertising agencies?**

   Many firms use an advertising agency because few companies have in-house expertise to develop their own advertising programs. Advertising agencies are specialists in planning and handling mass selling details.

4. **Provide some examples of advertising objectives.**

   Advertising objectives should include the objective to be accomplished and the target market. Some examples of this include to increase line service business, to increase the number of flight students, to develop charter business, and to increase maintenance business. There should also be a time period for accomplishing the objectives. Setting reasonable advertising objectives is part of the art of marketing.

5. **Distinguish between product and institutional advertising.**

   Product advertising has three forms, and those are pioneering, competitive or comparative, and reminder. Product advertising attempts to sell a product or service to final users or middlemen. Institutional advertising attempts to develop goodwill for the company and enhance its image, instead of promoting a specific product or service. In practice, a firm may employ both of these two basic types of advertising simultaneously.

6. **Explain several methods of establishing an advertising budget.**

   There are five traditional approaches in deciding how much to spend on advertising:

   1. *Spending all the firm can afford*—This approach treats advertising as a luxury. This is a financial rather than a marketing approach. It does not consider what advertising can or should accomplish.
   2. *Allotting a certain percentage of net sales*—This approach is popular because it provides a formula—a certain percentage of past sales—and it is simple and easy to use.

3. *Matching the advertising expenditures of competitors*—This is a defensive rather than an aggressive approach.
4. *Investing for future profits*—Under this approach, advertising is considered an investment for future profit. It is primarily used for introducing new products or services when extensive advertising dollars are required to get the product adopted.
5. *Using the objective-and-task method*— This method for creating advertising budgets is regarded by many as the best. It builds a budget by first deciding what type of advertising is needed to accomplish the stated objectives.

7. **What is the advertising message and how is it developed?**

   An advertising message is the overall appeal for a firm's campaign. This message in an advertisement is often called the copy. Copy results from a combination of analytical thinking based upon a clear understanding of the firm's products and services with a liberal use of imagination.

8. **Summarize the advantages and disadvantages of the following media: digital media, newspapers, magazines and trade journals, direct mail, radio, television, billboards, and telephone/business directories.**
   - Digital media is advantageous as it has a high degree of selectivity and is interactive. A disadvantage of digital media is that there is a lot of competition.
   - Newspapers have advantages such as short lead time, flexibility, good local market coverage, and inexpensive cost. Some disadvantages of newspapers are that they have a short life, poor reproduction quality, general audience, limited creativity, and heavy ad competition.
   - Magazines and trade journals have advantages such as high geographic selectivity, long life, high-quality reproduction, and good pass-along readership. Some disadvantages include a long lead time, poor frequency, ad clutter, and they are expensive.
   - Direct mail has advantages such as audience selectivity, no ad competition, personal approach, and they are inexpensive. Disadvantages include a high throwaway rate, potential receipt by the wrong person, and low credibility.
   - Radio advantages are selective market, high frequency, and low cost. The disadvantages of radio include lack of visual contact and potential customer distractions.
   - Television advantages are that it combines sight, sound, and motion; maintains high attention, and is persuasive. Televisions disadvantages are that it has a general audience, is relatively expensive, has a long lead time, and includes a short message.
   - Billboard advertising has advantages such as high repeat exposure, low cost, low competition, and color and creative options. Billboard's disadvantages include its general audience, legal restrictions, and inflexibility.
   - Telephone and business directories are advantageous because of their low cost, coverage of market, and specialized listings. Their disadvantages include clutter of ads, limited creativity, and long lead time.

9. **Provide several examples of how the effectiveness of advertising can be measured.**

   The final element in the advertising campaign is measuring its effectiveness, which should be measured in terms of criteria derived from the firm's overall advertising and marketing objectives. Some firms pre-test advertising effectiveness before starting the campaign. Focus groups (composed of a panel of customers or knowledgeable individuals) might be asked to rate which ad would most influence them. Customers might be asked to evaluate several ads and then recall the source and as much of the content of the message as they can. The uniqueness of an ad can be best measured by this method. Post-testing an advertisement can also be used. For example, results can be measured by the number of orders mailed back, coupons brought in, or customers who responded to an ad for a sale.

10. **What is the purpose of a firm's sales promotion activities?**
    Sales promotion activities supplement both advertising and personal selling. It is usually not directed at as large an audience as advertising but at much larger groups than a typical personal selling effort. Included are such activities as trade shows, exhibits, coupons, trade allowances, demonstrations, and dealer incentives. Sales promotion activities are designed to reach many targe markets and achieve objectives such as identifying sales leads, inducing prospective customers to try a new service, increasing the share of an established market, or improving name recognition.

11. **Identify and briefly describe five sales promotion activities used by FBOs.**
    Five sales promotion activities used by FBOs are trade shows, flight instruction coupons, price breaks on a block of charter hours, calendars, matchbooks, and other merchandising sales. Many firms use trade shows, such as the annual NBAA convention, to advertise their products and services. Coupons are certificates entitling the bearer to a stated savings on the purchase of a specific product or service. They can be effective in stimulating sales and getting a customer to try a new product or service. Short-term price reductions are commonly used to increase trial among potential customers or to counter a competitor's actions. These special deals generally work best when they are used infrequently or when the product or service being offered is relatively new. Point-of-purchase promotions are special displays, signs, banners, and exhibits that are set up in locations such as schools, stores, or mall entrances to promote a product or service.

12. **What is cooperative advertising?**
    Cooperative advertising is an agreement in which a manufacturer, like Cessna, pays a portion of an FBO's local advertising costs. These costs are shared on a fifty-fifty basis up to a specified limit.

13. **How does publicity differ from public relations?**
    Publicity is generally considered to be a part of a larger concept, that of public relations. Company public relations has several objectives, including obtaining favorable publicity for the firm, building a good image in the community, and handling adverse rumors and stories that circulate. Publicity involves free promotion about the product, service, or organization in the media.

14. **Identify some of the topics available to an FBO that have potential for publicity.**
    New products or services, product donations, special events (such as air shows, open houses, and presentations of construction and expansion plans), airport planning activities, athletic sponsorships, charitable activities, and personnel news such as promotions, service anniversaries, retirements, new student solos and pilot certificates, contest winners, and management participation in local service clubs.

15. **Describe several publicity techniques.**

Publicity techniques include news releases, feature articles, press conferences, and online videos. News releases are short statements about the firm's products, services, or organization released to the news media. Feature articles usually contain up to 3,000 words and are prepared for specific publications such as a trade journal. Press conferences involve inviting news people to hear a specific announcement and ask questions. Online videos can be created in-house or through a contracted vendor and may be useful to reach schools and social/civic groups.

16. **Name and describe the three types of sales positions.**

Three types of personal selling exist: inside sales, executive sales, and sales support activities. Typically, inside salespeople process routine orders, engage in telemarketing, and facilitate the exchange of products with face-to-face customers. Executive salespeople operate outside in assigned territories, when appropriate, and identify prospective customers, provide these prospects information, influence prospects to purchase products, close sales, and follow-up after the sale to build lasting customer relationships. Sales support salespeople assist executive salespeople by performing promotional activities and providing technical expertise.

17. **Define prospecting.**

Prospecting is searching for and identifying potential customers. It is the first step in the selling process and involves identifying primary and secondary sources.

18. **What is the North American Industry Classification System (NAICS)?**

The standard used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.

19. **Name four aircraft prospecting sources.**

Four prospecting sources are existing customers, interview replacement, acquaintances and friends, and direct mail. A salesperson's existing customer base is an excellent source of leads. Frequent contact with customers will not only provide new additional sales but if the customer is pleased with the product and service, referrals will be gladly given. Interview replacement is often referred to as the Endless Chain Method, because if applied correctly, it becomes the primary source of leads. Prior to leaving the closing interview, successful or unsuccessful, the salesperson attempts to secure the names of three or four individuals or businesses that could benefit from the use of their own aircraft. Prospecting acquaintances and friends is useful as salespeople usually enjoy being with others socially and in church and community activities. These contacts often result in good leads. Direct mail is used to supplement the prior methods. Lists of names, which meet predetermined criteria, are purchased and processed either internally or by a company specializing in direct marketing. Leads are generated whenever a prospect requests additional information as a result of direct marketing communication.

20. **What is the objective of qualifying the prospect?**

The pre-approach stage in the selling process is extremely important. Making sure that a prospect is a good fit and has the financial means and authority to purchase is critical to making a sale. Qualifying information is necessary before detailed plans for visiting the prospect can be formulated. Such knowledge permits the customization of selling strategy. The sources of qualifying information are, for the most part, the same as the sources for identifying prospects and developing basic information. Qualifying, however, involves deeper research and indicates more detailed questioning of sources who know more than just basic information.

21. **What is the objective of the approach stage?**

The strategies used by the salesperson to secure an interview and establish rapport with the prospect is called the approach. The use of the travel analysis in aircraft sales necessitates that the first interview be a fact-finding one where data is gathered in order to perform an analysis of the prospect's air transportation needs.

22. **Discuss some of the techniques used by sales representatives in presenting a product or service to a prospective buyer.**

Some sales techniques are gaining the prospect's attention, arousing the prospect's interest, convincing the prospect that it is an intelligent action to purchase the product, arousing the prospect's desire to purchase, and closing the sale successfully. To gain the prospect's attention, talk to them about something that interests them. To arouse the prospect's interest, a salesperson can tell them what the product will do to benefit or serve them. To convince a prospect that it is intelligent to purchase the product, a salesperson must provide sufficient information about the product to prove that purchasing it is justifiable. To arouse the prospect's desire to purchase, a salesperson must determine what their motives are and explain how the product will satisfy their needs. To close a sale successfully, a salesperson can get a positive decision by weighing the advantages against the disadvantages.

23. **Describe several closing techniques.**

The closing step is the logical conclusion to a well-organized sales presentation and involves obtaining a purchase commitment from the prospect. This step is the most important, as well as the most difficult, because it is often unclear when the prospect is ready to buy. Closing clues are signals that indicate that a close should be attempted. Closing techniques include simply asking for the order, reviewing the points of agreement and clarifying any questions the buyer may have, using the alternative choice method (assuming the prospect is ready to buy and providing two options to choose from), and using the decision on minor points method (when the prospect may be reluctant to make big decisions but is comfortable making a series of smaller ones).

24. **What is the importance of the follow-up stage?**

A follow-up stage is a very important step in the selling process because it ensures that a customer is pleased with their purchase. Post-sales activities include making sure that promises made at the time of the sale concerning delivery, equipment packages, training for employees, and other needs are met to the customer's satisfaction. Continuing to stay in contact with the customer will usually pay dividends in the form of referrals and additional sales.

Marketing Research

1. **What is the purpose of marketing research?**

   Marketing research is the systematic process of gathering, recording, analyzing, and utilizing relevant information to aid in marketing decision-making. Marketing managers today should understand that market research is an aid to decision-making, not a substitute for it. Having the right kind of information available can greatly increase the probability that the best decision will be made.

2. **Provide several examples of market measurement studies.**

   Student's responses may vary but should include several examples.

   Market measurement studies are designed to obtain quantitative data on potential demand—how much of a particular product or service can be sold to various target markets over a future period, assuming the application of appropriate marketing methods. Buyer motivation research studies probe the psychological, sociological, and economic variables affecting buyer behavior. Trained psychologists, sociologists, and economists are required to undertake these studies and interpret the resulting data. Few companies employ such people, and most motivation research is handled by outside consultants.

3. **Distinguish between market potential and sales potential.**

   Market potential is the maximum possible sales opportunity open to all sellers of a product or service during a stated future period to a target market. Sales potential is the maximum possible sales opportunity open to a particular company selling a product or service during a stated future period for a target market. The main difference between market potential and sales potential is what markets they are open to.

4. **Provide an example of a market research study involving a competitive situation.**

   Most marketing research studies focus on the elements of the marketing mix: product, place, price, and promotion. More firms emphasize studies of the competitive position of their own products and services than they do studies of the nature and impact of their competitors' activities. Specifically, a study measuring the market share of a firm's products and services is more common than one which appraises the strengths and weaknesses of a competitor's products and services, evaluates the effects of a competitor's service improvement, measures the impact of a competitor's price change, or checks the effects of a competitor's revised advertising approach.

5. **Why are defining the problem and determining the research objectives so critical for effective market research?**

   The first step in research requires management to carefully define the problem and clearly state the research objectives. This is so important because it will narrow down objectives that need to be completed to be successful. If the research findings are to be useful, they must relate to a specific problem or opportunity facing the firm. A well-defined problem statement gives direction to the research and assists in the formulation of research objectives. Some form of exploratory research is often needed to both refine and clearly state the problem and set research objectives.

6. **Distinguish between primary and secondary data.**
   Primary data is collected from original sources for a particular study. A plan for collecting primary data may pay specific attention to research designs, types of research instruments, sampling procedures, and methods of collecting data. Secondary data is information that already exists, collected for another purpose. Secondary data sources are often internal or external; internal sources include financial statements, training records, and safety reports, whereas external sources are government publications, industry associations, periodicals, books, online databases, consultants, nonprofit foundations, and commercial sources.

7. **Provide four examples of external secondary data sources.**
   Students may choose four external secondary data sources from the following: government publications, industry associations, periodicals, books, online databases, consultants, nonprofit foundations, and commercial sources.

8. **Which is the most commonly used research design?**
   The most common research design is the survey. In the survey method, information is obtained directly from individual respondents through personal interviews, telephone interviews, mail questionnaires, electronic questionnaires, or focus groups.

9. **Distinguish between a factual survey and an opinion survey.**
   In the factual survey, respondents are asked to report facts in response to questions such as, "Have you ever used a charter flight service?" or "During an average month, how many times do three or more employees travel to a meeting location within 300 miles of your office?" The opinion survey is designed to gather expressions of opinion and record evaluations of certain matters. For example, the survey might include questions such as, "How do you feel about the quality of flight instruction received?" and "What were your instructor's strengths and weaknesses?"

10. **How does the observation method differ from the experiment method?**
    With the observation method, marketing research data is gathered not through direct questioning of respondents but by observing and recording consumers' actions in a marketing situation. The experiment method is a technique in which matched groups of subjects are given different treatments and then checked to see whether observed differences are significant.

11. **What is the most common instrument used in collecting primary data?**
    The questionnaire is by far the most common instrument used in collecting primary data. It consists of a set of questions presented to respondents to gather their answers. A questionnaire is very flexible in that there are many ways to ask questions. Questionnaires need to be carefully developed, tested, and debugged before they can be used on a large scale.

12. **In questionnaires, distinguish between open-ended, multiple choice, and dichotomous questions.**
    Open-ended questions allow respondents to answer in their own words. Open-ended questions tend to reveal more because respondents are not limited in their answers. Multiple-choice questions offer respondents several alternatives. Multiple-choice questions require less

interviewer skill, take less time, and are easier for the respondent to answer. Dichotomous questions require the respondents to choose one of two alternatives. The answer can be a simple “yes” or “no,” and this is the most widely used of all question formats.

13. **Provide examples of a Likert scale and a semantic differential scale used to measure attitudes.**

    The Likert scale allows the respondents to indicate their attitudes by checking how strongly they agree or disagree with statements about products or services on a scale that ranges from very positive to very negative. A Likert scale may include different statements from strongly agree to strongly disagree, with incremental answers. These answers will be based on a question that the survey recipient is asked. The semantic differential is a popular attitude-measuring scale that asks people to rate a product, company, brand, or firm within the frames of a multi-point rating option. The options are grammatically on opposite adjectives at each end of the scale.

14. **What is a sample?**

    A sample is a portion or subset of the population from which it is drawn.

15. **What questions must be determined in developing an appropriate sample?**

    Who is to be surveyed? For example, for a survey assessing the charter services market, should the sample be made up of businesses in any industry or businesses in selected industries with more than 100 employees? In rating flight instructors, should only students who have dropped out of the program be surveyed? Should all students be surveyed at a certain stage in the flight program or only after completion? How many people or firms should be polled? How should the firms or people in the sample be chosen?

16. **Differentiate a simple random sample and a stratified random sample.**

    An example of a probability sample is a simple random sample in which all members in the population have an equal probability of being chosen to participate in the sample. When the selected population contains disproportionate demographics like gender, researchers may choose to use a stratified random sample to eliminate the bias. The population is divided into strata, such as two subgroups (males and females), and then a random sample is selected from each group. This method is an efficient procedure in situations in which subgroups hold divergent opinions. The main difference between these two forms of sampling is that a simple random sample is a random probability, whereas a stratified random sample seeks to have two different random perspectives from each group chosen.

17. **Describe three methods of collecting primary data.**

    Students may choose to discuss one of the following:

    Personal interviewing, a telephone interview, the mail questionnaire, the electronic or email questionnaire, and focus group interviewing.

18. **Differentiate probability samples and nonprobability samples and give an example of each.**

    A probability sample is one in which every person or firm in the identified population being surveyed has a known chance of being sampled. A nonprobability sample takes the approach to arbitrarily select the sample according to the researcher’s own convenience or judgement.

Transportation Needs Assessment

1. **Describe business-to-business marketing.**

   Business-to-business marketing is a term that pertains to buying and selling goods and services between businesses. The products purchased are either for resale or for use by the purchasers in their day-to-day business operations.

2. **Identify and explain three business market characteristics and demand patterns that are different from the consumer market.**
   - Direct channels—Business buyers traditionally purchase directly from the manufacturer rather than from a middleman as consumers do.
   - Derived demand—Manufacturers buy products to be used in the production of business-to-business goods and consumer goods. Thus, as the demand for these finished goods increases, the demand for components will also increase.
   - Inelastic demand—The demand for business goods tends to be inelastic, which means that the demand for a good or service is not sensitive to changes in price.

3. **Differentiate the three types of buying decisions made by organizations and explain the buying center concept.**

   Straight rebuys are simply reorders. Modified rebuy situations are essentially straight rebuy situations that require some additional information due to a change in price or specifications, or dissatisfaction with the present supplier. New buys involve products or services never considered before by the company or buyer.

   The buying center concept pulls together key individuals who provide different expertise needed to make quality major purchases. The size and make-up of the group will vary depending on the company and the product being purchased. Different members in the buying center have different roles in the decision. The five traditional roles in the buying center are users, gatekeepers, influencers, deciders, and buyers.

4. **What is the purpose of a travel analysis?**

   Travel analysis is an evaluation of a firm's current travel modes and the amount and nature of travel it presently undertakes. There are four major areas of investigation that guide an aircraft sales representative in attempting to determine if a business could use a company airplane. They are (1) amount and nature of travel; (2) travel dispersion; (3) type and frequency of airline service; and (4) potential aircraft utilization. It's necessary to know the amount and nature of travel to determine whether there is enough travel to make a business aircraft feasible and if it is the kind of travel for which a private aircraft is suited.

5. **How can the amount and nature of a firm's travel be determined?**

   The amount and nature of travel are determined by reviewing a prospective customer's past travel records. Depending upon the size of the firm and amount of travel, an average month or quarter is generally selected for analysis.

6. **What is the object of the travel dispersion analysis?**

   The object of a travel dispersion analysis is to examine the environment within which a company aircraft would operate by categorizing trips in terms of the cities served, distance, frequency, and volume of passengers. Such an examination reveals valuable information regarding the efficiency of past travel and the probability of improving efficiency. This information is useful in further defining a firm's travel patterns and determining whether these patterns are suitable for business aircraft use.

7. **Distinguish between geographic, volume, and time dispersion.**

   Geographic dispersion of business destinations partially indicates whether or not a company aircraft can be effectively substituted for present travel. Volume dispersion is the number of people traveling and indicates the relative importance of each destination. Time dispersion is the interval between trips taken by various individuals to the same or proximate destinations. This information helps determine the potential for combining company trips with the aircraft, which enables the aircraft to be used more efficiently.

8. **Describe the general trend of airline services since deregulation.**

   Airline services provide a valuable business tool. However, these services have undergone considerable changes since deregulation in 1978. The trend has been for certified carriers to concentrate more on service to large hub cities and less to smaller cities.

9. **What are the three levels of airline service and how do they relate to business aircraft use?**

   Three distinct classes of airline service exist: direct, indirect via connections, or none. The frequency of service will further modify the direct and indirect levels. If there are both frequent and direct airline flights to a company destination, a business aircraft's only measurable advantage may be its ability to transport company travelers at savings in total direct costs. If service is infrequent and/or indirect, a company aircraft can significantly reduce travel time, airport layovers, and overnight stays, as well as take advantage of direct cost savings through group travel.

10. **What is meant by the statement, "Let the model fit the mission?"**

    "Let the model fit the mission" is the rule in selecting a business airplane. Recognizing this, manufacturers offer numerous models—including fixed-wing or rotary-wing (helicopter), single-engine or multi-engine, piston or pure jet—and each can be tailored to meet the specific requirements of a firm. Once the proper airplane is selected, it can be altered to fit specific uses with the selection of avionics equipment, seating arrangements, wheels or floats (or both), and cargo or passenger configurations (or both).

11. **Distinguish between the single-engine and light twin-engine aircraft in terms of performance.**

    A single-engine airplane's range is best utilized in frequent trips of 1,000 to 1,200 miles or less, although it is capable of extended flight. A long flight requiring frequent business stops en route also can be handled well by the single-engine model. It has the capability to fly into and out of most airports, including grass strips. More than just an additional powerplant is gained with a twin-engine aircraft. Utility increases many times over. While seating capacity and payload of the light twin does not vary much from the high-performance single-engine models, the added powerplant expands the use during darkness and adverse weather. Deicing equipment may be added for convenience and safety. Since a long-distance flight is more likely to encounter varying weather conditions, the twin increases mobility for the company whose travel profile includes trips to different parts of the country.

12. **What are the major criteria for stepping up to a medium twin?**
When a company has a number of people traveling over the same routes, when in-flight conferences are required, or when all-weather operations are a routine matter, a medium twin is appropriate.

13. **When would the use of a corporate helicopter be prudent?**
The business applications of helicopters are almost endless, including herding livestock; moving bank papers and checks; harvesting seed cones from the tops of coniferous trees; moving work crews and material for construction projects; and aerial surveying/photography. However, the most visible business application of helicopters is for the reliable, rapid transport of corporate executives. The concept of portal-to-portal travel really pays off in convenience and time by eliminating ground travel by limo or taxi to and from the airport. Many firms have corporate helipads adjacent to their headquarters. The passengers walk to the helicopter and, ideally, fly directly to a heliport within walking distance of their destination.

14. **What is the significance of determining the use and users of the aircraft?**
Expected users of the aircraft will affect the type of aircraft, seating arrangements, performance requirements, and interior appointments. Special uses, such as cargo needs, will also affect the selection.

15. **Describe what is meant by the environmental aspects of routes and destinations?**
A review of the flight routes that will be flown will reveal the enroute terrain, flight levels, airport elevations, and typical weather encountered on such routes. The need for special systems (such as pressurization and turbocharging), runway performance requirements, and navigational packages are often predicted by such factors relating to routes and destinations.

16. **Why is it important to determine the frequency of trips?**
This information helps qualify the relative importance of other factors. In addition, trip frequency requirements aid in equipment decisions, such as avionics and convenience options.

17. **What are the major factors to consider in a performance analysis?**
The technical performance capabilities of the aircraft under consideration must be fully evaluated. These include such factors as short runway performance, high temperature operating characteristics, payload-range capability, speed, and operational reliability. In any equipment selection decision, this information provides a rationale by properly balancing needs against costs.

18. **What is a payload range chart?**

    Each aircraft has, according to its particular weight, fuel capacity, engine type, and performance characteristics, a capability to carry a certain payload over a certain distance. All else being equal, aircraft with heavier payloads are unable to fly as far as those with lighter payloads. For all aircraft, there is a tradeoff between payload and range, which can be illustrated by a payload range chart. This chart shows the aircraft's range with a maximum payload and how range can be extended through tradeoffs with a reduced payload or reduced fuel load.

19. **Discuss the importance of status of production, trade-in value, and reliability and maintainability in selecting an aircraft.**

    The status of production must be examined relative to cost. Each aircraft undergoes a significant evolutionary development after its initial design has been adopted. A forecast of the future disposal or trade-in value of the aircraft must be made to determine the net aircraft cost to the company. Reliability and maintainability must be investigated with regard to their effects on cost. The broad spectrum of business aircraft includes a wide variety of technical and mechanical complexity in engines, avionics, and aircraft systems. Each step in overall complexity increases the costs, required parts, personnel, and sophistication of equipment required for maintenance.

20. **Describe the significance of depreciation expense to a corporation.**

    The depreciation expense is an expense that is included in the cost of use of an aircraft. This accounts for the money lost as the aircraft is used by the corporation and loses value. The resale value, for example, may only be 71% of the purchase price and the difference is the depreciation expense.

21. **Distinguish between cost of ownership and cost of use.**

    The cost of ownership of an aircraft is the total cost of the purchase price, the maintenance, and taxes and fees. The cost of use of an aircraft includes two types of expenses: fixed costs and direct operating expenses. Direct operating expenses or variable costs are the expenses for fuel, maintenance, and miscellaneous expenses that occur as a direct result of hours flown.

22. **Provide some examples of fixed costs of use and direct operating costs.**

    Fixed costs are items that are incurred regardless of the amount of flying performed. Examples include crew salaries, recurrent training, insurance, and hangar rental or tie-down expenses. Direct operating costs are expenses for fuel, maintenance, and miscellaneous expenses that occur as a direct result of hours flown. Some aircraft components have predetermined or expected normal service lives that can be used to calculate an hourly cost of operation.

23. **Determine the cost per mile for an aircraft that has an estimated annual cost of $50,000; cruise speed of 200 miles per hour; and 500 estimated annual flying hours. If this aircraft has five passenger seats, what is the cost per seat mile?**

    The cost per mile is $0.50. The cost per seat mile is $0.10.

24. **Identify three benefits of a cash flow analysis to the sales process.**

A cash flow analysis completed by aircraft salespeople is essential not only for selling aircraft to corporations with in-house flight departments but also for all types of business aircraft acquisition.

Students may discuss any of these benefits of a cash flow analysis: It adds a professional touch to the sales presentation, it assists the salesperson in dealing with the company's financial concerns, it satisfies the prospect's need for detailed cost information and net present value analysis, or it helps move the sales process toward a favorable conclusion.

25. **Use the sample loan amortization schedule to determine the monthly interest on an eight-year, 9.25 percent loan for $450,000.**

About $335 per month.

26. **Compound interest is the reciprocal of present value. Explain how prospective aircraft purchasers use net present value analysis in their decision-making process.**

This dollar figure tells the company how much money must be invested now at the company's stated money value to earn enough cash to meet all the aircraft expenses as they come due each year. The net present value figure also brings expenses for a predetermined time period (e.g., six years) to a single figure. Prospective aircraft purchasers can use net present value during the evaluation stage to compare the total expense of owning and operating comparable aircraft.

27. **Describe how break-even analysis can be used as a sales tool.**

The aircraft salesperson will find it useful to calculate the prospective buyer's break-even point—that point at which the cost of operating the aircraft exactly matches the revenues generated through such activities as flight instruction or charter. Since business firms must do better than just break even, this analysis will help determine revenue levels sufficient to generate a predetermined profit objective. Thus, break-even analysis can be a powerful tool for aircraft salespeople to use in marketing business aircraft to corporations that will use the aircraft commercially to generate profits. The break-even analysis can be applied by determining two different costs. Fixed costs are those whose level remains unchanged when hourly usage changes. Direct operating expenses are those that do change in proportion to changes in aircraft use, including gas, maintenance, and hourly charges for maintenance reserves.

Methods of Acquiring a Business Aircraft

1. Why is a company-owned aircraft the most flexible method of business aviation?

The principal advantages of a company-owned aircraft are optimum utility, convenience, and safety. Consequently, business aviation departments get maximum use from their aircraft. Usually, one company-owned aircraft, efficiently used, can satisfy 75 percent of the air transportation needs of the people it is intended to serve. Anything over 75 percent will usually necessitate special charter or lease arrangements. A company-owned aircraft is the most flexible method of business flying because as owner, the company is not subject to restrictions imposed by charterers or lessors with regard to insurance requirements, operating restrictions, and other contractual provisions. The owner maintains total control over and manages aircraft operations.

2. What are time-sharing and interchange agreements?

A time-sharing agreement involves the lease of an aircraft with flight crew to another party, and no charge is made for the flights conducted under that arrangement other than the following: fuel, oil, lubricants and other additives; crew travel expenses; hangar and tie-down costs; insurance; landing fees and airport taxes; customs, foreign permits, and similar fees; in-flight food and beverages; passenger ground transportation; flight planning and weather contract services; and additional charges.

Under an interchange agreement, a person or company leases its aircraft to another company in exchange for equal time, when needed, on the other company's aircraft, and no charge, assessment, or fee is made, except that a charge may be made not to exceed the difference between the cost of owning, operating, and maintaining the two aircraft.

3. List some of the advantages of company-owned aircraft operated by a management company.

A company-owned, management company-operated aircraft is attractive to firms not wanting to take on the responsibility of operating their own aircraft. There are five distinct advantages with this arrangement:

1. It maintains an arm's-length arrangement with the owner in which all the aircraft-related administrative functions are performed outside the owner's company, thus relieving the need to commit internal resources.
2. It can deliver Part 135 charter revenues back to the owner to help defray costs.
3. It removes from the company any political or employee-sensitive, aircraft-related cost accounting.
4. It provides anonymity and security because an owner's aircraft becomes part of a fleet of many owners, and those who might be trying to use internet tracking programs or the FAA website to identify a particular aircraft user find it extremely difficult.
5. It maintains a pragmatic perspective toward the owner's aircraft. The aircraft is looked upon as a business asset detached from personal involvement, perhaps unlike an aircraft operated by an in-house flight department.

4. **What are some of the pros and cons of joint ownership?**

   A joint-ownership, in-house flight department arrangement can also provide excellent and customized service. However, aircraft availability requires coordination between the joint owners and advance planning. If the aircraft is not available, either owner can use charter, airlines, timeshare, or interchange to meet flight demands. Owners maintain control over and manage aircraft operations, and the liability for these operations is shared by both owners. This option requires a higher capital investment for the negotiated acquisition cost on the part of the owners. They must also agree on what aircraft to purchase and how to outfit it. Either owner can sell its share in the aircraft at any time, and the aircraft can be sold, upgraded, or downgraded as needed.

5. **Finance charges on aircraft loans are primarily based on four factors. What are they?**

   The amount of the loan, the amount of the down payment, the terms of the loan, and the credit strength of the borrower.

   Students may explain these four factors in more detail.

6. **What is the reason for the strong competition in the field of aircraft finance in recent years?**

   Strong economic growth in recent years and unprecedented demand for business aircraft have created a favorable climate for financing aircraft. First, banks and financial institutions that have not previously been willing to fund business aircraft purchases have overcome their preconceptions about the market in a bid to share in this period of strong demand. Second, relatively low interest rates and abundant capital markets have combined to make borrowing an attractive and feasible proposition.

7. **Describe four methods owners may use in selling their aircraft.**

   The four options are sale by owner, sale by a broker, sale to a dealer, and sale to an original equipment manufacturer (OEM).

   Students may explain these options in more detail.

8. **What are some of the areas to be considered in evaluating the purchase of a used aircraft?**

   It is important to examine the history of the aircraft, regardless of its age, by making a comprehensive inspection of all records pertaining to the aircraft's operation and maintenance. If incomplete maintenance logbooks are discovered, the buyer should initiate an in-depth research effort to fill in any gaps in the aircraft's maintenance history. In addition to the maintenance log, the prospective buyer should review the airframe log, which indicates hours flown and cycles, as well as incidents and accidents. A complete airframe log should also indicate compliance with past airworthiness directives (ADs) as well as the manufacturer's recommended inspection schedules. Other areas to be inspected include general, engine, propeller, wings, controls, landing gear, doors and windows, cabin interior, and radios and instruments.

9. **Define the following: FAA Form 337; airworthiness directives; and airworthiness certificates.**

An FAA Form 337 must be completed in the event of a major alteration or repair to an aircraft. Form 337s are examined because the information they provide may have a bearing on any work that the buyer might want to perform on the aircraft.

Airworthiness directives (ADs) are used to notify aircraft owners of unsafe conditions about their aircraft and to prescribe the conditions under which the aircraft may continue to be flown. ADs specify inspections the aircraft owner or operator must carry out, conditions and limitations that must be complied with, and any other actions that must be taken to resolve the unsafe condition.

If the aircraft is in conformity to the type certificate for safe and reliable operation, it is then issued an airworthiness certificate, which signifies the aircraft meets acceptable standards for service. The airworthiness certificate remains with the aircraft during its service life, regardless of owner.

10. **What are the major points covered in an aircraft sales contract?**

The sales contract identifies the parties, the specific aircraft by N-number, price, date of closing, and any other terms or conditions of the sale. It spells out all of the criteria that must be met before the aircraft is accepted. Sales contracts generally state that the aircraft will be delivered to the buyer in airworthy condition as a baseline, but they can also include all of the conditions agreed to. They could include repairs, refurbishment, the completion of a successful test flight, and/or the delivery time and date. If a certain component the buyer wants installed is not available by the time the aircraft is scheduled for delivery, it is important that the buyer and seller have an understanding that the component will be installed by a specific date.

11. **Distinguish between simple interest and add-on interest.**

Simple interest is charged only on the outstanding balance of the loan. The required monthly payment can be determined from financial tables or by multiplying the stated interest rate by the outstanding balance at the end of each month. Add-on interest combines principal and interest into one amount owed, to be paid off in equal installments. The add-on interest method of determining monthly payments is commonly used in aircraft financing and results in a much higher APR than does the simple interest method.

12. **What is a floor planning contract?**

Established aircraft dealers will employ the use of floor planning contracts to assist them in maintaining a good selection of aircraft. Floor planning is a financial arrangement whereby the bank, or other financial institution, will provide the dealer with short-term financing at moderate interest rates. With a floor plan, the initial investment needed to buy aircraft is a fraction of the aircraft's price. A typical program will charge the dealer one percent per month on the wholesale value of the aircraft. The bank will either take title to the aircraft or place a lien on the title as its protection in the event of default by the dealer. The dealer will have from four to six months to sell the aircraft. As soon as the aircraft sells, the dealer immediately realizes profits from the sale and can pay back the financial institution the initial value of the loan plus interest.

13. **Give an example of the retail price of an aircraft, including all of the items in the markup formula.**

    The retail price includes the purchase price, the gross margin, and expenses (including floor plan, hull coverage and liability insurance, minor repairs and aircraft detailing, selling costs such as advertising and sales commission, and general overhead).

14. **Distinguish between a dry lease and a wet lease.**

    A dry lease is the more common type of lease arrangement. In this case, the lessor supplies only the aircraft for a fee, and the lessee is obligated for all fixed and variable operating expenses, including fuel, crew, etc. A wet lease is a contract whereby the owner of the aircraft makes an aircraft available for the user and also provides everything needed to operate the aircraft: at least one crewmember, fuel and oil, maintenance, insurance, and storage.

15. **List four distinct advantages of leasing an aircraft.**

    Students may choose four of the following and explain each in more detail:

    Conservation of capital, tax savings, preservation of credit lines, flexibility, extended length of financing, and reduced risk of technological and physical obsolescence.

16. **What is the primary disadvantage of leasing?**

    The primary disadvantage of leasing is that the lessee usually cannot own the aircraft or have an equity interest in it. Should the aircraft have a residual value higher than the amount used to determine the lease rental payments, the lessor as the owner would receive this gain, not the lessee.

17. **What is a capital lease and how does this differ from an operating lease?**

    A capital lease resembles the acquisition of a business aircraft with the use of debt financing, and for income tax and financial accounting it is treated exactly like a loan. The aircraft is included as an asset, and the lease obligation (payments) is recorded as a liability on the lessee's balance sheet. The company's monthly rental payment will amortize the entire cost of the aircraft plus a fair return (interest) for the lessor. At the termination of the lease term, the lessee has the option to purchase the aircraft for a nominal amount (e.g., $1.00).

    The more traditional operating lease, which has become a standard feature of the commercial airline finance market, is suitable for those who cannot enjoy further tax benefits and who want to get their aircraft completely off the books. An operating lease, which is known as a "true lease" according to IRS regulations, provides the lessee with the use of the aircraft for a fixed period of time in exchange for rental payments. At the conclusion of the lease term, the lessee returns the aircraft to the lessor, or if the lessor offers a purchase option, may purchase the aircraft at the fair market value.

18. **What are synthetic leases?**

    A synthetic lease can be complicated, commonly involving a special-purpose entity. For accounting purposes, the lessee does not show the aircraft as an asset or the lease as a liability. Rather, the lease is shown as an expense on the income statement. For tax purposes, the lessee is recognized as having sufficient benefits and obligations of ownership to be considered the owner of the aircraft.

19. **How was the concept of fractional ownership started?**

The concept of fractional ownership was started by Executive Jets' NetJets program with four fractional jet owners in 1986. It evolved from a program that began in 1964 when the Pennsylvania Railroad provided the start-up capital for Executive Jet Airways. The new company ordered ten of the then brand-new Learjet 23s, and the mission was to provide a service where people would buy blocks of usage, and jets would be dispatched with efficiency to take customers wherever they wanted to go.

20. **What are fractional ownership programs?**

Fractional ownership programs are multi-year programs covering a pool of aircraft, each of which is owned by more than one party and all of which are placed in a dry lease exchange pool to be available to any program participant when the aircraft in which such participant owns an interest is not available. A single company provides the management services to support the operation of the aircraft by the owners and administers the aircraft exchange program on behalf of all participants.

21. **Who are the major fractional providers?**

NetJets, Flexjet, PlaneSense, Airshare, Airsprint, Nicholas Air, West Coast Aviation Services, and Northern Jet Management.

22. **What is the function of 14 CFR Part 91, Subpart K?**

Effective February 2005, fractional aircraft operations were required to fly under either 14 CFR Part 91 Subpart K or 14 CFR Part 135. Subpart K addresses the issues of safety of flight; regulatory compliance; pilot qualifications; aircraft maintenance and technician training requirements; aircraft weight, size, and runway landing requirements; and the installation of advanced safety equipment on aircraft. Under Subpart K, passengers would see little difference, except the requirement for the lead passenger to show a photo ID to the flight crew and provide verbal acknowledgment for all other passengers. Part 135 flights are subject to Transportation Security Administration (TSA) regulations which require each and every passenger to present a valid, government-issued photo ID to the flight crew for positive identification.

23. **What is meant by the term "supplemental lift"?**

The term supplemental lift describes the use of a fractional share to supplement an existing corporate fleet. Supplemental lift is used to reduce the costs of deadheading, to facilitate maintenance schedules, and as a fleet multiplier when the demand for aircraft exceeds the flight department's existing fleet.

24. **When might chartering an aircraft be considered the most effective method of acquiring the use of a business aircraft?**

Charter service companies provide aircraft and crew to the general public for on-demand, unscheduled transportation under a Part 135 certificate. Charter offers the ultimate flexibility in air travel. Chartering an aircraft is similar to hiring a taxi for a single trip. The charter company provides the aircraft, flight crew, fuel, and all other services for each trip. Chartering can be attractive for a firm that does not frequently require an aircraft or does not often need a supplement to its aircraft. Chartering can be cost effective for a group of executives traveling together or for an emergency. It provides greater value due to on-demand scheduling flexibility, closer proximity to business sectors, increased productivity, greater security, and overall time savings.

25. **List some of the reasons why corporate aircraft operators may charter aircraft.**

    Many corporate aircraft operators charter aircraft to keep flying when its own aircraft are down, supplement its airlift capability, avoid over-equipping, have a less expensive alternative to airline travel, test the business aviation waters, re-enter the field of business aviation, or fly before buying.

26. **What are the major factors to be considered in evaluating a charter operator's performance?**

    The major factors to consider in evaluating a charter operator's performance are operations, maintenance, fleet equipment, fitness, safety, and morale.

    Students may describe each in greater detail.

27. **How does a straight charter differ from contract flight service?**

    Contract flight service is the same as chartering an aircraft, except that the customer buys a block of aircraft time, mileage, or trips, usually over a certain period. Contract flight service is particularly suited to a company that has frequent and predictable need for business aircraft but at a level that is not enough to justify owning or leasing an aircraft.

28. **What are the general guidelines, in terms of annual hourly utilization, when considering charter, fractional ownership, company ownership, or leasing?**

    As a general guideline, charter service is best when annual utilization is less than 100 hours. Fractional ownership is the preferred approach when utilization is between 100 and 400 hours per year, and total ownership is best when annual utilization is above 400 hours.

29. **Compare and contrast fractional ownership with a company-owned aircraft in terms of service quality, aircraft administration, crew quality, operating costs, liability, tax consequences, capital commitment, and aircraft acquisition and disposition.**

    A company-owned aircraft with in-house flight department has many advantages, including highest level of comfort and service, best possible confidentiality/security, maximum control over safety options, likelihood of immediate availability, total control over aircraft operations, personnel on owner's payroll, consistency with crew quality, lowest costs of operations at reasonable utilization levels, and no commercial federal excise tax. Fractional ownership, on the other hand, is somewhat less customizable, but still has excellent service quality, guaranteed availability with 4–8 hours notice, more than one aircraft available at the same time, personnel not on owner's payroll, crew changes likely, shared liability with fractional provider, and owners sharing tax liabilities and benefits.

CHAPTER 12 REVIEW QUESTIONS
Management Functions and Organization

1. **Identify and briefly describe the characteristics of well-managed FBOs.**

   Well-managed and successful FBOs have been astute at developing strong organizational cultures that reflect the values and practices of their owners and managers. Employees have a sense of ownership, leading to high morale and a can-do attitude shared by all employees. Well-managed FBOs get quick action because they maintain organizational fluidity. For example, they have developed successful techniques for informal communication. Well-managed FBOs successfully balance the concern for people and production. They use positive reinforcement, do not expect employees to be motivated in a vacuum, and promote an environment of achievement and teamwork. Quality conscientiousness is another important trait of well-managed FBOs. They also strive to maintain an awareness of the industry's technological advancements, trends, and concepts. Well-managed FBOs are marketing oriented and have a complete understanding of their markets and know their niche in those markets. The well-managed FBOs have paid their dues in the community, to trade associations, and to customers. Finally, well-managed FBOs use metrics and performance standards to evaluate their success.

2. **Why is planning considered to be the most important management function?**

   Planning is the most important function in establishing and maintaining a business. In essence, planning is problem solving and decision-making wrapped up as one. This includes speculating on the future, setting objectives, considering alternatives, and making choices. Effective management begins with planning.

3. **Provide examples of plans an FBO may develop.**

   Strategic plans, tactical plans, operational plans, contingency plans or business continuity plans, single-use plans, and budgets are all examples of specific types of plans that can be made.

   Students may describe and/or provide examples of these plans.

4. **List the step-by-step approach to planning.**
   1. Assess the present state of affairs—external (the economy, competition, etc.) as well as internal.
   2. Set a target date for the activation of the plan.
   3. Make a forecast of the future state of affairs (at the target date and, thereafter, for the duration of the proposed plan).
   4. List specific objectives that are both reasonable and attainable.
   5. Develop methods for reaching the objectives.
   6. Work out the details by using the Five Ws (Who? What? Where? When? Why?) and How?
   7. Determine the resources available and the structure of the plan with a time schedule.
   8. Document all of the details.

9. Set up a control system to monitor the plan's operation and to make adjustments for deviations from planned outcomes.
10. As the plan unfolds, make the necessary changes to compensate for such deviations.

5. **How can employee goals be at odds with company goals?**

   It should be recognized that the employees working in an organization are there primarily to satisfy their own needs. Perhaps they want security, financial income, a sense of belonging as part of a group, or a prestigious title. Although they will work willingly toward the firm's objectives, this occurs only if their personal goals can be achieved alongside organizational goals. If an employee perceives organizational goals to be in conflict with their personal goals, an inner struggle begins, often resulting in lower morale and declining productivity.

6. **What is the purpose of departmentalization?**

   Departmentalization refers to the process in which segments of the business that have interrelated work functions are grouped together (in departments) under the supervision of a single specialist. In addition to line service, flight instruction, and maintenance departments, other departments commonly found at FBOs include aircraft sales, charter and rental, and corporate flight service.

7. **Describe the line-and-staff concept.**

   Most organizations have been arranged according to the line-and-staff concept. Line personnel are directly involved in the operation of the business, giving and receiving orders along the chain of command from the head of the company down to the lowest-level worker. Staff personnel, on the other hand, are outside this direct chain of command. They are present to aid and support the line personnel.

8. **What are some problems associated with flat and tall organizational structures?**

   Organizational structure often develops layers of authority: top, middle, and lower (supervisory) management. In the traditional tall organizational structure, employees become relatively confined within their own specialized positions, and dissatisfaction begins to emerge from people in middle and lower positions. Broadly interpreted, they feel that they are not really making a significant contribution to the business. In organizations with a flat structure, on the other hand, there are only one or two levels of management. The supervisory leadership exercised by the executives is of a more personal nature, with more face-to-face contact. Employees in lower management niches take on more responsibility for their efforts and make more decisions. Employees are closer to the action in a flat structure, as they are not as distantly separated from management.

9. **Explain the organizational principles of unity of command and span of control.**

   Unity of command is the principle that each employee should only report to one supervisor. It is a policy that should seldom be violated. Having more than one supervisor can cause confusion—for example, as when an employee working under a partnership arrangement is given two opposing directives by the partners.

   The span of control, which is the number of subordinates or direct reports a supervisor is responsible for, is another important concept. The average manager finds it relatively easy to oversee one to several employees: to watch over them, train them, direct them, and guide them. As the number of subordinates increases, it becomes increasingly difficult for the supervisor to devote enough attention to each person. The number of employees a supervisor can oversee depends on factors such as the supervisor's capabilities, the subordinates' abilities and characteristics, and the nature of the work being performed.

10. **What is the purpose of an operations manual?**

    There are multiple ways an operations manual can benefit a company. Operations may benefit from a manual because it establishes a comprehensive source of company policies and procedures; it facilitates even-handed, consistent administration of personnel policies; it promotes continuity in management style throughout the organization; it helps identify problems before they arise; it reduces the number of emotional decisions; it defines authority clearly and distributes responsibility; it becomes a training tool for employees; and it offers examples of standard forms.

11. **Why is effective leadership so important in directing a company?**

    Leadership involves interaction. It is a way of behaving—of persuading and inducing, and of guiding and motivating. A totally rounded leadership form calls for a mastery of certain skill areas, the creation of the right climate within which the work group can function properly, and the direction and control of group activities. Individuals, as well as groups, are extremely varied. Consequently, effective leadership requires an eclectic approach, taking into account the three-way match among the leader, group members, and situation at hand. Effective leadership is integral to the success of an organization and can impact employee morale, retention, productivity, company culture, and much more.

12. **Identify ten personality traits that can be helpful in dealing with others.**

    Students may choose ten traits from the following:

    Adaptability, alertness, communication skills, confidence, creativity, curiosity, dependability, drive, enthusiasm, evaluation skills, flexibility, human relations skills, maturity, open-mindedness, optimism, patience, persuasive powers, poise, resourcefulness, sensitivity to others, supportiveness, teaching ability, tolerance, warmth, willingness to listen, and willingness to take chances.

13. **Define personality and motives.**

    Everyone within an organization is a complex, multifaceted person. Among his or her many sides are the intellectual, physical, and emotional as well as the economic, social, political, and moral. An individual's personality is composed of values, attitudes, and response traits. Motives are the energizing forces that drive all of us and are behind most behavior. Many of our actions result from the interplay of several motives.

14. **Discuss Maslow's levels of human needs and wants.**

    Maslow's hierarchy of needs organizes human needs on different levels according to their potency for influencing behavior. Maslow's categories are physiological needs, safety needs, love and belongingness, esteem, and need for self-actualization.

15. **Discuss McGregor's Theory X and Theory Y approaches.**

More than 50 years ago, management theorist Douglas McGregor investigated the attitudes of supervisors toward their employees, resulting in McGregor's Theory X and Theory Y. Those who subscribe to what McGregor termed the Theory X approach are convinced that the average person doesn't like to work, has little if any ambition, and tries to avoid responsibility. Consequently, these supervisors feel that they need to micromanage workers and strategically use both rewards and punishment in order to obtain satisfactory performance.

Other supervisors follow a different philosophy, the more positive Theory Y approach. They believe employees consider work to be as natural as play and rest, and that once committed to specific objectives, they will not only put out effort willingly but will also seek responsibility. Theory Y managers more readily believe in employee empowerment and avoid micromanaging, which typically creates higher employee morale and productivity.

16. **What are the motivators and hygiene factors described by Herzberg?**

Herzberg maintained that motivators appeal to higher level human needs and, therefore, not only motivate employees but can also increase the level of job satisfaction. Examples include recognition, responsibility, advancement, growth, and the work itself. On the other hand, some factors in the workplace that cater to individuals' lower needs (hygiene factors) apparently do little to encourage worker motivation. Nevertheless, they can, of course, contribute to employee dissatisfaction. Salary, working conditions, company policies, and relations with one's supervisor are hygiene factors.

17. **What is meant by empowering employees?**

Employee empowerment means releasing an individual's power to succeed by removing the barriers that prevent it, such as lack of skills, not enough direction, or too little responsibility and authority. In order to empower an employee, managers must create small successes and recognize the employee for the success. This involves encouraging creativity, setting goals, giving feedback, and recognizing performance.

18. **Describe the six steps in the decision-making process.**

Decision-making is but one step in the problem-solving process. It is the last step in which the manager chooses the one alternative that seems best. The six steps in decision-making are to diagnose the problem, gather information, generate alternative solutions, evaluate the alternatives, select the best alternatives, and translate the decision into action.

Students may describe each step in greater detail.

19. **Provide several examples of the control function in such areas as marketing, line service, and parts inventory.**

Controlling is a process that includes analysis, setting standards, monitoring, securing feedback, and taking corrective action.

Specific examples in students' responses will vary.

20. **Why is communication the "oil that lubricates the various gears and cogs in the free-enterprise system"?**

    Service organizations such as FBOs run on communication. Prospective customers are located, contacted, and persuaded to buy products and services through communication. Similarly, employees are recruited, hired, trained, and directed; departments are managed; and machines are operated. Without communication, there is no way to effectively run or participate in an organization.

21. **Describe how communication is applied to a firm's internal organization.**

    Applied to a firm's internal organization, communication starts with verbal or written messages (orders, instructions, and the like) passed down from the top to lower levels. Feedback moves upward, completing the system. Of course, the effectiveness of this internal system also depends on unimpeded horizontal communication on each individual level.

Risk Management

1. **What types of risks are FBOs exposed to? Why is it important to mitigate these risks?**
   An FBO will be exposed to a number of different risks on a daily basis. An FBO managing risk must consider the areas of insurance, COVID-19 mitigation, safety, and security. These risks, although they can be mitigated, can never be completely eliminated. Thus, FBOs purchase insurance policies, educate employees, and develop plans and procedures to mitigate these known risks. Many FBO lease agreements actually require FBOs to purchase insurance policies proving specific coverages and in certain amounts to protect both the FBO and the airport from any possible claims.

2. **Why is safety important to an FBO?**
   Safety begins on the ramp and continues throughout the hangar and into the terminal building. Line service has inherent dangers (such as spinning propellers, jet blast, high noise levels, moving aircraft and vehicles, and fuel). Wise FBO managers begin training new line service personnel on the importance of safety on day one. The National Air Transportation Association (NATA) created a Safety 1st line service training program specifically to assist FBOs with educating line service personnel about the importance of safety on the ramp. In addition, the Occupational Safety and Health Administration (OSHA) demands safety throughout the workplace. Specifically, FBOs must furnish employees with a workplace free from recognized hazards. The FAA, in harmony with the International Civil Aviation Organization (ICAO), has issued guidance to airports in creating safety management systems (SMS). The application of a systematic, proactive, and well-defined safety program (as is inherent in a SMS) allows an organization producing a product or service to strike a realistic and efficient balance between safety and production.

3. **Explain the different types of insurance an FBO may need.**
   Typical insurance policies for an FBO include workers' compensation insurance, aircraft liability insurance, airport liability insurance, hangarkeeper's liability insurance, in-flight hangarkeeper's liability insurance, business auto liability insurance, environmental impairment insurance, property insurance, and commercial liability insurance.
   Students may describe each type of insurance in greater detail.

4. **What areas are addressed by the TSA publication *Security Guidelines for General Aviation Airport Operators and Users?***
   This publication provides options, ideas, and suggestions for the airport operator, tenants, and users to enhance security of the airport and covers the following areas:
   - Gathering intelligence—Relies on information provided by TSA, federal, state, or local resources, knowledge of customers and the industry, etc.
   - People—GA operators see and meet pilots and passengers. Suspicious activities can be quickly noted and authorities alerted.
   - Aircraft—Securing aircraft to prevent intentional misuse of GA aircraft.
   - Infrastructure and other facilities—Properly securing hangars, aircraft parking and movement areas, and public areas and controlling access.

- Airport watch programs—Awareness by airport users; AOPA, DHS, and TSA programs.
- Security awareness training—Provides information on suspicious behavior patterns and appropriate responses.
- Reporting procedures—For reporting incidents or threats.
- Security procedures and communications— Emphasize elements such as awareness, prevention, preparation, response, and recovery.
- Specialty operations.

5. **What role does the AOPA Airport Watch Program play in FBO security?**
   Airport users can be the eyes and ears needed to thwart criminal activities. Programs such as the Aircraft Owners and Pilots Association's (AOPA) Airport Watch, the DHS "If You See Something, Say Something" campaign, or the TSA "This is My Airport" campaign help promote general awareness and safety attitudes for all airport users and guests.

6. **What are challenge procedures?**
   An important component of any security program is the concept of challenge procedures. Required at all TSA Part 1542 airports (air carriers), this involves challenging individuals in the sterile area (or air operations area [AOA]) with no ID badge visible on their person.

7. **What should be remembered when answering a telephone threat?**
   A security threat may be received via the telephone. This may include a bomb threat or other threat against the business or GA aircraft operations. The key is to listen closely to the caller's voice (accent, roughness, gender) and discern as much information as possible so that an assessment of the threat may be made. If possible, it is best to alert someone to the call while the caller is still on the line. Typically, threat assessment will be made after the call has ended in consultation with local law enforcement and local management (airport and FBO).

Financial Planning and Control

1. **What is the purpose of financial management?**

   Financial management is the use of financial statements that reflect the financial condition of a business to identify its relative strengths and weaknesses. It enables the firm to plan, using projections, the future financial performance for capital, assets, and personnel requirements to maximize the return on the shareholders' (owners') investment.

2. **Describe the major categories of the balance sheet.**

   The balance sheet provides a picture of the financial health of a business at a given moment, usually at the close of an accounting period. The major categories of the balance sheet are assets, liabilities, and owner's equity. Assets include not only cash, merchandise inventory, land, buildings, equipment, machinery, furniture, patents, and trademarks but also money due from individuals or other businesses (accounts receivable). Liabilities are funds acquired for a business through loans, or the sale of property or services to the business on credit. Owner's equity is money put into a business by its owners for use by the business in acquiring assets.

3. **Why must the balance sheet balance?**

   The balance sheet is designed to show how the assets, liabilities, and net worth of a business are distributed at any given time. It is considered a snapshot in time, and it is only accurate on the day it is prepared. It is usually prepared at regular intervals—for example, at each month's end, but especially at the end of each fiscal (accounting) year. By regularly preparing this summary of what the business owns and owes (the balance sheet), the business owner/manager can identify and analyze trends in the financial strength of the business. It permits timely modifications, such as gradually decreasing the amount of money the business owes to creditors and increasing the amount the business owes its owners.

4. **Explain the purpose of the income statement.**

   The income statement is a measure of a company's sales and expenses over a specific period of time. It is also prepared at regular intervals (again, each month and fiscal year end) to show the results of operating during those accounting periods.

5. **What is the purpose of ratio analysis?**

   Ratio analysis supports data-based decision-making. The analysis of various financial ratios enables management to spot trends in a business and to compare its performance and condition with the average performance of similar businesses in the aircraft service industry.

6. **Define "working capital."**

   Working capital is more a measure of cash flow than an actual ratio. The result of this calculation must be a positive number. Working capital equals total current assets minus total current liabilities. The higher this ratio is, the better, especially if the firm is relying to any significant extent on creditor money to finance assets.

7. **Define the purpose and formula for calculating the current ratio.**

   The current ratio is a liquidity ratio that measures a company's ability to pay short-term obligations, or those due within one year. It reveals if the business has enough current assets to meet the payment schedule of its current debts with a margin of safety for possible losses in current assets, such as inventory shrinkage or collectable accounts. The current ratio is one of the best-known measures of financial strength. The current ratio equals the total current assets divided by the total current liabilities.

8. **Define the purpose and formula for calculating the quick ratio.**

   The quick ratio, sometimes called the acid-test ratio, is one of the best measures of liquidity. The quick ratio equals the cash, government securities, and receivables divided by the total current liabilities. The quick ratio is a much more exacting measure than the current ratio. By excluding inventories, it concentrates on the liquid assets, with a value that is fairly certain. It reveals if the business could meet current obligations with "quick" funds on hand, if for example, sales revenues drastically drop.

9. **Define the purpose and formula for calculating the debt-equity ratio.**

   The debt-equity ratio is a leverage ratio that indicates the extent to which the firm is dependent upon debt financing. The debt-equity ratio equals total liabilities divided by net worth. A high debt-equity ratio indicates a company that has been aggressive in financing its growth with debt. Usually, the higher this ratio, the riskier a creditor will perceive its exposure in the business, making it correspondingly harder for the business to obtain credit.

10. **Define the purpose and formula for calculating the gross margin ratio.**

    The gross margin ratio is the percentage of sales dollars left after subtracting the cost of goods sold from income. It measures the percentage of sales dollars remaining (after obtaining or manufactur-ing the goods sold) available to pay the overhead expenses of the company. The gross margin ratio equals the gross profit divided by the income.

11. **Define the purpose and formula for calculating the net profit margin ratio.**

    The net profit margin ratio is the percentage of sales dollars (gross income) left after subtracting the cost of goods sold and all expenses, except income taxes. It provides a good opportunity to compare the company's "return on sales" with the performance of other companies in the industry. The net profit margin ratio equals the net profit before tax divided by the gross income.

12. **Discuss the purpose and formula for calculating the return on assets ratio.**
The return on assets ratio measures how efficiently profits are being generated from the assets employed in the business when compared with the ratios of firms in a similar business. A low ratio in comparison with industry averages indicates an inefficient use of business assets. The return on assets equals the net profit before tax divided by the total assets.

13. **Discuss the purpose and formula for calculating the return on investment (ROI) ratio.**
The return on investment (ROI) ratio is perhaps the most important ratio of all. It is the percentage of return on funds invested in the business by its owners. In short, this ratio indicates whether the effort put into the business has been worthwhile. The return on investment equals the net profit before tax divided by the net worth.

14. **How does income statement ratio analysis differ from balance sheet ratio analysis?**
Income statement ratio analysis measures a firm's profitability. Profitability ratios simply measure the profitability or unprofitability of a firm. Profits may be measured against a variety of data, such as sales, net worth, assets, etc. Generally, profitability ratios are expressed as percentages rather than proportions or fractions. They include the gross margin ratio, net profit margin ratio, return on assets ratio, and return on investment ratio.
Balance sheet ratio analysis measures liquidity and solvency (a business's ability to pay its bills as they come due) and leverage (the extent to which the business is dependent on creditors' funding). Liquidity ratios indicate the ease of turning assets into cash. They include the current ratio, quick ratio, debt-equity ratio, and working capital.

15. **Distinguish between gross margin ratio and net profit margin ratio.**
The gross margin ratio is the percentage of sales dollars left after subtracting the cost of goods sold from income. The net profit margin ratio is the percentage of sales dollars (gross income) left after subtracting the cost of goods sold and all expenses, except income taxes. It provides a good opportunity to compare the company's "return on sales" with the performance of other companies in the industry.

16. **Why is the ROI ratio considered one of the most important ratios?**
The return on investment (ROI) ratio is perhaps the most important ratio of all. It is the percentage of return on funds invested in the business by its owners and thus indicates whether the effort put into the business has been worthwhile. If the ROI is less than the rate of return on an alternative, risk-free investment such as a bank savings account or certificate of deposit, the owner may be wiser to sell the company, put the money in such a savings instrument, and avoid the daily struggles of running a small FBO.

17. **What are pro forma income statements?**
A financial statement that predicts future income and expenses based on anticipated sales.

18. Discuss some of the factors affecting pro forma statements.

Preparation of forecasts (pro forma statements) requires assembling a wide array of pertinent, verifiable facts affecting the business and its past performance. These factors include:

- Data from prior financial statements (previous sales levels and trends, gross percentages, average expenses necessary to generate former sales volumes, and trends in the company's need to borrow and in accounts receivable).
- Unique company data (facility capacity, competition, financial constraints, personnel availability).
- Industry-wide factors (overall state of the economy, FBO's economic status, population growth, elasticity of demand, availability of aircraft).

19. Describe the steps in preparing a pro forma income statement.

There are three main steps to preparing a pro forma income statement. First, data from prior financial statements should be examined. This includes reviewing previous sales levels and trends; past gross percentages; average past general, administrative, and selling expenses necessary to generate former sales volumes; trends in the company's need to borrow (supplier, trade credit, and bank credit) to support various levels of inventory; and trends in accounts receivable required to achieve previous sales volumes. Second, unique company data should be examined. This includes facility capacity, competition, financial constraints, and personnel availability. Third, industry-wide factors should be examined. This includes the overall state of the economy, economic status of the FBO industry within the economy, population growth, elasticity of demand (responsiveness of customers to price changes) for the products or services the business provides, and availability of aircraft.

Once these factors are identified, they may be used in pro formas, which estimate the level of sales, expenses, and profitability that seem possible in a future period of operations.

20. Distinguish between direct expenses and overhead expenses.

Direct expenses, or operating expenses, are the result of normal business operations, such as materials, labor, and machinery used in production. Overhead (indirect) expenses are what it costs to run the business, such as rent, insurance, and utilities. Expenses may be either fixed or variable in nature. Fixed expenses, or fixed costs, are those costs that remain fairly constant, regardless of business volume. Variable expenses, or variable costs, on the other hand, vary directly with business volume. An example of direct variable costs are fuel and maintenance costs that vary depending on aircraft flight hours. Indirect expenses are typically fixed and not necessarily aviation specific (for example, administrative salaries, telephone, utilities, taxes, rent, advertising/promotion, office supplies, insurance, etc.).

21. How can overhead expenses be allocated to individual profit centers?

One accepted method is to allocate indirect expenses on a square footage basis. If the charter department occupies 20 percent of the total square footage of the facility, then 20 percent of the rent, utilities, administrative, and other indirect costs can be allocated to that profit center. Another common allocation method that works in some situations is to allocate indirect costs as a percentage of sales for that profit center. If the profit center generates 15 percent of the firm's revenues, then 15 percent of the indirect costs are allocated to that profit center.

22. **What is the purpose of break-even analysis?**
Break-even analysis enables the firm to study the relationship of volume, costs, and revenue to determine the break-even point. The break-even point means a level of operations at which a business neither makes a profit nor sustains a loss. At this point, revenue is just enough to cover expenses. Break-even analysis requires the FBO owner/manager to define a sales level, in terms of revenue dollars to be earned within a given accounting period, at which the business would earn a before-tax profit of zero. This may be done by employing one of various formula calculations to the business estimated sales volume, estimated fixed costs, and estimated variable costs.

23. **What are the basic assumptions in preparing a break-even chart?**
Typically, the volume and cost estimates assume the following: a change in sales volume will have no effect on selling prices, fixed expenses will remain the same at all volume levels, and variable expenses will increase or decrease in direct proportion to any increase or decrease in sales volume.

24. **Why are cash flow budgets so important?**
The cash flow budget identifies when money will be flowing into and out of the business. It enables management to plan for shortfalls in cash resources so short-term working capital loans may be arranged in advance, and to schedule purchases and payments in a way that enables the business to borrow as little as possible.

25. **Provide several examples of typical budget reports.**
Cash flow budgets can be established for sales, cost of goods sold, selling expenses, administrative expenses, direct labor, and other areas. The formats for budget reports typically have different categories that include the budget, the actual amount spent, any variations in spending, and remarks.

26. **Distinguish between working capital, equity capital, and debt capital.**
A company's working capital is in the form of liquid assets that are used for fulfilling daily obligations. Working capital represents a company's ability to cover its debts, accounts payable, and other obligations that are due within one year. Equity capital can be in the form of private equity, public equity, or real estate equity. Both private and public equity are generated through issuance of company stock. Debt capital is acquired through borrowing. It can be obtained through private or government sources. For established companies, banks and bond issuance are often the most common sources of debt capital.

27. **What is the primary source for working capital loans?**
Commercial banks are the largest source of working capital loans. These loans have the following characteristics: they are short term but renewable, they may fluctuate according to seasonal needs or follow a fixed schedule of repayment, they require periodic full repayment, they are granted primarily only when the ratio of net current assets comfortably exceeds the net current liabilities, and they are sometimes unsecured but more often secured by current assets.

28. Why are debt capital loans generally secured by collateral assets?

Debt capital is usually scheduled to be repaid over longer periods with profits from business activities extending several years into the future. Debt capital loans are, therefore, secured by collateral such as aircraft and other equipment—fixed assets which guarantee that lenders will recover their money should the business be unable to make repayment. For a debt capital loan, management will need to demonstrate that the debt capital will be used to increase cash flow through increased sales, cost savings, and/or more productivity. Although the building, equipment, or aircraft will probably be used as collateral for debt capital funds, management will also be able to use them for general business purposes.

29. What is the advantage of leasing equipment?

There are several advantages to leasing such as conservation of capital, tax savings, preservation of credit lines, flexibility, extended length of financing, and reduction in the risk of technological and physical obsolescence. A firm may be able to lease a particular aircraft rather than obtaining bank financing. The firm will not actually own the aircraft, but it will have exclusive use of it over a specified period. Such an arrangement usually has tax advantages. It lets the firm use funds that would have been tied up in the aircraft had the firm purchased it. It also affords the opportunity to make sure the aircraft meets the FBO's needs before it is purchased.

30. What is a conditional sales purchase?

A conditional sales purchase is a time payment plan in which a down payment is required and ownership of the property is retained by the seller until the buyer has made all the payments required by the contract.

31. How does venture capital differ from other equity finance sources?

Venture capital is high-risk capital offered with the principal objective of earning capital gains for the investor. While venture capitalists are usually prepared to wait longer than the average investor for a profitable return, they usually expect more than 15 percent return on their investment. Often, they expect to take an active part in determining the objectives of the business. Equity financing is money received by a company in exchange for some portion of ownership. It can be in the form of private equity, public equity, or real estate equity. Both private and public equity are generated through issuance of company stock.

32. Distinguish between short-term and long-term planning.

Short-term financial planning is generally concerned with profit planning or budgeting—tactical, in other words. Long-term financial planning is generally strategic, setting goals for sales growth and profitability over a minimum of three to five years.

33. Why is long-term planning so difficult for the small FBO?

Often, FBO managers understand their business but not the financial statements or the records, which they feel are for the benefit of the IRS or the bank. Such overburdened owners/managers can scarcely identify what will affect their businesses next week, let alone over the coming months and years. Success may be ensured only by focusing on all factors affecting a business's performance. Focusing on planning is essential to survival.

34. **What is the difference between EBITDA analysis and discounted cash flow (DCF) analysis in determining the value of an aviation business?**

An EBITDA analysis represents the conversion of one year's income into a value, while a DCF projects and evaluates an income stream over time. Both are appropriate means of valuation and use net income after the exclusion of certain non-cash flow items. EBITDA analysis is best suited for a stable operation that has experienced consistent revenue and expense trends historically, with similar trends expected over the next few years. DCF analysis is typically more appropriate in an unstable market, such as when an operator is experiencing significant growth trends or is facing new competitors whereby market share and margins are expected to change dramatically, or where a market is declining as the result of outside (or even internal) influences.

35. **Summarize the important factors in determining the value of an aviation business.**

The most important factor in determining the value of a current business is simply the level of profitability that is currently presented and that can reasonably be expected to continue over time. Profitability is impacted by several significant components, including historic operating statistics, type and strength of the revenue stream, control of material costs, and expenses associated with the operation of the business. Other significant factors that contribute to value are location (geographic area, size of airport, services offered); length of lease term and/or operating agreements; competition; and the conditions and terms of existing contracts (air carriers, cargo handling, and so forth).

Human Resources

1. **Describe the HR function.**

   Human resources are the most important resource for FBOs. Without a sufficiently qualified and capable workforce, the FBO would not be able to provide the necessary services to stay in business. Thus, the function of the human resources (HR) department is extremely important for an FBO. Generally, the HR department acts in a support role to specific departments within an organization.

2. **In what way does HR reduce the workload of other departments within the organization?**

   The HR department performs several functions. It assists in recruiting and selecting employees, training and promoting employees, arranging for salary and benefits, and coordinating separation from service. Generally, the HR department acts in a support role to specific departments within an organization (staff function). In this way, department directors and supervisors are able to maintain control of their employees and decide who specifically gets hired, promoted, or fired.

3. **What types of positions do FBOs typically recruit for?**

   FBO positions include accountants, avionics technicians, customer service representatives, dispatchers, line service personnel, maintenance technicians, managers, administrators, pilots, and sales personnel.

4. **Are there any shortages of skilled people to fill these various positions?**

   Prior to the COVID-19 pandemic in 2020–2022, the aviation industry was strong and there was a shortage of skilled labor. During COVID, this issue became more pronounced as the industry experienced a significant contraction due to stay-at-home orders and travel restrictions. However, once the pandemic eased in March 2022, the air travel demand rebounded quickly and the aviation industry was confronted with a great need for additional labor to support this renewed demand. Because aviation is a cyclical industry, there are different cycles of strong growth and potentially lack of skilled labor, as well as contraction and an overabundance of skilled labor.

5. **List the most common recruiting sources.**

   The most common recruiting sources are advertising through general online job platforms such as Indeed, Monster, Glassdoor, and LinkedIn; advertising through aviation-specific online job platforms such as Avjobs.com, AviaNation.com, and JSFirm,com; advertising in aviation trade publications like *Aviation Week;* advertising with aviation organizations such as AOPA and NBAA; advertising through posted announcements, window signs, and point-of-need methods; obtaining recommendations from colleagues, current employees, and others; recruiting through universities, colleges, and other academic venues; utilizing employment agencies or temporary agencies; and accepting applications from drop-in candidates.

6. **What is the purpose of interviewing?**
   The purpose of interviewing is to process job applicants, and it has two main goals: to elicit information to supplement the facts submitted on the application form, and to gain useful insights into the appearance, behavior, and personality of the prospective employee.

7. **What are the typical steps in a multi-step interview process?**
   The typical steps in a multi-step interview process include a first interview, which might occur over the phone or onsite with a single interviewer or a group of interviewers. The structure of the interviewing process depends on a number of factors, such as organizational resources, number of applicants, level of the position within the organizational structure, and geographic proximity of applicants to the organization. For a second interview, the applicant may be invited back to the FBO where the interviewer might focus on determining whether the individual truly desires an aviation career or simply seeks a paycheck. There may be a third interview with the FBO manager.

8. **What are some advantages of having well-trained employees?**
   The advantages of well-trained employees include better employee morale, increased sales, less waste, lower turnover rate, increased productivity, reduced operational costs, and faster employee development.

9. **Describe the steps to be taken in establishing a training program.**
   The steps in establishing a training program include making a needs assessment of the company on a departmental, section, and unit basis; setting the objectives to be accomplished through the training efforts; determining the curriculum; selecting the types of training that best serve the purposes of the company; selecting the training methods to be used; setting up a timetable and schedule for the program; selecting the instructor; and controlling costs.

10. **Why can employee turnover be such a problem?**
    Employee turnover is a reality for any small business. Some firms lose people at a faster rate than others, but whatever the turnover rate, it always hurts (financially as well as psychologically) to lose a good employee. There are initial costs involved in locating, interviewing, hiring, and training an employee to the point where he or she reaches full potential. There are also intermediate costs of doing without that person until a replacement is found, and still more expenses are incurred in acquiring the replacement.

11. **What are some methods of promoting employees?**
    When a company decides to fill a position by promoting from within, this is one role of HR that must be handled with tact. New responsibilities may be met by the immature employee with great difficulty. However, a mature employee possessing great leadership skills can propel a company successfully into the future. In any event, FBOs must endeavor to make promotion an attractive option, as they fill open positions and allow employees to seek higher levels of growth and opportunity within the company. For employees being developed for eventual promotion to management levels, there are other useful techniques, including job rotation, special project assignments, management games, sensitivity training, and training at local colleges or by trade associations.

12. **Describe the purpose of an exit interview.**

    Hard questions can be asked in an exit interview. Wise FBO managers will make sure that each employee is interviewed in an exit interview upon departing from the company. The purpose is to determine the reason that the employee is leaving: Is it because of poor supervisory practices by owners or middle managers, internal friction and personality clashes, or management's failure to provide incentives or an opportunity to move up the ladder? If so, the company is inadvertently losing good employees and then expending more resources in acquiring replacements. A review of the exit interview findings will be useful to management in taking corrective action to reduce the turnover rate. This step becomes more valuable as the company grows.

Present and Future Challenges

1. **What are some trends affecting the FBO industry?**

   Some trends affecting the FBO industry are an increase in the number of airport-operated FBOs, declining avgas consumption, investment in FBO facilities, FBO industry consolidation, competition, and addition of comprehensive business centers.

2. **What trend projected to affect the FBO industry should be of greatest concern to an FBO manager?**

   Competition is important for any FBO manager to look out for. The successful FBO must be the most customer focused and safest FBO around. In fact, the number one goal of an FBO manager should be to attract customers and based tenants from competing FBOs. One way to do this is to provide superior customer service.

3. **Explain business continuity.**

   Business continuity planning refers to the process whereby an entity considers the continued delivery of goods and services during a disruption to normal business processes, whether due to a cyberattack, flood, pandemic, etc. This requires the creation of systems of prevention (to prevent or minimize the likelihood of the disruption) and recovery (to return to normal operations after an event occurs). A business continuity plan should include cross-utilization and supplemental personnel, redundant systems, data backup and restoration, customer interaction and relationship management, supply chain disruption, and ransom payments for cyber attacks.

4. **How will UAS be a challenge to the FBO industry?**

   As uncrewed aircraft system (UAS) technology continues to advance, the initiative to fully integrate UAS, including passenger-carrying UAS, in the National Airspace System (NAS) continues in earnest. FBOs will need to consider the future of UAS, including UTM (unmanned aircraft system traffic management). UTM will bring eVTOL (electric vertical take-off and landing) UAS to airports, and FBOs should be prepared to accommodate these unmanned aircraft. This will include the development of charging infrastructure as well as consideration for passenger loading and unloading, maintenance, etc.

5. **Why are very light jets considered a challenge to FBOs?**

   Although the once-projected demand for very light jets (VLJs) didn't materialize as expected, FBOs must still accommodate (and even cater to) these aircraft. Although small jet aircraft are not new to the world of aviation, the VLJ is considered innovative in many ways. These VLJs will need to be serviced, maintained, and accommodated. FBOs will need to offer Jet A fuel services and have the facilities and amenities expected by the owner/operator of these aircraft. The FBO manager must focus not only on the aircraft but on the passengers and flight crew, as well. Maintaining these aircraft will require turbine-engine repair facilities, possible turbine-engine run-up areas, power carts, and possible aircraft deicing. These aircraft will also require tie-down areas, hangars, and security. Much of this is not new to FBOs; however, servicing an increasing number of jet aircraft in the form of VLJs may indeed have an impact on the way an FBO is operated, requiring the FBO manager and staff to focus on attracting and servicing these aircraft.

6. **Can fractional ownership benefit FBOs?**
   The growth in fractional ownership of aircraft, especially corporate jet aircraft, will have a disproportionate impact on the FBO business. Companies such as NetJets typically fly their aircraft significantly more than an equal number of airplanes operated by a single corporation. Although NetJets currently has a formal relationship with Signature Flight Support, there is not a Signature located at each airport that NetJets visits. Thus, NetJets searches for new FBOs to partner with, placing an emphasis on the following six criteria: safety, quality of service provided to owners and crewmembers, facilities and amenities, partnership development, maintenance capability, and price. NetJets is aware that poor FBO customer service is reflected on its operation. Fractional ownership can benefit FBOs if the FBO has excellent customer service and amenities to attract fractional ownership companies.

7. **How should FBOs meet the challenge of customer service?**
   Customer service is an extremely important aspect of operating a successful FBO in today's competitive GA environment. As such, customer service presents a challenge to FBOs. As FBOs throughout the nation begin focusing on customer service, a smile and a handshake will no longer be enough. The successful FBO must be the most customer focused and safest FBO around. In fact, the number one goal of an FBO manager should be to attract customers and based tenants from competing FBOs. One way to do this is to provide superior customer service. This requires empowering employees to satisfy customers regardless of the situation; staying aware of any customer service initiatives adopted by the competition; and training, educating, and instilling the importance of customer service to all employees.

8. **Why should FBOs be concerned with fuel prices?**
   The impact of rising fuel prices has been greater on GA. Although business aviation remains strong, those flying for recreation may not be flying as much or may be looking at more fuel-efficient aircraft when fuel costs are so high. FBOs have to be much more cognizant today of the prices charged for fuel. Competition among FBOs based on fuel prices alone has greatly intensified in the recent past. In fact, many GA pilots will travel outside their local area simply to purchase fuel at an FBO offering lower fuel prices. FBOs should be aware of this fact, while also offering other high-quality services at a fair price. This will overall help to build the customer base and create long-lasting relationships with the customers.

9. **How can an FBO meet the sustainability challenge?**
   As the aviation industry continues to minimize its impact on the environment, operators of aircraft and ground support equipment have explored sustainability as a standard of operation. Specifically, for FBOs, rechargeable battery-powered tugs are commonplace. Electric propulsion is also commonplace for golf carts. Although battery technology continues to evolve, the benefits of adopting this technology have apparently exceeded direct and indirect costs for many FBOs. Sustainability developments will require FBOs

to consider how to provide alternative fuels for aircraft in the future. This may require separate fuel storage areas as well as the infrastructure needed to deliver these alternative fuels to aircraft. FBO terminal buildings will need to be more environmentally friendly moving forward. Low-flow toilet fixtures, water-wise landscaping, use of reclaimed water for landscape irrigation, LED lighting, and strategic use of natural lighting are examples of how new terminal buildings are meeting more stringent environmental standards.

10. **How can FBOs meet the security challenge?**

    Security, while always a consideration, became the number one priority after the terrorist attacks of September 11, 2001. While GA airports had always had some form of security in place, an active effort at enhancing security at GA airports (as well as commercial-service airports) began after September 11. To prevent continued concern about GA security, FBOs will have to remain vigilant about maintaining and increasing security of personnel, facilities, and equipment. This will remain a challenge because FBOs will always be confronted with the possibility of terrorists using GA to launch attacks on U.S. soil. FBO managers must remain vigilant and current both on new technology that may be used to compromise FBO security as well as to enhance FBO security.

11. **Why is consolidation considered a challenge to FBOs?**

    Consolidation was mentioned as a trend affecting the FBO industry. This trend also presents challenges. The major challenge centers around the consideration of whether to remain independent or become part of a chain. Arguably, consolidation in the FBO industry will continue. The larger FBO chains will continually seek out successfully independent FBOs to acquire. These larger chains experience great economies of scale and may convince many independent owners to become part of a larger organization. At the same time, however, independent FBOs will have to seriously consider the pros and cons of remaining independent versus becoming part of a chain.

12. **How can FBOs meet the revenue diversification challenge?**

    To remain successful in the future, FBOs are challenged to seek additional, diverse sources of revenue. This revenue diversification can create a more financially stable FBO. An FBO may offer products such as headsets, sectional charts and approach plates, aviation books, and other items useful for flight students and transient pilots. Also, an FBO that does not currently offer maintenance or aircraft sales may consider offering these services to diversify revenues. A comprehensive FBO with numerous products and services is better positioned to weather business downturns than one relying on a single source of revenue.

13. **Why should FBOs be concerned about labor issues?**

    Properly staffing an FBO with qualified and knowledgeable employees will continue to remain a challenge. For instance, an FBO may hire a new flight instructor only to see that flight instructor leave after acquiring the minimum number of flight hours needed to be hired by a popular regional air carrier. Pilots, maintenance technicians, and other skilled aviation personnel are in high demand, and experts predict labor shortages will continue as more people resume flying and as retirements continue. This will force FBO managers to consider various measures necessary to not only attract but retain qualified employees.