Aircraft Characteristics Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

Table of Contents

Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- **Practice answering questions under realistic conditions,**
- **Improve accuracy and speed,**
- **Review explanations to strengthen weak areas, and**
- **Approach the exam with greater confidence.**

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

1. Which heavy four-engine jet has TAS 430 and rate of climb 4000-4500?

A. KC-135 Stratotanker

B. Boeing 747

C. B-52 Stratofortress

D. Piper Comanche

2. The Piper Cherokee corresponds to which model number?

A. PA24

B. C210

C. PA32

D. BE36

3. Which model is the twin-engine Piper with a TAS of 160 knots?

A. Piper Malibu

B. Piper Cherokee

C. Piper Seneca

D. Cirrus SR-22

4. Which nickname corresponds to B350?

A. Lockheed Hercules

B. Super King Air

C. Saab 340

D. Eclipse 500

5. Which statement best describes engine power and propeller efficiency with altitude for piston engines?

A. Engine power and propeller efficiency increase with altitude; TAS decreases for a given IAS.

B. Engine power and propeller efficiency decrease with altitude; TAS increases with altitude for a given IAS.

C. No relation between altitude and engine efficiency.

D. Both increase with altitude.

6. Which statement about static stability vs dynamic stability in pitch is correct?

A. Static stability is the initial tendency to return to trim after a disturbance; dynamic stability describes how the motion decays over time.

B. Static stability describes how motion decays over time; dynamic stability is the initial response.

C. Static stability refers to yaw behavior; dynamic stability refers to roll behavior.

D. Static stability is a function of altitude; dynamic stability is a function of airspeed.

7. What is the significance of Vle and Vlo in relation to landing gear?

A. Vle is maximum speed with gear extended; Vlo is maximum speed for extending gear safely; both protect against gear failure.

B. Vle is maximum speed for retracting gear.

C. Vlo is maximum speed for extending gear safely; Vle has no relation to gear safety.

D. Vle and Vlo are speeds unrelated to gear safety.

8. Which small aircraft is the Piper Navajo?

A. Cessna Caravan C208

B. Cessna Conquest C441

C. De Havilland-8 DH8

D. Piper Navajo PA31

9. Which eight-engine jet has TAS 460+ and rate of climb 3000-3500?

A. B-52 Stratofortress

B. Boeing 747

C. KC-135 Stratotanker

D. Cirrus SR22

10. Which factors influence takeoff distance beyond weight?

A. Runway surface and wind.

B. Altitude, temperature, and wind.

C. Aircraft configuration and engine power.

D. Aircraft configuration, flap setting, wing design, engine power, runway surface, altitude, temperature, wind.

Answers

1. A
2. C
3. C
4. B
5. B
6. A
7. B
8. D
9. A
10. D

Explanations

1. Which heavy four-engine jet has TAS 430 and rate of climb 4000-4500?

A. KC-135 Stratotanker

B. Boeing 747

C. B-52 Stratofortress

D. Piper Comanche

This question tests how performance numbers point to a specific aircraft type. A heavy four-engine jet with a cruise speed around 430 knots and a climb rate of about 4,000 to 4,500 feet per minute fits the KC-135 Stratotanker well. The KC-135 is a mid-century four-engine jet designed for high-speed, steady flight and strong climb performance when not at maximum weight, which matches those numbers. The Boeing 747, while also four-engine, typically cruises faster and its climb profile isn't defined by such a high initial rate of climb at typical weights. The B-52 has eight engines, not four, so it doesn't fit the four-engine criterion. The Piper Comanche is a light single-engine airplane, far from a heavy four-engine jet. So the performance figures align best with the KC-135 Stratotanker.

2. The Piper Cherokee corresponds to which model number?

A. PA24

B. C210

C. PA32

D. BE36

Piper's Cherokee name shows up in multiple model designations, with Cherokee used for the PA-28 family and the larger, six-seat PA-32 variant (often called Cherokee Six). In the options given, the only model that carries the Cherokee designation within Piper's lineup is PA-32, known as the Cherokee Six. The other options are not Piper Cherokees: PA-24 is Piper's Comanche line, C210 is a Cessna, and BE36 is a Beechcraft Bonanza.

3. Which model is the twin-engine Piper with a TAS of 160 knots?

A. Piper Malibu

B. Piper Cherokee

C. Piper Seneca

D. Cirrus SR-22

The key idea is recognizing which aircraft in the list is a twin-engine Piper and then recalling its typical cruise speed. Among the Piper models shown, the Seneca is the light twin; the Malibu is a single-engine high-performance aircraft, the Cherokee family consists of single-engine planes, and the Cirrus SR-22 is also single-engine. The Seneca commonly cruises around 150–170 knots true airspeed, so a TAS of about 160 knots fits its typical performance well. Therefore, the twin-engine Piper with a TAS of 160 knots is the Piper Seneca.

4. Which nickname corresponds to B350?

A. Lockheed Hercules

B. Super King Air

C. Saab 340

D. Eclipse 500

Think about how the King Air family is identified. The Beechcraft King Air 350 is the enhanced version within that lineup, designed as an upgrade to the 300 series with more power, a larger cabin, and improved performance. In common usage, this model is called the Super King Air to signal its upgraded status over the earlier King Airs. The other aircraft listed are completely different: a Lockheed Hercules is the C-130 military transport, the Saab 340 is a smaller turboprop commuter, and the Eclipse 500 is a light jet. So the nickname that fits the B350 is Super King Air.

5. Which statement best describes engine power and propeller efficiency with altitude for piston engines?

A. Engine power and propeller efficiency increase with altitude; TAS decreases for a given IAS.

B. Engine power and propeller efficiency decrease with altitude; TAS increases with altitude for a given IAS.

C. No relation between altitude and engine efficiency.

D. Both increase with altitude.

As you climb, air becomes thinner, so the engine can burn less fuel per cycle and produce less power. The piston engine relies on the mass of air it ingests; with lower density, the power output drops and cooling is less effective, further reducing usable horsepower. The propeller's ability to convert that shaft power into thrust also falls in thinner air because the blade experiences less air pressure and lift, so thrust drops for a given engine power. At the same time, when you keep an indicated airspeed constant, the true airspeed must rise with altitude due to the lower air density (dynamic pressure is the same, but density is lower). That combination—lower engine power and lower propeller thrust for a given power, with TAS increasing for a fixed IAS—leads to the observation that engine power and propeller efficiency decrease with altitude, while TAS increases for a given IAS.

6. Which statement about static stability vs dynamic stability in pitch is correct?

A. Static stability is the initial tendency to return to trim after a disturbance; dynamic stability describes how the motion decays over time.

B. Static stability describes how motion decays over time; dynamic stability is the initial response.

C. Static stability refers to yaw behavior; dynamic stability refers to roll behavior.

D. Static stability is a function of altitude; dynamic stability is a function of airspeed.

In pitch, static stability is about the immediate tendency of the aircraft after a disturbance. If you nudge the nose up or down from the trimmed attitude, a statically stable airplane has a restoring moment that acts right away to push the nose back toward trim. Dynamic stability deals with what happens after that initial response: how the pitch motion evolves over time. It describes whether the oscillations die out (are damped), persist, or grow. So the correct idea is that static stability concerns the initial tendency to return to trim, while dynamic stability concerns the subsequent motion and how it decays or evolves with time. The other notions mix up these concepts or misplace them on different axes or flight parameters (such as yaw/roll or altitude/airspeed), which isn't what defines static versus dynamic stability in pitch.

7. What is the significance of Vle and Vlo in relation to landing gear?

A. Vle is maximum speed with gear extended; Vlo is maximum speed for extending gear safely; both protect against gear failure.

B. Vle is maximum speed for retracting gear.

C. Vlo is maximum speed for extending gear safely; Vle has no relation to gear safety.

D. Vle and Vlo are speeds unrelated to gear safety.

Vle and Vlo define safe operating limits for the landing gear. Vlo is the maximum speed at which you may operate the landing gear—extend or retract—without risking gear damage. Vle is the maximum speed you can fly with the landing gear extended. Because gear down creates extra drag and places different loads on the structure, you must not operate the gear above Vlo, and once the gear is down you should not exceed Vle. In practice, Vlo is lower than Vle. For example, a light aircraft might have Vlo around 140 knots and Vle around 156 knots. That means you should extend or retract the gear only below or at Vlo, and you can fly with the gear down up to Vle. The choice that aligns with these definitions indicates Vle as the speed with the gear extended and Vlo as the gear-operating speed, both safeguarding the gear from failure.

8. Which small aircraft is the Piper Navajo?

A. Cessna Caravan C208

B. Cessna Conquest C441

C. De Havilland-8 DH8

D. Piper Navajo PA31

The main idea is identifying which aircraft is actually the Piper Navajo. The Piper Navajo is the PA-31, a small twin-engine piston aircraft produced by Piper Aircraft. It's distinct from the others because the Caravan is a single-engine Cessna high-wing, the Conquest is a larger twin from Cessna, and the Dash 8 (DH-8) is a turboprop airliner from De Havilland Canada. So the Piper PA-31 Navajo is the correct match for the Piper Navajo.

9. Which eight-engine jet has TAS 460+ and rate of climb 3000-3500?

A. B-52 Stratofortress

B. Boeing 747

C. KC-135 Stratotanker

D. Cirrus SR22

Eight engines define this aircraft. Among the options, only the B-52 Stratofortress uses eight engines, arranged in four twin-engine pods under the wings. That engine count matches the prompt exactly. The other choices have fewer engines or are not jet aircraft (the Boeing 747 has four engines, the KC-135 has four, and the Cirrus SR22 is a small, single-engine light aircraft). The performance figures given—true airspeed around 460 knots or more and a climb rate around 3000–3500 feet per minute—are consistent with a large, heavy bomber like the B-52 under typical operating conditions. Therefore, the B-52 Stratofortress is the best match.

10. Which factors influence takeoff distance beyond weight?

A. Runway surface and wind.

B. Altitude, temperature, and wind.

C. Aircraft configuration and engine power.

D. Aircraft configuration, flap setting, wing design, engine power, runway surface, altitude, temperature, wind.

Takeoff distance depends on how quickly the airplane can reach the speed at which lift equals weight, which is shaped by lift, thrust, and acceleration as you roll down the runway. The factors that matter beyond weight fall into three areas: aircraft design and configuration, power, and the environment. Aircraft configuration and flap setting change the lift your wings produce at a given speed. Extending flaps increases lift at lower speeds, allowing you to reach liftoff more quickly and shortening the takeoff run. Wing design, including overall airfoil shape, high-lift devices, and wing geometry, influences the maximum lift coefficient and stall speed, so a design optimized for higher lift reduces the distance needed to take off. Engine power affects the thrust available to accelerate the airplane. More thrust means you reach the required liftoff speed faster, decreasing the ground run. Runway surface conditions impact rolling resistance. A smooth, dry surface offers less friction than a wet, icy, or contaminated surface, so the airplane accelerates more efficiently and needs a shorter distance to takeoff. Environmental factors also matter. Altitude and temperature lower air density, reducing both lift and engine thrust, which lengthens the takeoff distance. Wind plays a role as well: a headwind reduces the forward speed you must achieve on the runway to liftoff, shortening the ground roll, while a tailwind has the opposite effect. All of these together create the overall takeoff distance beyond weight, making the most complete option the best description of influences.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

https://aircraftcharacteristics.examzify.com

We wish you the very best on your exam journey. You've got this!