COMMERCIAL PILOT AIRPLANE (CAX) CALCULATIONS PRACTICE EXAM (SAMPLE)

STUDY GUIDE

SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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 statement is true regarding the airplane's movement if the present heading is maintained?

A. Cross the 180 radial at a 45° angle outbound

B. Intercept the 360 radial at a 45° angle inbound

C. Intercept the 225 radial at a 45° angle

D. Cross the 270 radial at a 90° angle outbound

2. At -17 °C temperature and 2,300 RPM at 6,000 ft, what is the maximum flight time available?

A. 4 hours 30 minutes

B. 5 hours 20 minutes

C. 4 hours 50 minutes

D. 4 hours 20 minutes

3. How much AvGas will be burned in 4 hours at 6,000 ft and +3 °C with specified power settings?

A. 56 gallons

B. 59 gallons

C. 62 gallons

D. 70 gallons

4. At the airspeed represented by point A in steady flight, the airplane will have what ratio?

A. Minimum L/D ratio

B. Maximum L/D ratio

C. Develop its maximum coefficient of lift

D. Optimal power-to-weight ratio

5. If the aircraft's weight moment is calculated at 102.04 in-lb/1,000, does the empty weight inclusion of oil affect the total weight measurement?

A. Yes, it increases the empty weight

B. No, it does not affect the measurement

C. Yes, it decreases the empty weight

D. It has a negligible effect

6. What is the approximate base of the cumulus clouds if the temperature at 2,000 feet MSL is 10 °C and the dewpoint is 1 °C?

A. 3,000 feet MSL

B. 6,000 feet MSL

C. 4,000 feet MSL

D. 5,000 feet MSL

7. What is the intended effect of adjusting baggage towards the forward compartment?

A. To increase speed

B. To lower fuel consumption

C. To balance the aircraft

D. To increase altitude

8. In illustration 4, which will occur if the airplane's heading is maintained?

A. Intercept the radial at a 90° angle

B. Cross the 180 radial at a 75° angle

C. Intercept the radial at a 30° angle

D. Cross the 240 radial at a 55° angle

9. If the heading of the aircraft is adjusted to the heading marker, what will happen according to illustration 2?

A. Intercept the selected radial before station passage

B. Intercept the selected radial after station passage

C. Not join the selected radial at any time

D. Join the selected radial regardless of position

10. For a climb to 8,000 feet, how long would it take for an aircraft weighing 3,400 lb with a temperature of 14 °C?

A. 5.5 minutes

B. 7.5 minutes

C. 10 minutes

D. 12 minutes

Answers

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

Explanations

1. Which statement is true regarding the airplane's movement if the present heading is maintained?

A. Cross the 180 radial at a 45° angle outbound

B. Intercept the 360 radial at a 45° angle inbound

C. Intercept the 225 radial at a 45° angle

D. Cross the 270 radial at a 90° angle outbound

When discussing the airplane's movement with respect to its current heading and the relationship to radials, option A is relevant as it pertains to the navigation concepts often used in flight planning and operations. If the airplane's present heading is maintained, and it is crossing the 180 radial at a 45° angle outbound, this indicates a specific relationship between the aircraft's path and the radial. A 45° angle outbound means that the airplane is traveling away from the station and is effectively leaving the 180 radial, which is oriented due south. This scenario typically occurs in navigation practices where the aircraft is transitioning from one radial to another, emphasizing the concept of intercepting navigation aids while maintaining a heading. This understanding of how radials and airplane headings interact is essential for real-world navigation and ensures that pilots can effectively plot their courses while remaining aware of the aircraft's position relative to navigational aids.

2. At -17 °C temperature and 2,300 RPM at 6,000 ft, what is the maximum flight time available?

A. 4 hours 30 minutes

B. 5 hours 20 minutes

C. 4 hours 50 minutes

D. 4 hours 20 minutes

To determine the maximum flight time available at a specific temperature, RPM, and altitude, it's crucial to reference the performance charts or tables relevant to the specific aircraft in question. In this scenario, at -17 °C temperature, 2,300 RPM, and an altitude of 6,000 ft, we look at the fuel consumption rates and efficiency at these operating conditions. At the given temperature and RPM, fuel efficiency tends to be optimized, which directly affects the total maximum flight time achievable before fuel depletion. Typically, lower temperatures can enhance engine performance, resulting in a more efficient fuel burn rate which lengthens potential flight duration. In this case, the response indicates that the maximum flight time available is 4 hours and 30 minutes. This timeframe suggests that under the operating conditions provided, the aircraft's fuel capacity and efficiency were calculated to support flight spanning that specific duration. Flight time is usually assessed based on fuel flow rates which can be derived from the engine's power settings (RPM) and atmospheric conditions, confirming how long the aircraft can maintain flight before needing to refuel or land. The other options suggest longer durations, which may not align with the calculated performance metrics for the parameters specified. Factors such as changed fuel burn rates at different RPM

3. How much AvGas will be burned in 4 hours at 6,000 ft and +3 °C with specified power settings?

A. 56 gallons

B. 59 gallons

C. 62 gallons

D. 70 gallons

To determine the amount of AvGas that will be burned in 4 hours at 6,000 ft and +3 °C, it's crucial to understand the relationship between power settings, fuel consumption rates, and altitude. At 6,000 feet altitude, the aircraft engine typically operates under specific power settings which influence fuel burn. Generally, fuel consumption can be estimated based on the power output as a function of air density, temperature, and efficiency of the engine operating characteristics. If we consider a reference fuel burn rate at a certain power setting, it can be expressed in gallons per hour. For example, if the engine burns around 14 gallons per hour (a common estimate for many small aircraft under similar conditions), we can calculate the total fuel burned over 4 hours: 14 gallons/hour × 4 hours = 56 gallons. This calculation provides a clear basis for understanding that the fuel consumed aligns with the first choice, reinforcing its correctness. Therefore, understanding this relationship between altitude, power settings, and fuel burn allows for accurate predictions of fuel consumption during a flight, affirming that the answer of 56 gallons correctly fits the scenario described.

4. At the airspeed represented by point A in steady flight, the airplane will have what ratio?

A. Minimum L/D ratio

B. Maximum L/D ratio

C. Develop its maximum coefficient of lift

D. Optimal power-to-weight ratio

In steady flight, the airplane's performance can be analyzed through various aerodynamic ratios. When considering point A, which typically represents a specific airspeed on the lift-to-drag (L/D) curve, it correlates to the maximum lift-to-drag ratio. This ratio is crucial in understanding aerodynamic efficiency. The maximum L/D ratio indicates the speed at which the airplane achieves the best lift relative to drag, meaning it can maintain level flight with the least amount of power input for a given amount of lift produced. This is essential for flight efficiency and is often the target speed during operations such as gliding or optimizing fuel consumption during cruise. In contrast, other options represent different performance aspects. The minimum L/D ratio occurs at a different airspeed, where drag is increased relative to lift. Developing the maximum coefficient of lift pertains to different flight conditions, usually associated with specific angles of attack rather than airspeed alone. The optimal power-to-weight ratio does not directly relate to the lift-to-drag ratio but rather to how effectively the aircraft can climb or accelerate in conjunction with its weight. Thus, at the airspeed represented by point A in steady flight, the airplane will indeed have the maximum L/D ratio, making it the correct choice for understanding the

5. If the aircraft's weight moment is calculated at 102.04 in-lb/1,000, does the empty weight inclusion of oil affect the total weight measurement?

A. Yes, it increases the empty weight

B. No, it does not affect the measurement

C. Yes, it decreases the empty weight

D. It has a negligible effect

When considering the impact of oil on an aircraft's empty weight, it's essential to understand what constitutes the "empty weight" of an aircraft. The empty weight generally includes the airframe, engines, unusable fuel, and all operating fluids, including oil. If oil is added to the measurement of the aircraft's weight, it indeed increases the total empty weight. In the scenario presented, calculating the weight moment at 102.04 in-lb/1,000 indicates that the empty weight has been factored into this measurement. Therefore, any inclusion of oil would contribute to the total empty weight, meaning the presence of oil would increase it. Since empty weight is a crucial component in weight and balance calculations, the addition of oil is necessary to maintain an accurate understanding of the aircraft's weight metrics, and thus contributes significantly to the overall weight calculation. Maintaining accurate weight figures is essential for compliance with safety limits and flight performance.

6. What is the approximate base of the cumulus clouds if the temperature at 2,000 feet MSL is 10 °C and the dewpoint is 1 °C?

A. 3,000 feet MSL

B. 6,000 feet MSL

C. 4,000 feet MSL

D. 5,000 feet MSL

To determine the approximate base of cumulus clouds, one can use the temperature and dew point data provided. The base of cumulus clouds can be calculated using the formula that estimates the height above the ground where the temperature reaches the dew point temperature, and therefore where condensation occurs. In this case, the temperature at 2,000 feet MSL is 10 °C and the dew point is 1 °C. The difference between the temperature and the dew point is important — in this scenario, it is 10 °C - 1 °C = 9 °C. The rule of thumb is that for every 1 °C difference in temperature and dew point, the cloud base can be estimated to be approximately 1,000 feet above the elevation where the temperature is recorded. Starting from the 2,000 feet reading, if there is a 9 °C difference, we multiply this difference by approximately 1,000 feet. This gives us an approximate increase of about 9,000 feet from the base temperature of 2,000 feet MSL. However, since this approach assumes a linear relationship and there's a common practice that establishes the base of cumulus clouds at around 1,000 feet per 3

7. What is the intended effect of adjusting baggage towards the forward compartment?

A. To increase speed

B. To lower fuel consumption

C. To balance the aircraft

D. To increase altitude

Adjusting baggage towards the forward compartment is done primarily to balance the aircraft. Proper weight distribution is essential for maintaining the aircraft's center of gravity within safe limits, which directly affects stability and control during flight. When baggage is shifted forward, it helps ensure that the center of gravity is aligned correctly, allowing for more effective handling characteristics and improved performance overall. The balance of the aircraft is crucial for safe operations, as being out of balance can lead to difficulties in controlling the aircraft, particularly during critical phases of flight such as takeoff and landing. This measure helps pilots maintain the desired flight path and enhances safety. The other options, while they might have implications in specific scenarios, are not the primary reason for adjusting baggage to the forward compartment. Increasing speed, lowering fuel consumption, or increasing altitude are influenced by a range of other factors, including aerodynamics, power settings, and overall aircraft performance, rather than just weight distribution.

8. In illustration 4, which will occur if the airplane's heading is maintained?

A. Intercept the radial at a 90° angle

B. Cross the 180 radial at a 75° angle

C. Intercept the radial at a 30° angle

D. Cross the 240 radial at a 55° angle

The correct choice is based on the principles of navigation and the relationship between an aircraft's heading, its course, and the radials associated with navigational aids such as VORs (VHF Omnidirectional Range stations). If the airplane's heading is maintained, it implies that the aircraft will be following a constant directional path in relation to ground navigation references. As it approaches a specific radial, the angle at which it crosses that radial is significant because it provides insight into the aircraft's positional relationship to that radial. In this scenario, if the aircraft crosses the 180 radial at a 75° angle, it suggests that the aircraft is coming in from a direction that is slightly offset from the radial itself. This angle indicates a specific navigational understanding where the aircraft maintains its heading and crosses the radial at the described angle. By understanding how radials work and how they relate to the aircraft's course and heading, one can predict the resulting intercept angles with precision. This understanding is crucial in practical flight navigation, ensuring that pilots can adjust their headings as necessary to accurately intercept the desired radial. The context here heavily relies on the application of navigation principles, demonstrating the significance of maintaining a steady heading while approaching a specific radial.

9. If the heading of the aircraft is adjusted to the heading marker, what will happen according to illustration 2?

A. Intercept the selected radial before station passage

B. Intercept the selected radial after station passage

C. Not join the selected radial at any time

D. Join the selected radial regardless of position

When the heading of the aircraft is adjusted to the heading marker, the indication suggests that the aircraft is moving toward the radial indicated by the navigational aid, but the actual trajectory of the aircraft may not align with this radial effectively. In the context of navigation, particularly when utilizing navigational aids like VORs, intercepting a radial depends on the position of the aircraft relative to the station and the selected radial. If a pilot is on a heading that does not align with any of the radials available or is at a position where it cannot physically join the radial, adjusting the heading to reflect the heading marker will not lead to an interception of that radial. This means that, despite aligning the heading of the aircraft with the marker, external factors such as position and flight path will determine whether an interception occurs. If the aircraft's position is such that it is not able to join the selected radial at any time, the adjustment to the heading marker won't change this outcome. Therefore, it is accurate to conclude that the aircraft will not join the selected radial at any point, highlighting the importance of understanding both the heading indicators and the aircraft's geographical position relative to the navigation aides.

10. For a climb to 8,000 feet, how long would it take for an aircraft weighing 3,400 lb with a temperature of 14 °C?

A. 5.5 minutes

B. 7.5 minutes

C. 10 minutes

D. 12 minutes

To determine the time it would take for an aircraft to climb to 8,000 feet, we can use the general rule of thumb for climb performance, which varies based on aircraft weight, atmospheric conditions, and other factors. For a light aircraft, a common rate of climb can be estimated, which often ranges from 500 to 1,000 feet per minute under normal conditions. At standard temperature of 15 °C (which is close to the provided temperature of 14 °C), we can estimate a climb rate based on the given aircraft weight of 3,400 lbs. Typically, this weight would correspond to a climb rate around 700 to 800 feet per minute. If we take an approximate rate of climb of 1,000 feet per minute under optimal conditions as an upper boundary, we can calculate the time to reach 8,000 feet as follows: Time (in minutes) = Altitude to climb (in feet) / Rate of climb (in feet per minute) Using the highest practical rate of climb in this scenario: 8,000 feet / 1,000 feet per minute = 8 minutes. This is an upper estimate. A more realistic average rate of climb, around 1,000 feet

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:

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