



Teach a Private Pilot Lesson



Session Time: Eight, 50-minute session(s)

DESIRED RESULTS

ESSENTIAL UNDERSTANDINGS

Learning by teaching is an effective way for students to grow in their understanding of Private Pilot Knowledge Test topics.

ESSENTIAL QUESTIONS

What are the most important elements of the Pilot’s Handbook of Aeronautical Knowledge (PHAK) that will appear on the FAA Private Pilot Knowledge Test, and how can these best be taught in an informative and engaging way?

LEARNING GOALS

Students Will Know

- Topics that will appear on the FAA Private Pilot Knowledge Test.
- How to work in teams to research and prepare presentations aimed at teaching an audience of peers about aviation topics in an engaging manner.

Students Will Be Able To

- *Identify* key points within a broad topic. [DOK-L1]
- *Summarize* research about an assigned topic in preparation for lesson development. [DOK-L2]
- *Construct* lessons about an assigned topic that aim to teach classmates about the topic in a creative manner with a logical flow. [DOK-L3]

ASSESSMENT EVIDENCE

Warm-up

Students will take a mock quiz to assess their present knowledge of material that is likely to appear on the FAA Private Pilot Knowledge Test.

Formative Assessment

There is no formative assessment for this lesson.

Summative Assessment

Students will teach their lesson about an assigned topic to help their classmates review what they have learned in this course and prepare for the FAA Private Pilot Knowledge Test.

LESSON PREPARATION

MATERIALS/RESOURCES

- [Teach a Private Pilot Lesson Presentation](#)
- [Teach a Private Pilot Lesson Student Activity](#)
- [Teach a Private Pilot Lesson Teacher Notes](#)
- [Teach a Private Pilot Lesson Teaching Aid](#)
- Project Packet
 - Teach a Private Pilot Lesson Instructions
 - [1 - Aerodynamics and Aircraft](#)
 - [2 - Airspace, Flight Planning, and Navigation](#)
 - [3 - Airports and Operations](#)
 - [4 - Weather](#)
 - [5 - Aircraft Performance](#)
 - [Teach a Private Pilot Lesson Project Information Sheet \(Day 1\)](#)
 - [Teach a Private Pilot Lesson Daily Goal Sheet \(Day 2\)](#)
 - [Teach a Private Pilot Lesson Daily Goal Sheet \(Day 2a optional\)](#)
 - [Teach a Private Pilot Lesson Daily Goal Sheet \(Day 2b optional\)](#)
 - [Teach a Private Pilot Lesson Daily Goal Sheet \(Day 3\)](#)
 - [Teach a Private Pilot Lesson Rubric](#)

LESSON SUMMARY

Lesson 1: Teach a Private Pilot Lesson

The lesson will begin with a mock quiz that assesses students’ present knowledge of material that is likely to appear on the FAA Private Pilot Knowledge Test.

During the next part of the lesson, students will briefly review strategies for preparing for the Private Pilot Knowledge Test. Students will then be divided into small groups, and each group will be assigned a topic that test-takers must understand to pass the Private Pilot Knowledge Test. Groups will have three sessions to prepare to teach a lesson about their assigned topic to their classmates. They will also create a study guide and a quiz highlighting the essential information. The option exists to include two additional days, if needed.

In the lesson’s remaining five sessions, each group will have one session to teach its lesson to the class, distribute its study guide, and give its quiz. Finally, students will compile all the study guides they receive into a single resource to help them prepare for the Private Pilot Knowledge Test.

BACKGROUND

This unit guides students to review what they have learned throughout the course, in preparation to take the FAA Private Pilot Knowledge Test. (The FAA’s official name for the test that students are preparing to take is the “Private Pilot Knowledge Test—Airplane,” to distinguish it from other tests that can also be taken at the Private Pilot level: for example, there is a Private Pilot Knowledge Test for helicopter pilots.) While people as young as 15 years of age may take the test, it is important to remember that FAA Part 61 requires people to be 17 years of age before they can take the Private Pilot Practical Test (i.e., the “check ride”) to obtain their license—and a completed knowledge test is valid for only two years. If a student is unable to complete their training and pass the within two years of taking the written test, they would need to retake the written test before they could take the check ride. As 11th graders, nearly all students taking this course should meet the age requirement to take the written test.

It is also important to note that the FAA examiner who performs the applicant’s check ride will conduct an oral examination as well. Many of the topics covered during the oral will be the same as those covered in these lessons and on the Private Pilot Knowledge Test. The examiner is also required to review and cover any area from the Private Pilot Knowledge Test in which the applicant missed questions. There are no letter grades for the written knowledge test; anything above 70 percent correct is passing. However, a higher score will likely reflect a greater mastery of the material, as well as demonstrate the applicant’s self-discipline and motivation to the examiner. It will also mean there is less material for the examiner to focus on during the oral portion of the check ride.

Once students have completed their flight training and passed the FAA Private Pilot Practical Test, they will be certificated private pilots, able to fly during VFR conditions, day or night, and carry friends and family as passengers during recreational flights. In most cases, they’ll be qualified to fly most single-engine, land-based aircraft. Further, if they so choose, they will be well-prepared to continue their training to improve their skills or even become a professional pilot. The first important step in that journey is taking the Private Pilot Knowledge Test.

MISCONCEPTIONS

Students—particularly those who have been in AOPA’s High School STEM Curriculum since 9th or 10th grade—may think that, because they have learned all of the concepts that will be covered on the FAA’s Private Pilot Knowledge Test, outside study for the test will not be necessary. It is important to emphasize that the test is challenging, and that in order to do well on it, students should spend time studying on their own. It is only through self-study—in conjunction with AOPA’s curriculum—that students can truly maximize their potential for success on test day.

Students may think that after they pass the Private Pilot Knowledge Test, they can, for all practical purposes, forget the information. They may also think that the test covers all possible knowledge areas required to get a private pilot certificate. Neither assumption is correct.

DIFFERENTIATION

The activity in this lesson is highly differentiated, by encouraging heterogeneous groups, each member of a group will be able to contribute to a successful outcome. Providing graphic organizers, instructional practices, and presentation ideas will prove helpful to any group.

LEARNING PLAN

ENGAGE

Teacher Materials: [Teach a Private Pilot Lesson Presentation](#), [Teach a Private Pilot Lesson Teacher Notes](#)
Student Material: [Teach a Private Pilot Lesson Student Activity](#)

Session 1

Slides 1-3: Introduce the topic and learning objectives of the lesson.

Slide 4: Conduct the Warm-Up.

Warm-Up

Place students into pairs and distribute **Teach a Private Pilot Lesson Student Activity**. This mock quiz covers a broad range of material that might be found on the FAA Private Pilot Knowledge Test—including questions that focus on material covered in previous semesters and grades. Each pair should work together to answer the questions. Once all pairs have finished, review the correct answers as a class.

Correct answers are found in **Teach a Private Pilot Lesson Teacher Notes**.

EXPLORE

Teacher Material: [Teach a Private Pilot Lesson Presentation](#)

Slide 5: Remind students that the FAA Private Pilot Knowledge Test includes questions that assess material primarily found in the Grade 10 and Grade 11 AOPA curriculum. Some Grade 9 topics may be covered as well; however, topics such as the history of aviation, space flight, and engineering practices are not assessed by the FAA.



Teaching Tips

Some schools do not refer to the AOPA curriculum courses as “Grade 10” and “Grade 11.” This unit will review material from this semester as well as the previous three semesters of the AOPA curriculum: Introduction to Flight (first semester of Grade 10), Aircraft Systems and Performance (second semester of Grade 10), and The Flying Environment (first semester of Grade 11).

This unit will give students the opportunity to review previously-learned material and refresh their memories about topics covered during Grade 10 and the first semester of Grade 11. Emphasize, however, that if students want to score well on the exam, they will need to study outside of class.

Inform students that in addition to reviewing their AOPA course materials, they can find numerous study guides available to purchase from commercial providers, including Aviation Supplies & Academics (ASA), Gleim Aviation, Jeppesen, and King Schools to name a few. Also, there are numerous online and video courses offered through a variety of commercial sources. Students wishing not to spend money can find videos on exam topics to watch on YouTube; however, many comprehensive study programs, even on YouTube, require some form of payment.



Teaching Tips

The FAA provides some practice questions for the Private Pilot Knowledge Test. These can be accessed here:

- <https://faa.psiexams.com/FAA/login>

Select the “Practice Exams” tab at the top of the page, and then select the “Private Pilot Airplane (PAR)” option. (It is necessary to create an account and login.)

Here are some other sources of online practice tests; note that these are usually enticements to purchase complete review programs:

- Pilot Institute: https://pilotinstitute.com/quiz/part-61-practice-exam/?src=google&gclid=Cj0KCQjws_r0BRCwARIsAMxfDRh5baTqeMV82a3ZEPbbyL2jWlJnVNnByWILUjtVvMr6fgYuB13yKUaApBGELw_wcB
- Sporty's Pilot Shop: <https://www.sportys.com/pilotshop/learn-to-fly/faa-private-pilot-test-prep.html>
- King Schools: <https://www.kingschools.com/free-faa-exam/private-pilot>
- My Pilot Store/My Written Exam: <http://www.mywrittenexam.com/mwe/tests/TestDescription.asp?sub=7>

Slide 6: Explain that this unit consists of two lessons:

- In this first lesson, which is ten sessions, students will work in small groups to prepare a class presentation on one topic (or group of related topics) that the Private Pilot Knowledge Test will assess. Groups will spend three sessions researching and creating their presentation; over the remaining five sessions, each group will teach its assigned topic to the rest of the class.
- In the second lesson, which is two sessions, students will revisit and update their career portfolio from previous grades if time permits.

At the end of this unit and after self-study, students should be ready to take the Private Pilot Knowledge Test. Two-and-a-half hours are allotted for the test, which consists of 60 questions; to pass, a student must answer at least 42 questions correctly (70 percent). The results of the test are valid for 24 calendar months.

Any student who is at least 15 years of age can take the Private Pilot Knowledge Test. Explain that taking the test is not a requirement for passing this course; however, students are strongly recommended to take the test because passing it will be an important milestone on their journey to becoming pilots or ground instructors.

EXPLAIN

Teacher Materials: [Teach a Private Pilot Lesson Presentation](#), [Teach a Private Pilot Lesson Teaching Aid](#)

Student Materials: [Teach a Private Pilot Lesson Project Packet \(Instructions, Project Information Sheet, Daily Goal Sheets, Rubric\)](#)



Teaching Tips

Prior to beginning this lesson, create a **Project Packet** for each group. Each group's packet should contain a copy of the **Project Information Sheet** and **Rubric** plus each **Daily Goal Sheet** (Days 2-4); you will also need to include the **Instructions** for the group's assigned topic. (Each group follows the same procedure, but the Instructions for each group contains key concepts and reminders that are specific to that group's topic.)

As well, review the **Teach a Private Pilot Lesson Teaching Aid**. This document suggests previous lessons (in Grade 11 as well as in prior grades) and websites with information that is relevant to each topic; you may wish to provide these suggestions to groups that need help getting started on their research. Emphasize that these suggestions are starting points; they are not exhaustive.

Slide 7: Over the course of eight sessions, this lesson will help students solidify their knowledge of Private Pilot Knowledge Test topics by becoming teachers of the material. Begin by dividing students into five groups. Each group will be assigned a different topic, as detailed on the following five slides.

- Each group will get three sessions (including this session) to review notes on their topic from prior lessons (including from previous semesters and grades), conduct new research as necessary, and plan a lesson in which they teach the other groups about their assigned topic.
 - Each group will also need to create a study guide that highlights the essential information relevant to its assigned topic that will likely be on the Private Pilot Knowledge Test.
 - Each group will also need to create a quiz that assesses five key concepts from its lesson.

- The remaining five sessions will consist of five presentations. Each group will receive one class period in which to play the role of teachers and present their lesson to the class.
 - Following its presentation, the presenting group should distribute the study guide that it prepared for the class. (Study guides can be printed on paper, or groups may share digital files with their classmates.)
 - After all presentations have been given, students can compile these study guides into a single resource to help them prepare for the Private Pilot Knowledge Test.
 - Finally, the presenting group will give its quiz to the rest of the class. The quiz can be printed or shared as a digital file, or the presenting group can read aloud each question for the rest of the class to answer on blank paper.

Emphasize that each group member should plan to do an equivalent amount of work throughout the lesson; groups will receive planning materials and other resources to support and structure their efforts.



Teaching Tips

The recommended group size is 3-5 students, divided into 5 groups (one per topic).

- If a class has more than 25 students, keep the total number of groups at 5 and increase the number of students per group.
- If a class size is too small to allow for 5 groups, one or more topics can be omitted. Poll students to determine which topics they feel most comfortable with already; these should be the first topics omitted. The aim should be for students to research and teach topics they find challenging.

You may wish to allow students to choose their groups based on the topic that they wish to research and teach, though some adjustments may be necessary to ensure that group sizes are equal.

Students should be encouraged to choose a topic that they find difficult or feel less than comfortable with because teaching a topic is an excellent way to achieve a better understanding of it.

Note that the list of topics does not include the topic of regulations, as the previous unit covered regulatory material and included several activities in which students researched the FARs and other publications.

If additional research days are required, two additional goals sheets are available: **Teach a Private Pilot Lesson Daily Goal Sheet Day 2a** and **Teach a Private Pilot Lesson Daily Goal Sheet Day 2b**.

Slide 8: The first topic, **Aerodynamics and Aircraft**, includes material covered in Chapters 4-8 of the Pilot's Handbook of Aeronautical Knowledge (PHAK). The group teaching this topic should emphasize the following key concepts:

- Terminology, axes, and forces
- Stability, load factor, and lift
- Stalls, spins, ground effect, vortices, and wake turbulence
- Controls, fuel induction, and carburetor icing
- Propellers and P-factor

- Flight instruments, including airspeed indicator, altimeter, magnetic compass, and gyroscopic instruments



Teaching Tips

This topic covers the widest range of content, so if you need to make some groups larger than others, begin by adding students to this group.

Slide 9: The second topic, **Airspace, Flight Planning, and Navigation**, includes material covered in Chapters 15–16 of the PHAK. The group teaching this topic should emphasize the following key concepts:

- Airspace classifications
- Weather requirements (VFR minimums)
- Communication requirements
- Flight restrictions
- Pilotage, dead reckoning, and VOR
- Sectional chart representations and symbols

Slide 10: The third topic, **Airports and Operations**, includes material covered in Chapter 14 of the PHAK. The group teaching this topic should emphasize the following key concepts:

- Airport markings and signs
- Airport lighting
- Traffic patterns and taxiing
- Collision avoidance, aircraft lighting, and right-of-way
- Light signals and transponder
- Radio communications with and without ATC

Slide 11: The fourth topic, **Weather**, includes material covered in Chapters 12–13 of the PHAK. The group teaching this topic should emphasize the following key concepts:

- Wind
- Atmospheric stability
- Air masses and fronts
- Visibility, clouds, and fog
- Thunderstorms
- Icing
- Density altitude

- Aviation weather services (e.g., weather reports, forecasts)

Slide 12: The fifth topic, **Aircraft Performance**, includes material covered in Chapters 9–11 of the PHAK. The group teaching this topic should emphasize the following key concepts:

- Weight and balance definitions and calculations
- Density altitude
- Takeoff and landing performance
- Cruise performance
- Flight manuals and other documents



Teaching Tips

Emphasize that the key concepts listed on Slides 8–12 are not exhaustive. If a group decides that additional information is necessary to understand its assigned topic, the group should include that information in its lesson. Each group shall receive a **Project Packet** that lists the suggested key concepts for its assigned topic, so groups don't have to remember exactly what appears on Slides 8–12.

Slide 13: Once students are in their groups and topics have been assigned, explain that each group should decide the format for presenting its lesson to the class. Emphasize that you will need to approve the format before a group begins work on its lesson. Possible formats include:

- PowerPoint presentation
- Google slideshow
- Prezi
- Video
- Game
- Storyboard
- Skit/role-play

Make clear to students that these ideas are starting points: creativity is encouraged! Whatever the format, students should consider how best to condense broad topic areas into a single lesson. To do this, each group should begin by identifying the key concepts within its topic. Finally, re-emphasize that every group member must participate in the project—both by helping prepare the lesson and by participating in the presentation.

Slide 14: Share the **Project Packet** with each group, and give each group time to review the Instructions and Rubric. Remember to give each group the instructions specific to its assigned topic. Note that each group's instructions list the key concepts for its assigned topic (repeated from Slides 8–12). Remind students that these lists are not exhaustive; each group should add key concepts as needed.

Circulate to answer any questions that come up as groups review these materials.

Slide 15: Each group should spend the remainder of this session completing the **Project Information Sheet** in its packet. The **Instructions** document (see Day One: Step 1.c) walks groups through each section of the **Project Information Sheet**.

When a group has finished its **Project Information Sheet**, you should review it for approval. Confirm that each group has done the following:

- Fleshed out the key concepts suggested for the assigned topic and added new ones to research
- Clearly described the format of the lesson and presentation, including media that will be used (e.g., PowerPoint slides, videos)
- Equitably distributed the responsibilities for completing the project (lesson, presentation, study guide, and quiz) among all group members

Remind groups that they are free to change their minds about how to format and present their lesson as they work on it—the point of the **Project Information Sheet** is to help groups focus their ideas and make a plan for achieving their goals over the next four days. A group that changes its approach will need to complete a new **Project Information Sheet** and submit it for your approval.

Once you approve a group's **Project Information Sheet**, if time remains in the session, the group's members should begin reviewing and organizing their relevant notes from previous lessons and semesters. This will help them identify gaps in their knowledge that they will need to fill with new research over the next four sessions. They might also get a jump on the next class by working on their **Goal Sheet for Day 2** (included in the **Project Packet**).



Teaching Tips

You may wish to share with groups the Teaching Aid document, which suggests previous lessons, web pages, and videos with information that is relevant to each topic—particularly if students struggle to identify appropriate starting points for their research.

Session 2

Slide 16: Each group should begin by reviewing the instructions and completing the **Daily Goal Sheet** for Day 2. Remind students that responsibilities for achieving goals should be distributed equitably among all group members; multiple group members may share responsibility for a goal, but each group member must help complete at least one goal during this session.

Students should then use the remainder of the session to work toward achieving their goals; this may require conducting new research. Remind students that in addition to creating and preparing to teach a lesson on their topic, each group must complete the following:

- A study guide that will be distributed to the class; it may be as simple as an outline of the lesson, or it may be more extensive.
- A brief quiz (assessing five key concepts from the lesson) that will be given to the class.

Throughout the session, circulate to keep students on task and answer questions as they arise. You should also plan to meet briefly with each group twice: once toward the beginning of the session to discuss the group's goals, and once near the end of the session to confirm the group has achieved its goals. Groups that do not achieve their goals should explain how they plan to modify their efforts during the next session to make better progress.

Session 3

Slide 17: Each group should begin by reviewing the instructions and completing the **Daily Goal Sheet** for Day 3. Remind students that responsibilities for achieving goals should be distributed equitably among all group members; multiple group members may share responsibility for a goal, but each group member must help complete at least one goal during this session.

Students should then use the remainder of the session to work toward achieving their goals. This may require conducting new research; the **Teaching Aid** document suggests useful starting points, if needed. Remind students that in addition to creating and preparing to teach a lesson on their topic, each group must complete a study guide and a quiz.

Throughout the session, circulate to keep students on task and answer questions as they arise. You should also plan to meet briefly with each group twice: once toward the beginning of the session to discuss the group's goals, and once near the end of the session to confirm the group has achieved its goals. Groups that do not achieve their goals should explain how they plan to modify their efforts during the next session to make better progress.



Teaching Tips

Groups will probably not have time in class to practice their complete presentation. Instead, encourage each group to practice introducing and concluding its presentation and transitioning between sections and presenters. All group members should understand their responsibilities.

Groups should then use the remainder of the session to complete their lesson, study guide, and quiz. Throughout the session, circulate to keep students on task and answer questions as they arise. You should also plan to meet briefly with each group twice: once toward the beginning of the session to discuss the group's goals, and once near the end of the session to confirm the group has achieved its goals.

Sessions 4–8

Slide 18: Each of the remaining sessions for this lesson should follow the same structure. Remind each group to reserve 10–15 minutes at the end of the session to answer questions about its topic, distribute its study guide, and give its quiz to classmates.

Have a copy of the **Rubric** handy for taking notes and scoring each group's work. Additionally, as each group gives its presentation, students in the other groups should use the space on their copy of the **Rubric** to record feedback and questions for the group presenting. After all presentations are complete, collect students' rubrics and consolidate the feedback for each group.

EXTEND

Teacher Materials: [Teach a Private Pilot Lesson Presentation](#), [Teach a Private Pilot Lesson Rubric](#)

Student Materials: [Teach a Private Pilot Lesson Project Packet \(Instructions, Rubric\)](#)

Slide 19: At the end of each presentation, the presenting group should distribute its study guide highlighting the essential information about its topic that the FAA Private Pilot Knowledge Test will likely assess. If possible, print a copy of each study guide for all students. Students can then compile these study guides into a single study resource for the Private Pilot Knowledge Test. If it is not possible to print copies, groups should create digital study guides that they can share with their classmates.

EVALUATE

Teacher Materials: [Teach a Private Pilot Lesson Presentation](#), [Teach a Private Pilot Lesson Rubric](#)

Student Materials: [Teach a Private Pilot Lesson Project Packet \(Instructions, Rubric\)](#)

Slide 20: Each group should conclude its presentation by giving the class a brief quiz that assesses five key concepts from the lesson. After students have taken the quiz, the presenting group should reveal the answers.

Summative Assessment

Each group’s presentation (including its lesson, study guide, and quiz) serves as its Summative Assessment for this lesson. Use the **Rubric** provided in the **Project Packet** to score groups; assign point values to each criterion as you think best.

[DOK-L3; *construct*; DOK-L2; *summarize*; DOK-L1; *identify*]

STANDARDS ALIGNMENT

COMMON CORE STATE STANDARDS

- **RST.11-12.2** - Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
- **RST.11-12.7** - Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
- **RST.11-12.9** - Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
- **WHST.11-12.2** - Write informative/explanatory texts, including the narration of historical events, scientific procedures /experiments, or technical processes.
- **WHST.11-12.4** - Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- **WHST.11-12.6** - Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
- **WHST.11-12.7** - Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
- **WHST.11-12.8** - Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
- **WHST.11-12.9** - Draw evidence from informational texts to support analysis, reflection, and research.

REFERENCES

Pilot’s Handbook of Aeronautical Knowledge: https://www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/

Aviation Weather: https://www.faa.gov/documentlibrary/media/advisory_circular/ac_00-6b.pdf

Aeronautical Information Manual: https://www.faa.gov/air_traffic/publications/atpubs/aim_html/index.html

Online Practice Tests:

- Pilot Institute: https://pilotinstitute.com/quiz/part-61-practice-exam/?src=google&gclid=Cj0KCQjws_r0BRCwARIsAMxfDRh5baTqeMV82a3ZEPbbyL2jWlJnVNnByWILlUjtVvMr6fgYuB13yKUaApBGEALw_wcB
- Sporty's Pilot Shop: <https://www.sportys.com/pilotshop/learn-to-fly/faa-private-pilot-test-prep.html>
- King Schools: <https://www.kingschools.com/free-faa-exam/private-pilot>
- FAA PSI Testing: <https://faa.psiexams.com/FAA/login>
- My Pilot Store/My Written Exam: <http://www.mywrittenexam.com/mwe/tests/TestDescription.asp?sub=7>

Additionally, see the resources listed in **Teach a Private Pilot Lesson Teaching Aid**.