Aeronautical Decision Making

Session Time: Two, 50-minute sessions

DESIRED RESULTS

ESSENTIAL UNDERSTANDINGS

Pilots must use proven, systematic decision-making processes to ensure the safety of flight in both normal and emergency circumstances.

Pilots are responsible for determining if they are physically and mentally safe for flight. Often, this is done by using self-assessment checklists.

ESSENTIAL QUESTIONS

1. How does aeronautical decision making affect the safety of a flight?

LEARNING GOALS

Students Will Know

- The concept of the accident chain and aeronautical decision making.
- The five hazardous attitudes and their antidotes.
- Several models for managing risks in aviation, including IMSAFE and PAVE.

Students Will Be Able To

- *List* factors that affect a pilot's ability to fly safely. [DOK-L1]
- *Explain* the elements of common risk management models. [DOK-L2]
- *Apply* multiple risk management models to ADM. [DOK-L3]
- *Assess* the safety of a proposed flight based on scenarios related to hazardous attitudes and other factors. [DOK-L3]

ASSESSMENT EVIDENCE

Warm-up
Students will discuss a variety of factors that may affect a pilot's ability to fly safely.

Formative Assessment
In pairs, students will recall the process, steps, and fundamental principles of risk management, as well as the five hazardous attitudes.

Summative Assessment
Working individually, students will read scenarios and apply risk management models to assess the level of safety in each scenario.

LESSON PREPARATION

MATERIALS/RESOURCES

- Aeronautical Decision Making Presentation
- Aeronautical Decision Making Student Activity 1
- Aeronautical Decision Making Student Activity 2
- Aeronautical Decision Making Student Activity 3
- Aeronautical Decision Making Teacher Notes 1
- Aeronautical Decision Making Teacher Notes 2
- Aeronautical Decision Making Teacher Notes 3

LESSON SUMMARY

Lesson 1: Aeronautical Decision Making

The lesson begins with a warm-up in which the students will brainstorm possible factors that influence the ability of a pilot to safely execute a flight. This will encourage the students to begin to see the wide range of factors that can impact flight safety. The concept of an accident "chain" is then discussed and the risk management process is introduced. This is followed by an introduction to the fundamental principles of risk management and hazardous attitudes.

After a review, students will be introduced to two primary risk assessment and mitigation checklists, with the opportunity to explore five more if time is available. Students will then answer sample FAA Private Pilot Knowledge Test questions relating to risk management, as well as work through real-life and hypothetical scenarios to analyze risk and mitigate hazards. Teachers then have the option of presenting aircraft accident videos. The chain of events leading to the accident in the video may be discussed, and students will have the opportunity to assess the flight using aeronautical decision making principles.

BACKGROUND

In 2016 the FAA rewrote the Pilot's Handbook of Aeronautical Knowledge (PHAK). Chapter 1 remained the overview and introduction to flying, as in the old version, but the FAA moved the topic of aeronautical decision making (which had been the very last chapter) all the way up to Chapter 2. The change reflected an increase in the FAA's emphasis on risk management. Around the same time, the FAA began republishing standards for practical examinations, with updates emphasizing risk assessment and risk factors accounting for nearly a third of the changes. The FAA's increasing interest in risk management is clear.

The vast majority of both commercial and general aviation aircraft accidents are attributable to human error. The FAA has recognized that by helping pilots identify, assess, and control risk, they can potentially reduce aircraft accident rates.

To assist pilots in these assessments, the FAA has published a wide variety of risk-management resources. These tools rely upon checklists and mnemonics to streamline the risk-assessment process.

While there is always some level of risk in flying, pilots strive to identify, predict, and control risks where possible.

It is important to remember that pilots are ultimately responsible for the safe operation of their aircraft. While the FAA publishes guidelines and aids, it is up to the pilot to use them.

MISCONCEPTIONS

Students may think that aeronautical decision making refers only to decisions made during a flight, but in reality a pilot makes numerous important decisions prior to climbing into an aircraft. From the time a flight is planned until the aircraft

is safely secured at its destination, each element of a flight involves decisions, so the pilot is always at some stage of the risk management process.

DIFFERENTIATION

To aid in student comprehension, encourage students to prepare a graphic organizer to document learning on the Risk Management Cycle, Fundamental Principles of Risk Management, and Risk Mitigation Checklists.

To aid in student success in the **EXTEND** and **EVALUATE** sections, set up learning centers with scenarios for students to apply models to a given situation. Provide hints or checklists to help students monitor their work.

LEARNING PLAN

ENGAGE

Teacher Material: Aeronautical Decision Making Presentation

Session 1

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

Slide 4: Conduct the **Warm-Up**.

Warm-Up

As a class, brainstorm and discuss any factors that affect a pilot's ability to fly safely. As the students come up with ideas, list these factors on a whiteboard or other classroom display for reference throughout the lesson.

Student suggestions may include drug or alcohol use, maintenance, passengers, weather, natural disasters, rules and regulations, traffic, air traffic control, and other pilots. Have them consider how those factors might influence flight safety.

There are no "right" answers; rather, the goal is to have the students begin to conceptualize the wide range of factors that affect pilots and the safety of flight.

[DOK-L1; *list*]

EXPLORE

Teacher Material: Aeronautical Decision Making Presentation

Slide 5: When an aircraft accident occurs, it is rarely the result of a single factor. Rather, aircraft accidents are normally the culmination of a series of events that link together, which is why the aviation industry often refers to the series of events leading to an accident as the "accident chain." Many of the links in the chain are connected by decisions made by pilots, so it is important for pilots to make good decisions.

Slide 6: The FAA has formalized this in a process called aeronautical decision making, or ADM. ADM was initially developed by the airlines and then adopted by the FAA as a means to reduce the human factors that contribute to accidents. As the graphic on the slide shows, a pilot's decision can break the chain and prevent an accident from occurring. It was once thought that good judgment came only with experience, but the concept of ADM relies upon the idea that decision making can be taught.

Slide 7: One of the key concepts of decision making is the ability to manage risk. The FAA describes the risk management process in six steps:

1. Identify potential hazards.
2. Assess risks those hazards present.
3. Analyze options to control those risks.
4. Make decisions about how to control those risks.
5. Use those risk controls.
6. Monitor results.

Using this process, pilots identify the things that could be hazardous, and then evaluate the risks associated with those hazards. A hazard is something that can cause harm, while a risk is the chance that the hazard will cause the harm. Once risks are identified, the pilot figures out the best options to control them, and then chooses which options to use. Finally, the pilot monitors the results to see if the risk has been successfully managed, or if the outcome needs to be re-evaluated.

Slide 8: Risk management is not "one and done." As the diagram on this slide shows, risk management is a continuous process. Pilots repeatedly assess current hazards as well as the outcome of the previous risk management cycle.

It is important to understand this is a risk management process, not a risk elimination process. Risk is inherent to every activity, whether taking a walk, driving a car, or flying an airplane. In flying, though, the room for error is small, and the consequences for error can be severe, so risk management in aviation is particularly important.

Slide 9: The FAA's Pilot's Handbook of Aeronautical Knowledge lists four "fundamental principles of risk management":

1. Accept no unnecessary risk.

Questions

What do you think this means? Can you think of examples?

Responses will vary. The general idea is there is always some risk involved in flying, but not all that risk is necessary. It may be possible and legal for a pilot to make a flight in marginal VFR conditions, but an inexperienced pilot might choose not to accept the risk that accompanies making such a flight. For example, the chance that ceilings and visibility could become uncomfortably low is a risk the pilot may choose to eliminate by remaining on the ground.

Slide 10:

2. Don't let others make the risk decision for you.

Questions

What do you think this means? Can you think of examples?

Responses will vary. An example involving a flight school could include a scenario where strong winds are blowing, and a flight instructor feels their instructional flights should be canceled for the day. The chief pilot, however, feels the winds are fine and tries to persuade the instructor to fly with students anyway. The challenge here is that the instructor is the PIC and must make the decision about whether or not flights can be made safely. While it may be hard to contradict an employer, only the PIC should make the decision whether to fly or not.

The important message is that only the PIC should make risk decisions--not passengers, ATC, employers, etc.

Slide 11:

3. Accept risk when the benefits outweigh the dangers.

Questions

What do you think this means? Can you think of examples?

Responses will vary, but in order to fly at all, accepting some amount of risk is necessary. The only way to avoid all risk in flying is to avoid flying altogether. Consider, for example, FAA multi-engine training. During training for multi-engine aircraft, pilots are expected to shut down and restart an engine in flight. There is inherent risk in shutting down an engine in flight (even with the other engine operating), but the value of the training (and the future safe flight it represents in the pilot's future multi-engine flying) outweighs the risk. Contrast that with the risk associated with a private pilot deciding to shut down the only engine on their Cessna 172—most pilots would say the risk in this case clearly outweighs the benefit.

Slide 12:

4. Make risk management part of your planning process at every level.

Questions

What do you think this means? Can you think of examples?

Responses will vary, but risk management is not just a preflight planning tool. It is something that is used continuously in every phase of a flight. While a pilot may make a risk assessment about the weather in planning, the pilot will likely continue to reassess the risk associated with the weather throughout the flight and may alter the flight at any point if the risk assessment changes.

EXPLAIN

Teacher Materials: Aeronautical Decision Making Presentation, Aeronautical Decision Making Teacher Notes 1
Student Material: Aeronautical Decision Making Student Activity 1

Slide 13: Risk exists for all pilots, but the way that pilots assess risk will vary by each individual. For example, if the weather is legally (but just barely) VFR, with low clouds and low visibility, an instrument-rated pilot with thousands of hours will likely view the conditions as lower risk than a newly-minted, VFR-only private pilot with only 80 hours. The more-experienced pilot may choose to take off knowing they can, if necessary, pick up an IFR clearance to fly in the clouds. The less-experienced, non-instrument pilot may opt to cancel their flight and wait for another day. Neither pilot is wrong. They are both assessing the conditions and themselves to arrive at a conclusion about the level of risk that exists and the level of risk they are willing to accept.

In this example, it is evident that pilot skill is a factor in risk management. Similarly, the capabilities and equipment of the aircraft (for example, whether it is IFR or VFR equipped) are other factors.

Slide 14: Not all aspects of risk are external to a pilot; some come from within. A pilot's attitude is a critical element in the decision making process. The FAA has identified five hazardous attitudes. These attitudes, if left unchecked, can negatively influence risk assessment and judgment, potentially leading a pilot to increase their exposure to risk. The greatest challenge, of course, is for a pilot to recognize they have the attitude to begin with. This requires honest introspection, as well as a willingness to accept feedback from others. Each hazardous attitude has an identified "antidote" that, if properly applied, can help a pilot make better decisions.

Slides 15-19: The five hazardous attitudes are

1. **Anti-Authority:** This hazardous attitude is found in pilots who do not like to be told what to do. They may dismiss or belittle the rules and regulations, or justify their decision to ignore them.

    1. **Antidote:** Remember that the rules are written for a reason. They are usually right.

2. **Impulsivity:** Impulsive pilots feel the need to do something—anything—quickly, without thinking it through.

    1. **Antidote:** Slow down. There are very few things in aviation that require action immediately, and there are a great many things that can be done incorrectly if done too quickly.

2. **Invulnerability:** This is the idea that accidents only happen to others. Pilots with this hazardous attitude know that accidents happen, but think they'll never be personally involved.

    1. **Antidote:** Realize that "it could happen to me."

2. **Macho:** Macho pilots are willing to take risks to impress others or show off their skills. While stereotypically associated with males, any pilot, regardless of gender, can have this dangerous attitude.

    1. **Antidote:** Taking chances is foolish.

2. **Resignation:** Pilots with this hazardous attitude believe that risk management is no longer worth trying. This is an attitude of inaction that fails to consider a pilot's own behaviors and actions.

1.
Antidote: I'm not helpless. I can make a difference.

Slide 20:

Questions

Have students watch the following Accident Case Study from AOPA's Air Safety Institute. What hazardous attitudes might the pilot be displaying? Explain.

"Accident Case Study: Everyone's Problem" (Length 4:27)
https://video.link/w/UaG6
For teachers unable to access Safe YouTube links, the video is also available here:
https://www.youtube.com/watch?v=A6wJt9xCshI&t=194s
Students can discuss the potential motivations or attitudes of the pilot, even though they're not explicitly stated. Possible responses include:

Anti-Authority: *Despite the pilot being cautioned by a fellow instructor "not to do any funny stuff," as well as FAA rules prohibiting aerobatics in aircraft not certified for such maneuvers, the pilot decided to engage in risky behavior anyway.*
Invulnerability: *The pilot may have believed that while other people may not have been able to pull off such maneuvers, the pilot was not one of those "other people." The pilot did not doubt his own capabilities and believed that what would be hazardous to others wouldn't be hazardous to him.*
Macho: *The pilot likely viewed aerobatics as a challenge and wanted to prove to the student and his friend how good he was.*
Resignation: *It is unlikely that this hazardous attitude was a factor within the scenario.*
Impulsivity: *While unlikely given his pattern of behavior over time, this attitude is possible. The pilot may have quickly decided to engage in his behavior without considering potential consequences.*

Slide 21: One important point to take away from this scenario is that a pilot may claim they don't have a particular hazardous attitude—but they might take the same risks as someone who does because they have a different hazardous attitude. Pilots need to be humble about their attitudes and recognize their own vulnerability to hazardous attitudes, no matter how invulnerable they may think they are.

Hazardous attitudes do not have to be extreme. In fact, it is likely that everyone experiences at least a bit of each hazardous attitude at some point. For example, students might imagine a pilot with an anti-authority attitude flying so low they "buzz" the ground, or a pilot with a macho attitude challenging other pilots to races. However, the reality is that all pilots are likely tempted to grumble about certain rules—and maybe even bend them sometimes. Ever known someone who thought going 5 MPH over the speed limit wasn't a big deal?

Pilots need to recognize that any of these attitudes can happen to them. Recognizing a hazardous attitude as it starts, and applying the appropriate antidote, is necessary to maintain safety and professionalism as a pilot.

Slide 22: Complete the **Formative Assessment**.

Formative Assessment

Divide the class into pairs and provide students with **Aeronautical Decision Making Student Activity 1**. Students will recall the process steps and fundamental principles of risk management, as well as the five hazardous attitudes. Responses are available in **Aeronautical Decision Making Teacher Notes 1**.

[DOK-L3; *apply*]

EXTEND

Teacher Materials: Aeronautical Decision Making Presentation, Aeronautical Decision Making Teacher Notes 2
Student Material: Aeronautical Decision Making Student Activity 2

Slide 23: There isn't one single method or model of evaluating, managing, and mitigating risk that covers every situation or every person. Pilots should choose the methods and models that work for them in their circumstances. That said, it's important to remember that no method or model works if it isn't used.

Slide 24: One method to help assess risk is to visualize a matrix that helps graph the likelihood that something will happen and the severity of the situation if it does happen. When both the likelihood and severity are high, the risk is high. When the likelihood and severity are low, the risk is low. When either of the two factors is high while the other is low, pilots need to use their judgment to evaluate the risk.

For example, suppose that a non–instrument-rated pilot is planning to make a 200 NM flight. The current forecast is for marginal VFR weather conditions over most of the route, and the weather is expected to worsen as the day goes on. To help understand the risk, the pilot would chart the severity across the top and the probability down the left. The chart on the slide is Figure 2-5 from the Pilot Handbook of Aeronautical Knowledge.

The pilot determines that the likelihood of encountering IFR conditions is high (the vertical axis of the chart).

Accident reports show that the consequences for an unplanned flight into instrument meteorological conditions (IMC) a non-instrument-rated pilot can be severe, even fatal (catastrophic). The severity of the consequences is high, and that is reflected on the horizontal axis of the chart.

The chart on the slide has the pilot's determination—"probable, catastrophic"—plotted in the top-left corner. Seeing this, the pilot should recognize the need to make the flight when conditions are more favorable.

Slide 25: There are a variety of ways that a pilot could mitigate this risk. For example, delaying the flight or choosing another destination could reduce the likelihood of encountering IMC to "occasional." Bringing along an instrument-rated pilot or a flight instructor could reduce the severity of the consequences to "marginal" or less if IMC is encountered. The pilot has many options that influence both the severity and likelihood of the risk. If the pilot cannot mitigate the risk, the only options may be to accept it or avoid it.

Session 2

Slide 26: Identifying and mitigating risks begins with the pilot. The IMSAFE checklist is reviewed on this slide.

Teaching Tips

The FAA publishes a number of risk assessment checklists. This lesson will focus on the IMSAFE and PAVE checklists. Students will have the opportunity to investigate other risk assessment checklists in **Student Activity 2**.

IMSAFE has been discussed in previous lessons; it helps pilots determine their physical and mental readiness for flying:

Illness—Am I sick? Illness is a pilot risk because feeling unwell naturally reduces a pilot's performance, both the pilot's actions and decision making.

Medication—Am I taking any medications that might affect my judgment or make me drowsy? Side effects from medications can pose a significant risk.

Stress—Am I experiencing elevated stress? Am I struggling with something at work or in my personal life? Am I worried? Pilots who have these stressors should consider the impact on their performance. Stress can be positive or negative, and most people are under some level of stress most of the time. A pilot feeling the effects of stress may suffer a loss of physical and mental performance.

Alcohol—Have I consumed alcohol in the past 8 hours? Within 24 hours? Even a single drink can impair a pilot's performance as well as impair them physically by making them more susceptible to disorientation and hypoxia.

Fatigue—Am I tired or not adequately rested? Fatigue is one of the most insidious hazards to flight safety, as it may not be apparent to a pilot until after serious errors are made. Performance can be significantly impaired by fatigue.

Emotion—Am I emotionally upset? Strong emotions, both positive ones and negative ones, can negatively impact our judgment. Any strong emotion can be hazardous in that it distracts a pilot from the tasks at hand.

Slide 27: PAVE is another checklist that a pilot can use to identify potential hazards. PAVE helps pilots remember four areas of potential hazards: Pilot-in-Command (P), Aircraft (A), Environment (V), and External Pressures (E).

Pilot-in-Command: Is the pilot ready? Does the pilot have the skills, recency of experience, and overall experience to fly safely, and are they in the best physical and mental state? The IMSAFE checklist provides insight into this part of the PAVE checklist.

Aircraft: Is the aircraft ready? Is it capable? Does it have the necessary equipment, fuel, useful load, etc., for this flight? Is the pilot familiar with this aircraft?

enVironment: Consider the weather, terrain, airports, airspace, and time of day. Are the environmental factors appropriate for this trip and the capabilities of the pilot and aircraft? Is the weather within tolerances? Are there obstacles? What airport runways and lighting are available? Is the route over water? Are there TFRs? Is the situation changing; if so, how could these changes affect the flight?

External Pressures: Is the pilot under pressure (from passengers, people at the destination, themselves) to get there at a certain time? Does the pilot feel the need to impress someone or to achieve a personal goal? Does the pilot have an alternative plan?

Slide 28: The IMSAFE and PAVE risk mitigation tools are not the only methods or models, but they are effective means to identify potential risks to a pilot. Note, however, that neither checklist has limits or directs any action. It is always up to the pilot what to do with the information. For example, the IMSAFE checklist may help the pilot realize the amount of stress they are under, but the IMSAFE checklist doesn't say what amount of stress is too much or what the pilot should do with this realization. That's up to the pilot to determine. Also, pilots may choose any tool they want, but they need to use it. Ultimately, pilots need to have a plan and method to identify, assess, control, and evaluate risks they may encounter.

Distribute and have students complete **Aeronautical Decision Making Student Activity 2**. Students will divide into five groups, with each group using a different model to evaluate the same scenario for risk. Potential responses are available in **Aeronautical Decision Making Teacher Notes 2**.

[DOK-L2; *explain*]

EVALUATE

Teacher Materials: Aeronautical Decision Making Presentation, Aeronautical Decision Making Teacher Notes 3
Student Material: Aeronautical Decision Making Student Activity 3

Slides 29-36: Review the Private Pilot Knowledge Test questions.

Slide 37: Conduct the **Summative Assessment**.

Summative Assessment

Distribute **Aeronautical Decision Making Student Activity 3**. Students will apply the fundamental principles of risk management, recall risk-management models, and apply their knowledge of risk management and hazardous attitudes to both imagined and real-world scenarios. The activity may be completed in pairs or individually, at the discretion of the teacher. Potential responses are available in **Aeronautical Decision Making Teacher Notes 3**.

[DOK-L3; *assess*]

Summative Assessment Scoring Rubric

- Follows assignment instructions
- Responses show evidence of one or more of the following:
    - Correct recall of risk management fundamentals, checklists, hazardous attitudes, and mitigations
    - Reasonable application of risk management fundamentals and principles to scenarios
    - Evidence and explanation of the above that demonstrate understanding of the material
- Contributions show understanding of the concepts covered in the lesson
- Contributions show in-depth thinking including analysis or synthesis of lesson objectives

Points	Performance Levels
9-10	Thoroughly understands all risk management fundamentals, checklists, hazardous attitudes, and mitigations, and makes a reasonable application and analysis of those principles to scenarios, with appropriate explanations.
7-8	Understands most risk management fundamentals, checklists, hazardous attitudes, and mitigations, with some errors, and makes generally reasonable application and analysis of those principles to scenarios, with some incomplete analysis or errors.
5-6	Understands some risk management fundamentals, checklists, hazardous attitudes, and mitigations, with errors, or makes generally reasonable application and analysis of those principles to scenarios but lacks adequate explanation.
0-4	Provides few, if any, correct ideas about risk management fundamentals, checklists, hazardous attitudes, and mitigations, and/or makes poor application and analysis of those principles to scenarios with inadequate explanation.

GOING FURTHER

Slide 38: Have the students watch the following videos, which show how a series of events come together to form a chain leading to an accident. Either video may be used, or consider splitting the class into two and having each half evaluate one video, with time for a shared discussion afterward. As the students watch the videos, have them write

down key points that could be links in the accident chain, where a potential opportunity to prevent the accident was missed.

- "Accident Case Study: Just a Short Flight" (Length 17:51)
  https://video.link/w/YT94
  For teachers unable to access Safe YouTube links, the video is also available here: https://youtu.be/BML2lfqaK-4

- "Accident Case Study: Cross-Country Crisis" (Length 13:26)
  https://video.link/w/ySD4
  For teachers unable to access Safe YouTube links, the video is also available here: https://youtu.be/_wsa3vhnowk

If used as an in-class assignment, have the students discuss the links in the chain they identified.

Questions

How might the chain have been broken to avoid the accident? What lessons can students pull from this accident that they can apply to any flight?

Responses will vary, but for each video students should be able to identify moments both at the beginning of and during the flight in which a single decision could have changed the direction and prevented the accident.

An example of chain links might be if the pilot had considered the advice of another pilot who questioned the weight and balance or recommended a weather check and flight plan, or if the pilot had listened to Air Traffic Control's advice on where to go or the flight conditions.

From that example, students might consider that if another pilot questions their judgement, or if ATC begins to offer advice, they should avoid hazardous attitudes by fully considering the inputs of those pilots and controllers.

Teaching Tips

For a potential homework assignment, have students write a paragraph (or a longer essay) that summarizes the key links in the accident chain from one of the videos and identifies potential places the chain could have been broken. If class time is limited, you might also instruct students to watch the videos for homework.

Slide 39: Have students take the free online AOPA Air Safety Institute Course "Do the Right Thing." The course is located here:

- https://www.aopa.org/training-and-safety/online-learning/online-courses/do-the-right-thing

The course takes approximately 45 minutes and includes a quiz at the end. After the quiz, have students discuss the course as a class, summarize what they learned, and discuss how they might apply these principles to their own flying.

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.11-12.4** - Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 11-12 texts and topics*.
- **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.11-12.6** - 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.11-12.8** - 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

FAA AIRMAN CERTIFICATION STANDARDS

PRIVATE PILOT

I. Preflight Preparation

Task H. Human Factors

- Knowledge The applicant demonstrates understanding of:
  - **PA.I.H.K3** Effects of alcohol, drugs, and over-the-counter medications.
  - **PA.I.H.K4** Aeronautical Decision-Making (ADM).
- Risk Management The applicant demonstrates the ability to identify, assess and mitigate risks encompassing:
  - **PA.I.H.R1** Aeromedical and physiological issues.
  - **PA.I.H.R2** Hazardous attitudes.
- Skills The applicant demonstrates the ability to:
  - **PA.I.H.S2** Perform self-assessment, including fitness for flight and personal minimums, for actual flight or a scenario given by the evaluator.

REFERENCES

- Advisory Circular 60-22,
- https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_60-22.pdf
- Pilot Handbook of Aeronautical Knowledge, Chapter 2.
- https://www.aopa.org/training-and-safety/online-learning/online-courses/do-the-right-thing
- FAA Risk Management Handbook, FAA-H-8083-2.