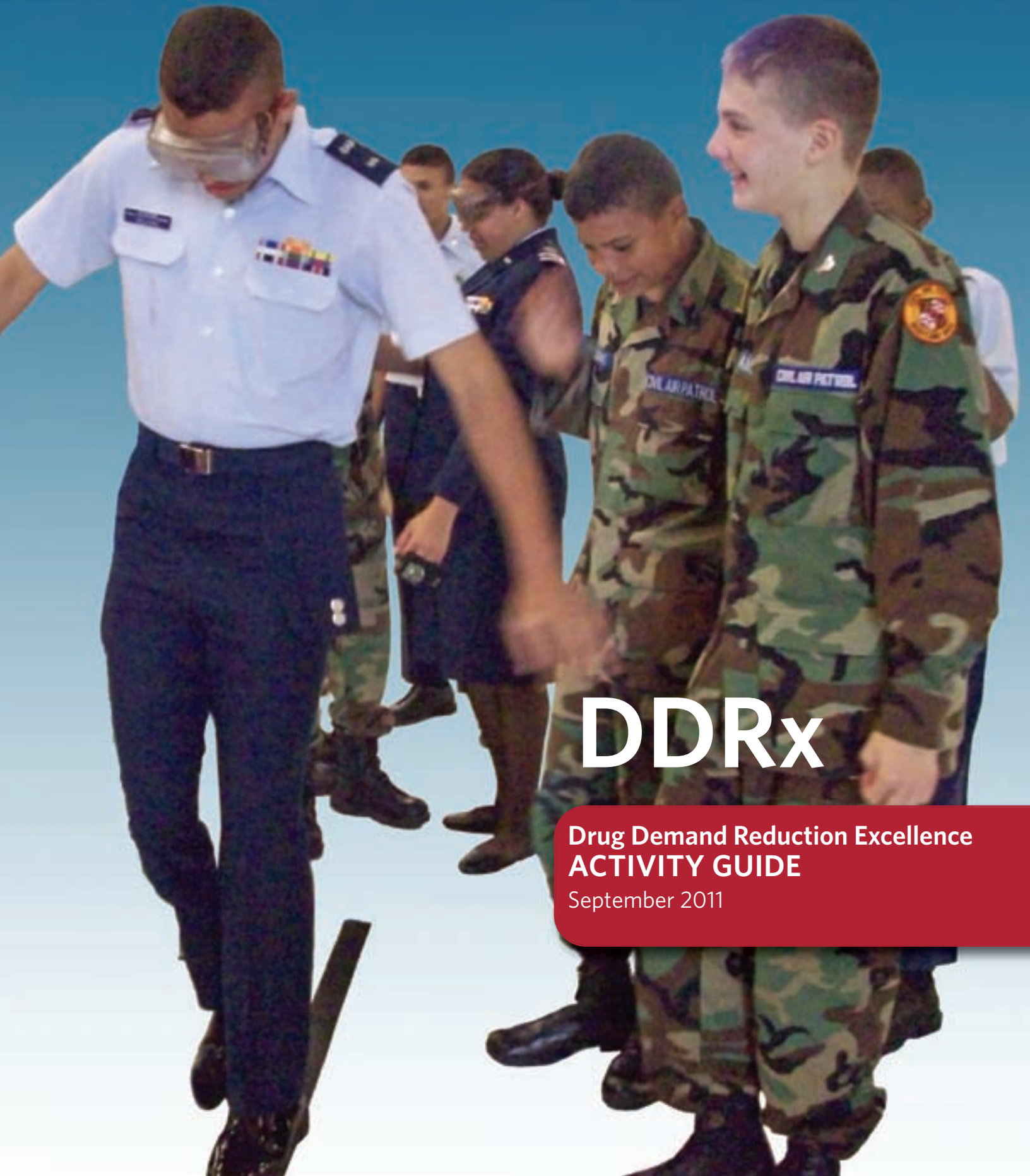
CIVIL AIR PATROL **CADET PROGRAMS**



DDRx

Drug Demand Reduction Excellence
ACTIVITY GUIDE

September 2011

A CIVIL AIR PATROL CADET DRUG DEMAND REDUCTION ACTIVITY-BASED PROGRAM

VOLUME ONE

By Ben Millspaugh

One of the greatest activities in Civil Air Patrol is the orientation flight. Many cadets join the organization because they want to fly.

(Image courtesy of Alex McMahon.)

Published 2011

DDRxcellence

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INTRODUCTION

A cadet who wants to enter the world of aviation must be willing to work toward goals that require excellence in human performance. For a Civil Air Patrol cadet to be successful in aerospace as a career, she must be prepared to meet the highest possible performance standards. This is expected by the military, the aviation industry, and the Federal Aviation Administration.

The Drug Demand Reduction mission is dedicated to helping Civil Air Patrol cadets achieve excellence in life by making good choices and remaining free of drugs and alcohol. This is especially important if the cadet wants to become a part of the military or the professional world of civilian aviation.

In almost every facet of the aerospace industry, there is a required annual physical examination. Aerospace professionals are very aware of the fact that a medical certificate is equally as important as a license, and losing that certification can mean the end of a lifelong dream.

From the very beginning, pilot trainees are expected to perform with excellence. Civilian training aircraft are expensive, and the student will be expected to pass performance examinations based on the high standards of the Federal Aviation Administration. This is even more significant in military flight training. Every task must be performed with excellence.

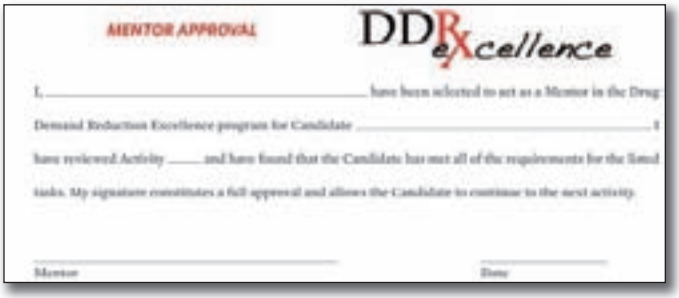
It is a known fact that drugs and alcohol can seriously compromise human performance. A young person who has a desire to become a professional in the world of aviation must start making good choices early and living a drug-free lifestyle. The world of aviation and aerospace has zero tolerance for anything less.

AN ACTIVITY-BASED ACHIEVEMENT PROGRAM

This Drug Demand Reduction Excellence (DDRx) program rewards a CAP cadet for successfully completing activities related to making good choices, choosing good role models, avoiding substances that have a negative effect on human performance, and striving to live a drug-free lifestyle. The "elements" of this new program are:

- During the course of this activity program, the participating cadet will be referred to as the "Candidate."
- A senior member is required to provide guidance and counseling to the Candidate in the DDRx program. That senior member is known as a "Mentor."
- Once the Mentor and Candidate agree on the selection, the Mentor gives the Candidate approval and this allows the Candidate to get started.
- An activity is a series of short-term tasks that result in a learning experience. This volume consists of 36 activities.
- A task is a step toward successfully completing the activity.

- Once the Candidate finishes all of the tasks in an activity, the required paperwork is submitted to the Mentor for approval. The cadet and mentor discuss the activity using the Meaningful Learning Experience Rubric at the end of this volume. If the Mentor approves, she signs and dates the "Mentor Approval," which can be found at the end of this volume. The Candidate can now continue on to the next activity.
- A Candidate must complete six (6) activities in a 12-month period to receive recognition. Upon completion, the Mentor or Unit Commander sends a request for a DDRx certificate to National Headquarters DDR.
- A candidate may complete activities in subsequent years to receive DDRx credit, but may not repeat activities that were used in a previous year.
- Only DDR publications and Mentor-approved resources may be used in activities.


MENTOR APPROVAL

DDRXcellence

I, _____ have been selected to act as a Mentor in the Drug Demand Reduction Excellence program for Candidate _____. I have reviewed Activity _____ and have found that the Candidate has met all of the requirements for the listed tasks. My signature constitutes a full approval and allows the Candidate to continue to the next activity.

_____ Mentor

_____ Date

These mentor approval forms can be copied from pages 110-111.

ACTIVITY RESOURCES

These are the basic resources used in an activity. In order for a Candidate to get credit and recognition for completion of an activity, she accomplishes the required tasks using only DDR-approved activity resources. The Mentor must approve all other outside resources for the activities. The resources for this program are based on the concept that the aerospace industry has zero tolerance for drugs and alcohol. From this concept comes the DDR motto, "Follow your dream & stay clean."

The DDRx list of official activity resources includes the following:

- DDR lesson plans
- 'Famous Flier' biographies
- *LET'S GO FLYING* book
- *FIT FOR FLYING* book
- Jeppesen *Aviation Physiology* DVD
- Internet (as approved by Mentor)
- Human resources (as approved by Mentor)

A cadet and his mentor working together.

(Image courtesy of Civil Air Patrol.)

ACTIVITY FORMAT

Each activity will have a similar layout and this will make the transition from one activity to another easy. The activity format includes:

TITLE – This is a short description of the activity.

OBJECTIVE – This is a clear statement of the desired learning outcome.

DISCUSSION – This is an explanation of the methodology used for achieving the objective.

ACTIVITY RESOURCES – In an effort to utilize existing DDR materials, the Candidate is required to do all research from the official activity resources.

TERMS TO DEFINE – These are words related to the activity.

TASKS – These are assigned steps that must be accomplished to complete the activity.

THE MENTOR – The Mentor is a senior member who works one-on-one with the Candidate to approve activities. Each Candidate will work with a single Mentor, who submits the final approval statement to the Unit Commander for Candidate recognition. Note that there is no such thing as extra credit: the Candidate either does the activity to the Mentor's satisfaction or not.

THE UNIT COMMANDER – The commander is asked to review and approve the successful completion of the full set of activities leading to DDRx recognition. This may come in the form of (1) an awards ceremony, (2) an oral acknowledgement at a unit meeting, or (3) a DDR announcement in a unit or wing newsletter. By being a part of the DDRx program, the Unit Commander is showing his/her support by recognizing the achievements of the Candidate.

RECOGNIZING PRIVACY – In several activities, the Candidate will ask other cadets and senior members to provide personal information. In order to maintain privacy and avoid revealing sensitive information, the Candidate should pass out a 3" x 5" index card to every unit member. The Candidate should ask that everyone write their own personal "N Number" in the upper left corner of the card, also called the "N-Card." To give it an aviation theme, this "N Number" is like an airplane's registration that is found on the vertical stabilizer or aft fuselage.

Example: A Candidate requests information from a senior member whose name is Major Joe Handley. In the upper left corner of the card, Major Handley writes "N1244C" and gives it to the Mentor. The Mentor then records, in a secure DDRx record book, "Major Joe Handley—N1244C." Later, when "sensitive information" is requested, the cards are laid out and only Major Handley knows that N1244C is his card.

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ACTIVITY 1

CELEBRITY DRUG SCENE INVESTIGATION

AIRPORT SECURITY AND ARRESTS OF THE RICH AND FAMOUS

OBJECTIVE:

To raise the awareness of drug security in both national and international airports.

DISCUSSION – It seems like the news media is constantly telling the public about a celebrity who has been arrested on drug charges. It becomes especially alarming when the arrests happen at major national or international airports.

Michael Phelps, center, Ryan Lochte, left, and Laszlo Cseh, right, show off their Olympic medals.

(Image courtesy of the President's White House Staff.)

It is not uncommon during the Olympics to hear about an athlete who's been involved in some scandal regarding substance abuse. A classic example of how drugs can almost ruin the career of an athlete is the story of Michael Phelps, world champion Olympic gold medal swimmer. The media has often cited this athlete as being the greatest swimmer of all time. Unfortunately, Phelps has had problems with both drugs and alcohol during his life. Other athletes have received "bad press," especially for their involvement in performance-enhancing steroids.

In this activity, the focus is on airport security and the drug arrests of celebrities, both present and past. The Candidate is given the task of researching one favorite celebrity and then writing a short overview of their life and how he or she rose to fame. In the second task, the Candidate will discuss how 5 listed celebrities were arrested by airport security. The Transportation Safety Administration (TSA) has very specific laws about drugs and air travel. These laws affect all of the flying public, even the rich and famous.

TASK 1.0 The Candidate chooses any internationally-known celebrity (this can include athletes, musicians, race car drivers, politicians, etc.) and writes a 1/2-page biography of this person. If the celebrity has had drug and alcohol issues, include that in the biography. This can be any high profile celebrity the Candidate wants to research. The Mentor may ask what makes this person a celebrity and the Candidate is expected to justify why she considers that person to be "high profile."

The TSA Security Check Point at Denver International Airport.

TASK 2.0 The following persons are all "high profile" celebrities who have had drug issues in international air travel:

1. Paris Hilton
2. Kareem Abdul-Jabar
3. Carlos Santana
4. Orlando Cepeda
5. Mookie Blaylock

The Candidate must select one of the celebrities mentioned above and write a 1/2-page biography about that individual. The Candidate must include in the report how drugs and airport security interacted.

TASK 3.0 Upon completion, the Candidate submits the term definitions and both biographies to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

ACTIVITY RESOURCES:

1. Internet

TERMS TO DEFINE:

1. International airport
2. TSA
3. High profile
4. Celebrity

2

ACTIVITY 2

I DON'T THINK I SHOULD FLY AND I'LL TELL YOU WHY

OBJECTIVE:

To raise the awareness of the possible negative effects of common over-the-counter drugs on cadets who are attending glider or powered aircraft summer encampments.

DISCUSSION – The book *FIT FOR FLYING* is used in this activity to help the Candidate become more aware of the potential threat that may exist in the use of over-the-counter (OTC) drugs by pilots.

All too often we tend to think that any substance not requiring a prescription is a "non-issue" when it comes to flying. Unfortunately, this is not true. When we take to the skies, quite a number of physical and physiological changes happen that can affect pilot performance. One very important factor is the reduction of oxygen available to our body, especially the brain. Other factors include changes in pressure and gravity. The human body is a very complex chemical "machine" and drugs are chemicals. OTC drugs, like antihistamines, are not tested in the high altitude environment. It is just assumed that if it is acceptable at sea level, it isn't going to be a problem when we are flying.

After release, the cadet takes the controls of the glider.
(Image courtesy of Civil Air Patrol.)

In this activity, a "situation" is created wherein a female cadet is attending a summer glider camp at a high altitude airport. The night before her first flight lesson, she has a minor headache and she wants to make sure that she gets a good night's rest. She figures that a pain reliever with sleep ingredient will help her. As part of this activity, the Candidate is required to research the contents of a night-time pain reliever and determine whether or not it contains ingredients that may be a problem with the cadet's glider flight scheduled for the next morning.

TASK 1.0 The Candidate considers this situation involving a cadet at a glider encampment:

The cadet is from a city located near the Pacific Ocean and is attending a summer glider flight encampment in Boulder, Colorado (elevation 5,288' above sea level). It is the night before her flight, and she has spent most of the first day in ground school and getting acquainted with other cadets. A chat session ends the first day's activities, and she decides to get some much-needed rest. She returns to her room and tells her roommate that she is really excited about her first flight scheduled for the next morning. There is a bottle of night-time pain reliever in her personal items and she takes two tablets to alleviate a headache and get some rest.

ACTIVITY RESOURCES:

1. Package information for a night-time pain reliever
2. Internet

TERMS TO DEFINE:

1. OTC
2. Side effects
3. Prescription
4. Chronic
5. Underlying condition
6. Adverse reaction
7. Suppressant

TASK 2.0 The Candidate researches the contents of a standard night-time pain reliever. The package information can be found online or in a local pharmacy.

TASK 3.0 The Candidate writes a 1/2-page report with a decision to either "go" or "no-go" in it. The Candidate's report must defend the reasons for the final decision. Upon completion, the Candidate submits the term definitions and report to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

Cadets prepare for a flight at a summer glider encampment.
(Image courtesy of Civil Air Patrol.)

A cadet examines the contents of a night-time pain reliever. She attended summer glider flying encampment and elected not to take a sleep aid before her first day of flight training. Her medical certification is featured in the *FIT FOR FLYING* book.

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ACTIVITY 3

THE COMMON DENOMINATOR

OBJECTIVE:

To analyze the lifestyle of professional pilots and determine what enabled them to reach their career goals without becoming involved with drugs and alcohol.

DISCUSSION – In Part Six of the book *LET'S GO FLYING*, six professional pilots tell their personal stories about becoming a military or civilian flight crewmember. These biographies describe how each pilot had a very strong desire to work hard and live a drug-free lifestyle. Cadets who read their interviews will soon realize that a successful flying career is a series of good choices and the stories of these professionals will help the cadet make good decisions.

Many CAP units are located in small towns and cities where there is no Air Force base or even a large airport. This activity uses the resources published by the DDR program to provide role-modeling and career guidance for all cadets. No matter where the cadet lives, these stories will show how a very rewarding and successful career can be obtained without drugs or alcohol.

ACTIVITY RESOURCES:

1. *LET'S GO FLYING* book
2. Chalkboard (or wall pad, or poster board, with at least six sheets)
3. Large permanent marker or chalk

TERMS TO DEFINE:

1. Moderator
2. Commonality
3. Corporate pilot

THE SIX AVIATION PROFESSIONAL ROLE MODELS FOR THIS ACTIVITY:

1. Captain Randy Trujillo
2. Lt Col Ron Gendron
3. First Officer Adam Wright
4. Major General Tandy Bozeman
5. Captain Rick Vigil
6. Lt Col Pat Hanlon

Role model #1 is Randy Trujillo, a senior 767 Captain for United Airlines.

(Aircraft image courtesy of Adam Wright.)

Role model #2 is Lt Col Ron Gendron. He is a simulator and certification pilot on the Lockheed C5B for the U.S. Air Force.

(Aircraft image courtesy of U.S. Air Force.)

Role model #3 is First Officer Adam Wright. He is currently flying the Canadair CRJ-700.

(Images courtesy of Adam Wright.)

Role model #4 is Major General Tandy Bozeman. He flew the C130 Hercules during the latter part of his career for the California Air National Guard.

(Images courtesy of California Air National Guard.)

Role model #5 is Captain Rick Vigil. He flies the Citation XJL for Netjets as a corporate pilot.

(Images courtesy of Netjets and Adam Wright.)

Role model #6 is Lt Col Pat Hanlon, Director of Operations for the 120th Tactical Fighter Wing of the Colorado Air National Guard. He is an F-16C fighter pilot.

(Images courtesy of Colorado Air National Guard.)

TASK 1.0 The Candidate reads Part Six of the *LET'S GO FLYING* book.

TASK 2.0 The Candidate arranges a time and place for a roundtable discussion consisting of at least six participating cadets.

TASK 3.0 The Candidate moderates the roundtable discussion. Each participant takes one of the pilots and studies his biography. Using a chalkboard, or large flip-paper pad, or six poster boards on easels, the Candidate puts a pilot's name on each sheet and records the input for the following questions:

1. Did the pilot receive his flight training in military or civilian aircraft?
2. Does the pilot have a 4-year college degree?
3. What college did the pilot attend?
4. Did the college have a pre-career training program or ROTC?
5. Did the pilot experience any drug problems while in high school?
6. Did the pilot mention any alcohol-related problems within the family while he was growing up?
7. At approximately what age did the pilot discover he wanted to fly?
8. At approximately what age did the pilot become aware that drugs or alcohol might be a problem in flying for a living?
9. Does the pilot have health maintenance workout program?
10. Did the pilot have friends or associates who succumbed to alcohol or drug issues and subsequently lost their flying status?

TASK 4.0 The Candidate then asks the participating cadets to discuss what these role models have in common, by analyzing the following commonalities:

1. Commonality - Were they all college graduates?
2. Commonality - When did they become interested in being pilots?
3. Commonality - Were any alcohol or drug issues experienced in high school?
4. Commonality - Did any of the pilots ever smoke cigarettes?
5. Commonality - Do the pilots have a physical fitness workout program?
6. Commonality - Did the pilots ever have a friend or close associate who became involved in drug or alcohol abuse?
7. Commonality - Did the pilots take flying lessons before high school graduation?
8. If there was one "outstanding" commonality or feature, that all of these pilots had in common relevant to reaching their career goal, what do you think it is?

TASK 5.0 The Candidate writes a one-page report about the commonalities of the professional pilots featured in this activity. Upon completion, the Candidate submits the term definitions and report to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

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ACTIVITY 4

THE EYES HAVE IT

OBJECTIVE:

To make unit personnel aware of the science of visual acuity.

DISCUSSION – The eyes are absolutely critical for just about every career in the field of aviation. This is especially true for pilots because of the FAA's "see and be seen" philosophy under Visual Flight Rules (VFR). The use of drugs or alcohol can have severe negative effects on vision, from limiting the visual field to destroying visual acuity. This effect can be multiplied at higher elevations, such as when flying at high altitude.

Everyone has at one time or another seen an eye chart in a doctor's office. In this activity, the Candidate is required to acquire an eye chart for use in the unit. The chart is posted somewhere on a wall and then, using masking tape, a line is placed on the floor so the unit members know where to stand (twenty feet from the wall mounting). One by one, everyone reads the eye chart and the records the result on an N-Card. It's a fun activity, but also a valuable learning experience.

A cadet prepares the Snellen Eye Chart for eye testing.

General Charles "Chuck" Yeager was known to have incredible eyesight (20/10), which is about twice as good as normal. Even today in his 80s, he still has 20/15 eyesight. In WWII combat, he could often see enemy aircraft long before his unit mates. This gave him a tactical combat advantage. He is an amazing aviation pioneer.

(Image courtesy of the U.S. Air Force.)

Dr. Robert Sancetta, the featured physician in the *FIT FOR FLYING* book, was asked if the Snellen Eye Chart is still a valid test for flight crews. He said:

> "The FAA uses the Snellen chart (the one designed to be read from 20 feet) as the testing standard for distant vision, but also permits the use of almost all commer cially available testing machines. For the purposes of a Candidate doing some self-research, obviously a Snellen chart is the cheapest way to go. However memorizing the 20/20 line (for distance for first or second class) doesn't always help, as the Aviation Medical Examiner might have one of the machines (and they do tricks lik e telling the pilot to r ead the line backwards, that kind of thing). Near vision will be passed at the standard 14-16 inch length, with either a handheld chart or the more expensive testing machine.
>
> Intermediate vision at 32 feet isn' t tested until age 50 , so that's not really relevant to cadets. Color vision is tested either with the standard Ishihara booklet, or again, on one of the testing machines. You can also go to faa.gov and find, under medical certification, the Guide for Aviation Medical Examiners. Then you can easily locate under 'examination techniques' various links for this." (Robert Sancetta, M.D., 18 June 2010)

ACTIVITY RESOURCES:

1. Snellen Eye Chart
2. Masking tape

TERMS TO DEFINE:

1. Visual acuity
2. Optometrist
3. Ophthalmologist
4. Standard vision
5. VFR or Visual Flight Rules (look up under an FAA resource)

MENTOR NOTE: The object of this activity is to learn about the Snellen Eye Chart and then get the unit involved in testing visual acuity. Discuss this with the Candidate. It is recommended that an actual eye chart be purchased because it appears to be more professional and less of a "toy." All members of the unit are asked to participate by reading the chart and then recording their scores on the N-Card. Privacy should be considered in recording the scores.

If this is the first time that the N-Cards are used: Before beginning the activity, the Candidate sets the N-Cards out on a table and ask everyone to pick up their own card. Their personal "N Number" is put in the upper left corner of the card, and the Mentor records each member's name and N number in a private log file. After the activity is completed, the Candidate collects the completed N-Cards.

This is a new Snellen Eye Chart.

TASK 1.0 The Candidate acquires a Snellen Eye Chart. This is the one that will be used in the unit for visual acuity tests. Normal cost is less than $10.

A strip of masking tape is put down on the floor 20 feet away from the wall.

TASK 2.0 The Candidate uses masking tape to make a line on the floor or carpet that is 20 feet from the wall and parallel to the wall.

TASK 3.0 The Candidate conducts an eye test for all unit members. Individual results should be recorded on N-Cards.

TASK 4.0 The Candidate prepares a 1/2-page report on how the Snellen Eye Chart is used as an instrument for visual acuity. The report must include how the chart is used as part of the FAA medical certification process, and the effect of drugs or alcohol on visual acuity. Upon completion, the Candidate submits the term definitions and report to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

At 20 feet away, the cadet reads the Snellen Eye Chart, first with one eye and then the other. His results are recorded on the N-Card.

N358LH

I was able to read line 9 on the Snellen Eye Chart

This is an example of a 3 x 5 index card with a personal "N number." This person wrote "N358LH" and her Snellen information. It doesn't give a personal name, only the "N number" she selected.

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ACTIVITY 5

THE WEIGHT OF THE ATMOSPHERE

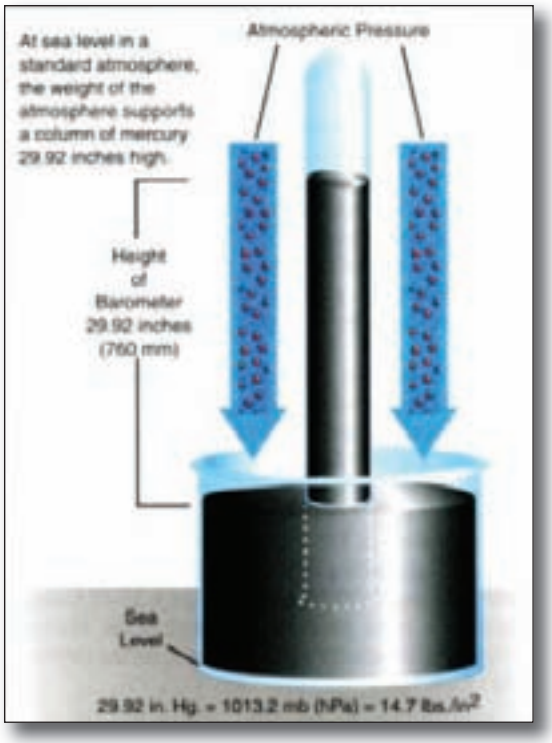
OBJECTIVE:

To raise awareness of the actual weight of the atmosphere upon the human body.

DISCUSSION – When students in a secondary science class hear the teacher explain atmospheric pressure, they are told that the weight of air, beginning at sea level, is 14.7 pounds per square inch. If the teacher is thorough, she will expand the explanation with, "...and as we climb higher above the Earth and eventually reach space, the pressure becomes zero. This means that a one square inch column of air, 100 km tall, would have a weight of 14.7 pounds on every square inch of our body."

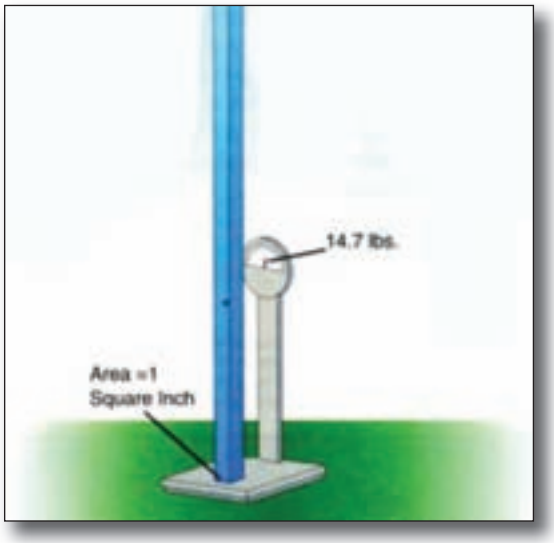
What most teachers don't mention is the fact that an average adult body has an incredible 3,000 square inches of surface area. A square inch is about the size of a postage stamp, meaning we would have to stick 3,000 postage stamps all over our bodies in order to cover it completely. What makes this activity realistic, and educational, is putting a weight of 14.7 pounds on an area about the size of a postage stamp. This generates many questions like: "What keeps us from collapsing under all that weight?" or "Out in space, where we wouldn't have atmospheric pressure, wouldn't we explode?"

14.7 pounds is gently placed upon one square inch of the forearm. The human body has more than 3,000 square inches of surface area on it.



The blue arrows are the air pushing down on the Earth and all that exists here. Note the equation showing how 14.7 pounds per square inch is derived.

(Image courtesy of the FAA.)



This shows that one square inch of air (blue square tube) weighs 14.7 pounds. The human body has approximately 3,000 square inches of surface area, which varies according to size, age, and weight.

(Image courtesy of the FAA.)

ACTIVITY RESOURCES:

1. *FIT FOR FLYING* book, Part Two – "The Flying Environment"
2. 1 square inch of a fuzzy piece of hook-and-loop material
3. Large plastic bottle with handle
4. Bathroom scale
5. Rocks and sand

TERMS TO DEFINE:

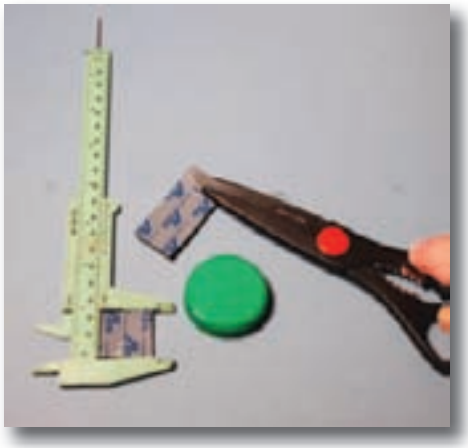
1. Atmosphere
2. PSI
3. Bends
4. Hypoxia
5. Compression
6. Decompression

TASK 1.0 The Candidate reads Part Two of the *FIT FOR FLYING* book.

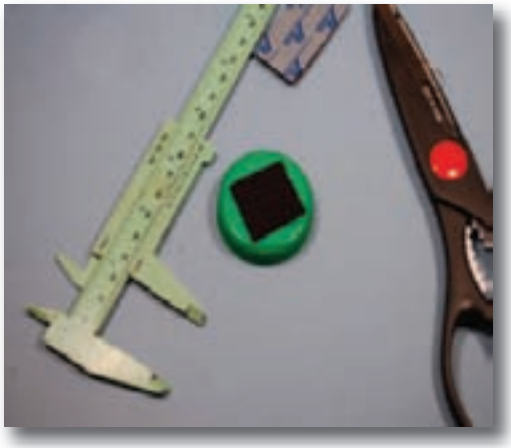
TASK 2.0 The Candidate cuts out a "square inch" from the fuzzy side of a piece of hook-and-loop material. This material can have an adhesive backing so it can easily be attached to the bottle cap. The Candidate salvages a large plastic bottle with handle and attaches the hook-and-loop "stamp" to the lid.

TASK 3.0 The Candidate fills the bottle with rocks until the weight is slightly less than 14.5 pounds, then places the bottle on the scale and adds sand until the weight is exactly 14.7 pounds. Note: Verify the scale is "corrected" to zero by removing all weight and moving the rotating adjustor to a reading of zero before placing the bottle on the scale.

A large tea bottle with a handle can be used to contain the weight of 14.7 pounds.



A piece of fuzzy, soft hook-and-loop material is cut to one square inch.



One square inch of material is adhered to the surface of the bottle cap. Note: The bottle cap is just a little larger than a square inch and yet soft enough not to harm anyone when placed on the arm of a cadet or senior member.

This clearly shows the one-inch "stamp" on the top. It's now ready for the weigh-in!

This large plastic bottle is filled to exactly 14.7 pounds using sand and rocks.

TASK 4.0 The Candidate gently places the "atmosphere bottle" on the arm of each cadet or senior member to show how much a column of air 100 km tall would weigh.

TASK 5.0 After completion of the activity, the Candidate submits the term definitions to the Mentor for review and approval. The Candidate answers the Mentor's questions per the Meaningful Learning Experience Rubric. The Candidate and Mentor must also discuss the following:

1. Did the weight seem heavy?
2. Discuss the fact that there is a weight of 14.7 pounds pushing down on every square inch of the body. What keeps the body from collapsing inward?
3. Discuss why an older person can feel a storm coming or a weather change.
4. Discuss what would happen in space if an astronaut didn't have a protective suit.
5. When you take in a deep breath of air, what makes the lung expand?
6. When exhaling air, what makes the lungs contract inward?
7. Conversely, why does a scuba diver feel greater pressure the deeper she goes?
8. What effect would the use of drugs and/or alcohol have on the human body during severe compression and decompression events, such as scuba diving or explosive aircraft decompression?

ACTIVITY 6

CAPTURE THE BLACK BULLET

OBJECTIVE:

To test the reaction time of cadets and senior members catching a soft projectile in flight.

ACTIVITY RESOURCES:

1. Foam square (12x12 inch) and about 3/8-inch thick to use as a projectile platform
2. Hobby knife
3. Two or three #64 rubber bands
4. A piece of foam tube, diameter 1/2-inch or 3/8-inch (commonly used for pipe insulation)
5. Protective glasses or goggles
6. Medium grit sandpaper

TERMS TO DEFINE:

1. Speed
2. Velocity
3. Speed of a nerve impulse

DISCUSSION – Using a lightweight and safe foam tube, the Candidate will build a little device that is used to check reaction times. This is the first of two similar activities. The foam tube is made to slip into a hole in the foam board that is just a little larger in diameter. Once the Candidate attaches the rubber band, it is ready to "launch." The higher the pull, the faster the tube "flies." The Candidate then sets up the activity by having another cadet seated and ready to "clap" the foam tube as it flies out of the hole. If the tube is marked, the Candidate can ask the seated cadet to call a "number." The higher the number, the faster it goes and the more difficult it is to "capture" the black foam bullet. As a precaution, it is always a good idea for the participants to wear protective glasses or goggles.

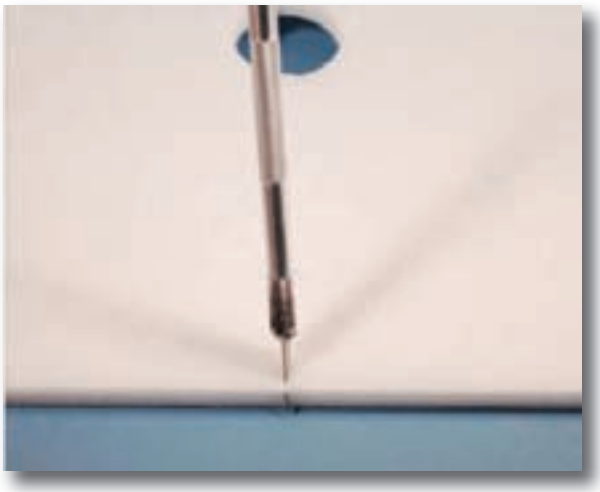
TASK 1.0 The Candidate uses the following how-to photography to construct a foam board launcher:

Step 1: Search local craft stores or online suppliers to find a foam board approximately one foot square by 3/8-inch thick.

Step 2: This square foam board is the launcher. Cut a hole in the center of the board using the hobby knife. Make the hole slightly larger than the tube so the foam tubing slips easily through it.

Step 3: Wrap a piece of medium grit sandpaper around the foam tube, grit side out, and draw it through the center hole of the foam board to make the hole perfectly rounded.

Step 4: Cut two or three #64 rubber bands in half. Tie them in the middle and tie a knot at each end.



Step 5: Make two slits in the foam board, on each side of the hole, to secure the ends of the rubber band.

Step 6: Mount the tied rubber bands across the top of the foam board, and insert the foam tube (or "black bullet") in the center hole from the bottom. The Candidate pulls up on the foam tube, stretching the rubber band. Once released, it shoots the foam tube downward and the seated cadet tries to "capture" it.

Step 7: The seated cadet puts her hands in a "clapping position," and the foam tube will be launched down the blue line. The Candidate calls, "3, 2, 1, fire!" The seated cadet must capture the flying tube somewhere along the blue line. This is fun and cadets take great pride in being fastest!

TASK 2.0 The Candidate explains to the group that she is going to do a reaction time test by launching a "black bullet." The volunteer cadet is asked to sit down with feet about 18 inches apart and hands in a "clapping position" (see illustration above).

TASK 3.0 Once the cadet is seated, the Candidate loads the foam tube and calls, "3, 2, 1, fire!" The foam tube is launched on "fire," and the seated cadet attempts to capture the flying tube. The group applauds the cadet with the fastest reaction time.

TASK 4.0 Upon completion of the activity, the Candidate submits the term definitions to the Mentor for review and approval. The Candidate and Mentor must also discuss the effects that drug and alcohol use would have on reaction time. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

Fast, but not quite fast enough. Notice the white line of the black foam bullet as it bounces off the floor.

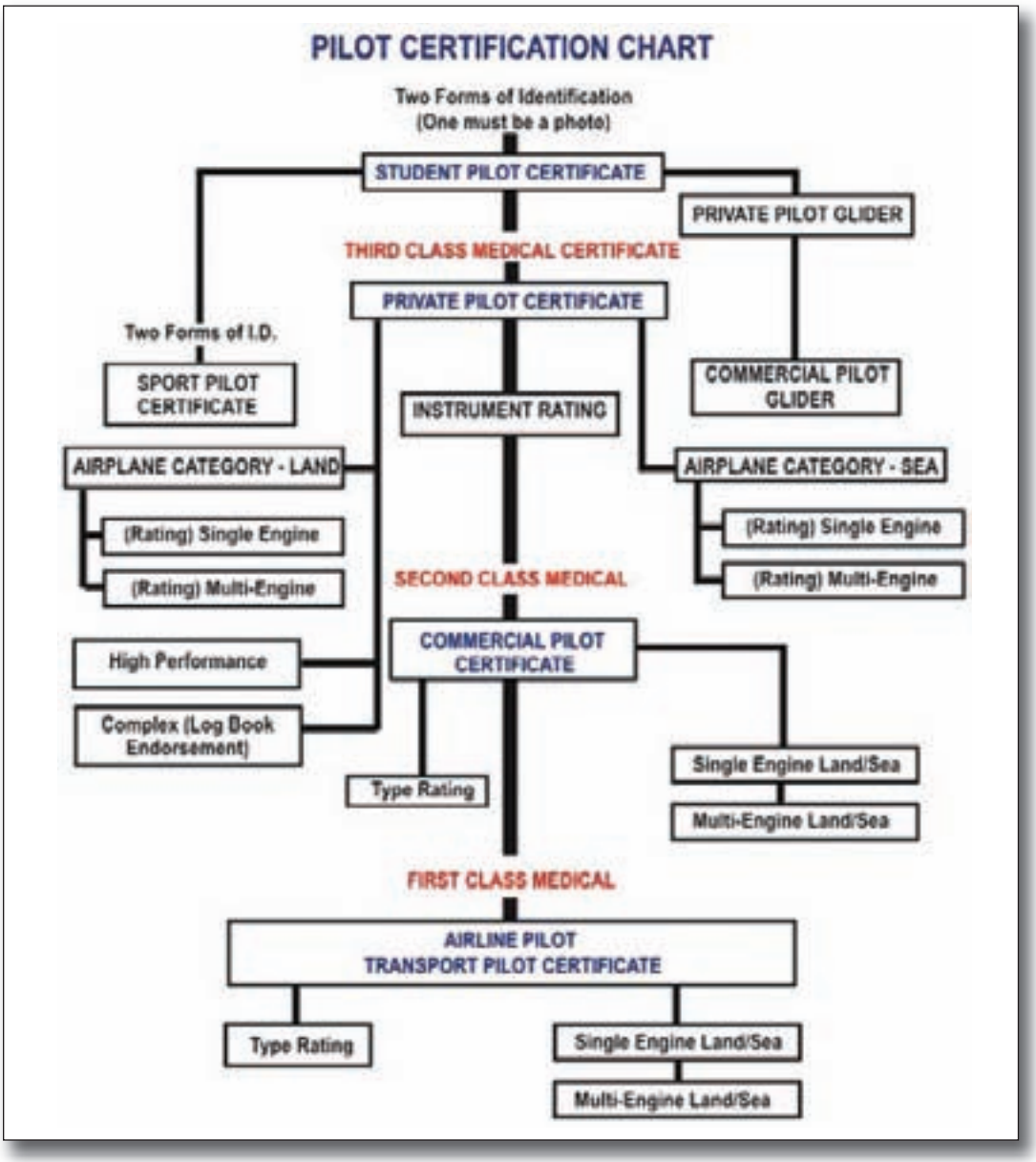
7

ACTIVITY 7

A CAREER FLIGHT PLAN

OBJECTIVE:

To raise awareness of what it takes to become an airline pilot.



This is a pilot certification flow chart. When finished, the Candidate's "flight plan" can look similar to this. The object is to make a visual wall plan that shows the path to an airline career either vertically or horizontally.

(Image courtesy of Peggy Greenlee.)

DISCUSSION – If someone asks the question, "What is CAP all about?," near the top of most answers would be, "Civil Air Patrol is about airplanes, flying, fellowship, fun, leadership, self-esteem and achievement." This activity requires the Candidate to build a visual career flight plan that features all of the stages required to become a professional airline pilot. The Candidate uses a large paper or cardboard display to showcase the career plan.

In the beginning of this activity, the Candidate studies the flow chart and researches Part Five in the *LET'S GO FLYING* book. This flow chart may be used as an example to show the details for each step, starting with Student Pilot Certificate.

"Cadets, how many of you want to be pilots?"

To become an airline pilot requires dedication, planning and commitment.

(Image courtesy of Adam Wright.)

The object is to display a plan that shows the steps necessary to become an airline transport pilot, starting with the student pilot certification. After solo, the Candidate must show how training continues on toward the Private Pilot certificate.

In the visual plan, the Candidate must include the role of medical certification and ground school training. At every level during flight training, there will be stage checks on aeronautical knowledge. Once all of these requirements are met, the Candidate must show that the FAA will give an oral exam and a test of demonstrated ability, known as a "check ride."

From the Private Certificate, the student moves on to an instrument rating, a 2nd class medical certificate, more ground school, another check ride, and, eventually, the commercial pilot's certificate. Finally, after 1,500 hours of flight time is logged, the pilot takes yet another physical examination, a written test, and a check ride. At the end of all of the training, the pilot can seek employment as an airline pilot. The Candidate sets up a visual "plan" so that others can see the training required.

ACTIVITY RESOURCES:

1. *LET'S GO FLYING* book, Part Five
2. A self-stick wall pad
3. 4x8 foot foam board (optional)

TERMS TO DEFINE:

1. License
2. Medical certificate
3. Pilot certificate
4. Commercial pilot

If the Candidate plans to showcase the flight plan to the unit, a self-stick wall pad is an effective way to make a presentation without a chalkboard or an easel with fold-over paper.

TASK 1.0 The Candidate reads Part Five of the *LET'S GO FLYING* book.

TASK 2.0 The Candidate constructs a visual career plan on a wall pad or foam board. This could look like a visual aid for ground school. The career plan should emphasize the fact that a medical certification is part of the process, and must highlight the FAA's zero tolerance policy on drug and alcohol use by pilots.

This "commitment pledge" can be administered by the Mentor. The pledge is: "I (state your name), hereby promise that I will not do drugs or alcohol during my flight training or during my career as a pilot." In the production of this manual, a total of 138 cadets made this pledge and they are now on their way to becoming America's best pilots in both civilian and military aircraft.

(Image courtesy of Russ Gruell.)

TASK 3.0 (Optional) The Candidate may request that all of those who desire to become pilots take an oath (commitment pledge) that they will not do drugs or alcohol during their flight training or during their career. The Mentor administers the oath.

TASK 4.0 Upon completion, the Candidate presents the term definitions and flight plan to the Mentor for review and approval. The Candidate has the option to present the flight plan to the unit at a designated time and location. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

This activity is dedicated to the memory of Captain Jason Dahl. He did his initial flight training in Civil Air Patrol, and he went on to become a pilot for United Airlines. He was the aircraft commander of UAL Flight 93, which crashed in a hijack attempt by terrorists during the attacks on September 11, 2001.

(Image courtesy of United Airlines.)

This could have been Flight 93 with Jason Dahl as Captain. This dramatic 757 image was taken by another former Civil Air Patrol cadet who made his aviation dream come true by dedication, hard work, and living a drug-free lifestyle.

(Image courtesy of Adam Wright.)

8

ACTIVITY 8

A BARANY CHAIR AND THE GRAVEYARD SPIRAL

OBJECTIVE:

To demonstrate the effects of vertigo using a constructed or purchased freely rotating chair.

DISCUSSION – The Candidate can involve both cadets and senior members in this activity, which is featured in many FAA aviation physiology workshops. The ultimate requirement is a freely rotating chair with someone in it. This rotating seat is called a Barany Chair.

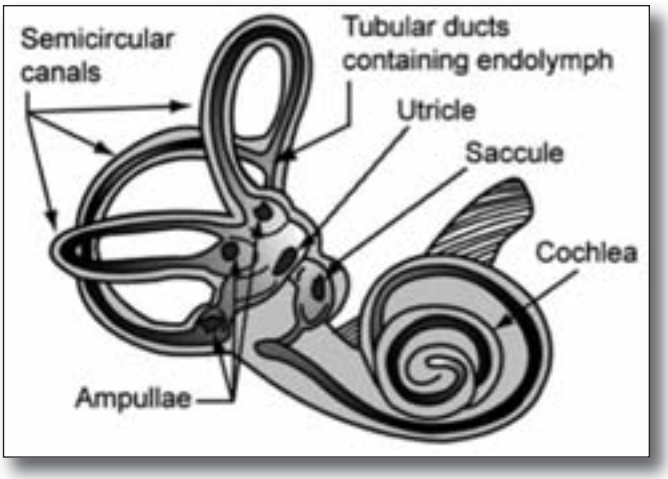
The *FIT FOR FLYING Instructor's and Conference Guide* shows how to build a Barany Chair. It is a common office seat mounted in an automobile's rear axle housing. The one used in the book was purchased from a wrecking yard and was part of an old Nissan Sentra. The ball-bearing housing holds the seat and allows it to rotate with extreme smoothness.

Another option is to purchase a Barany Chair online or from a beauty supply shop. With a little research, a nice used chair can be found for less than $50. It is recommended that the Mentor get involved in this purchase to ensure an appropriate purchase is made without unnecessary expense.

The question may arise, "What does a beauty shop salon chair have to do with flying?" It all comes down to the physiological fact that a human's inner ear has a mechanism that can tell a pilot the wrong information. In a worst-case scenario, it could even cause a crash. In this activity, the rotating chair simulates the cockpit of an airplane, and the "pilot" is the person seated in the rotating chair. When seated, a pilot has a horizon out in front of the airplane and also in the classroom. The classroom horizon can be "removed" by putting on a pair of blacked-out goggles or a blindfold. In real flying, a similar situation can occur when a pilot flies into heavy clouds, or at night when the horizon is lost. If, for any reason, the pilot starts making a turn, such as being put in a holding pattern, this can set up the disorientation.

In the classroom, the seated person (acting as a pilot) puts on a blindfold to eliminate the horizon, and the chair is slowly rotated in one direction. To show the observers what's going on, the seated person is given a pilot's "stick" and will show that they are turning by moving the stick in the direction of the turn. In a real airplane, the pilot would either rotate the control yoke, or move the actual stick in the direction of the turn.

Whenever the body experiences a turning motion, the brain receives the information from sensors in the inner ear. The inner ear mechanism contains a fluid called the endolymph. There are also tiny hairs that sense movement within the fluid. As the seat, or the aircraft, starts turning, the fluid moves and so do the tiny hairs. Once established in the turn, the hairs will straighten up. The movement of the hairs within the fluid can tell the pilot that she is turning, but the straightening of the hairs can provide conflicting or false information.



The Vestibular System.
(Image courtesy of NASA.)

False information occurs because of movement within the vestibular system, shown below. The three semicircular canals are connected to two membranous sacs called the *saccule* and *utricle*. The saccule and utricle are often referred to as the *otolith organs*. The otolith organs allow us to sense the direction and speed of *linear acceleration* and the position (tilt) of the head. The semicircular canals allow us to sense the direction and speed of *angular acceleration*. When demonstrating the Barany Chair, the rotation causes the endolymph within the axis of the semicircular canal to start moving. At first, the inertia of the fluid causes it to lag behind the motion of the seated person's body. This causes the hair cells to bend. Now stimulated, the hair cells send signals to the brain telling it that motion has been initiated and it also tells the speed and direction. When the rotating chair is allowed to stop, the momentum of the now-moving endolymph causes it to continue moving even though the seated person's head and semicircular canals have stopped. The hair cells are now bent in the exact opposite direction as before. This sends a false signal to the brain, telling it that the direction of motion has reversed. The pilot or seated person now thinks that they are going the other direction. If a blindfold is removed, the pilot will often be shocked to learn that she is standing still (NASA, "Web of Life," http://weboflife.ksc.nasa.gov/learningResources/humanVestibularSystem.htm, accessed September 2011). In a real flying situation, the pilot senses that a turn in the opposite direction and a full bank is initiated. The airplane can end up in a spiral which, if not corrected, can result in a crash: the Graveyard Spiral.

ACTIVITY RESOURCES:

1. Barany Chair
2. Blacked-out goggles or blindfold
3. A pilot's joy stick, made of a broom handle or piece of PVC pipe

TERMS TO DEFINE:

1. Barany (the man)
2. Physiology
3. Aeromedical

TASK 1.0 The Candidate coordinates acquisition of the materials and sets up a place and time to conduct this activity. The Candidate selects a volunteer that does not have problems with vertigo to serve as the "pilot." The Candidate and Mentor must realize that this maneuver can cause a person to vomit, and take appropriate precautions.

TASK 2.0 The Candidate seats the pilot in the Barany Chair and provides a blindfold or blacked-out goggles to eliminate horizontal "clues."

TASK 3.0 The Candidate gives the pilot a "joy stick," which can be a broom handle or a piece of PVC pipe, and instructs the pilot to use the joy stick to indicate the direction the chair is turning.

TASK 4.0 The Candidate or Mentor rotates the pilot slowly for about 10-15 rotations, and then very gently slows the chair to a stop. It is highly recommended that the Candidate and Mentor use the utmost caution to keep the Barany Chair motion slow and restrained. During the rotation, the pilot is asked to show the direction of rotation by leaning the "joy stick" in the direction of the turn. When the pilot comes to a stop, a full stick direction reversal should be observed. The blindfold or goggles can now be removed. Once the blindfold is removed, it reassures the pilot if everyone applauds her "skill in flying!"

TASK 5.0 The Candidate should explain to the audience and the pilot what happened:

> "... The endolymph fluid in the semicircular canal will lag behind the initial motion. Signals sent to the brain will be interpreted as bodily rotation in a particular direction. Gradually, the endolymph in the yaw semicircular canal will catch up with the motion, and stimulation of the hair cells in this canal will stop. The brain will falsely interpret the lack of hair cell stimulation to mean that the chair has come to rest. Later, when the chair slows down or stops, the momentum of endolymph will cause it to continue to flow through the yaw canal. Stimulation in the opposite direction will be falsely interpreted as movement in the opposite direction" (NASA, "Web of Life," http://weboflife.ksc.nasa.gov/learningResources/humanVestibularSystem.htm, accessed September 2011).

TASK 6.0 Upon completion, the Candidate submits the term definitions to the Mentor for review and approval. The Candidate answers the Mentor's questions per the Meaningful Learning Experience Rubric. The Candidate and Mentor must also discuss the effects that drug and alcohol use would have on pilots in the Barany Chair or in actual instrument flight situations.

Flying above the clouds is a clear and beautiful sight. However, if you have to come down through the clouds on your way home, you may have to rely on your instruments. Without a horizon reference, you can easily experience vertigo. Even the smallest amount of alcohol or drugs in the blood stream can cause disastrous consequences under these conditions.

(Image courtesy of Civil Air Patrol.)

A participant is placed in the Barany Chair in preparation for her "flight" at the 2009 CAP National Board and Annual Conference.

This Barany Chair participant can't believe she's standing still. Notice a full-left stick deflection!

9

ACTIVITY 9

EXCELLENCE IN NON-AEROSPACE CAREERS

OBJECTIVE:

To create a discussion with cadets about non-aerospace careers that require excellence in human performance.

DISCUSSION – In a large DDR workshop attended by the Author, all of the discussion topics were about excellence in the field of aerospace and the zero tolerance it has for alcohol and drugs. One senior member said, "Aerospace is very close to the top when it comes to excellence. We like to think that all of our airplanes are made of the finest materials and the components are assembled by the best workers. We like to think that our pilots are in the best possible physical condition and have been trained by the finest, most qualified instructors. We like to think that we put safety ahead of every operation and that America has the finest transportation system in the world. We feel the same about our spacecraft and exploration of the universe. We think that America still leads the world in aerospace technology because we have set the highest possible standards in every facet of the industry. This is excellence."

Then a cadet said, "I have a medical issue that will never be acceptable in aviation or space. What about me?" For a moment, the room was silent and then one of the attendees said, "There are thousands of careers that don't require medical examinations, drug testing, and annual performance examinations, but still demand a high level of excellence in the workplace. I think our cadets should know more about what there is outside of aerospace."

Another CAP senior member said, "That's true. Excellence is especially important in my field of computers. America is known world-wide for its leadership in computer science and technology. We have achieved that because we've developed very high standards. International competition requires that we have excellence in the workplace."

The discussion went on for several minutes and before it was time to take a break, everyone agreed cadets should know more about non-aerospace career possibilities that depend upon excellence and a commitment to the highest standards in human performance. This activity is about excellence in the world outside of aerospace.

TASK 1.0 The Candidate announces to the unit that they will have a 30-minute roundtable discussion on "Excellence in non-aerospace careers."

TASK 2.0 The Candidate asks for six cadets who are not considering aerospace as a career to research a field that interests them and to bring their viewpoints to a 30-minute roundtable discussion. Emphasis should be made on careers and ambitions that have high standards and require excellence in human performance.

TASK 3.0 The Candidate arranges a time and a place for this activity.

TASK 4.0 On the day of the activity, the Candidate moderates the forum and the Mentor makes sure that order and pace are maintained during the discussion.

TASK 5.0 The Candidate announces that the object of the roundtable discussion is to discuss excellence in human performance outside of the aviation/aerospace industry.

TASK 6.0 The Candidate appoints a time keeper to notify the group when there are only five minutes remaining.

TASK 7.0 The Candidate then goes to the easel and asks the cadets to list 1-3 professions or career possibilities that interest them. For each profession, the group should discuss:

1. Excellence in human performance
2. Policies on drug and alcohol tolerance
3. Industry policies toward employees with problems related to alcohol and drugs
4. Demands and rewards for those who are "the best of the best"

TASK 8.0 The Candidate writes a one-page summary of the roundtable discussion. Upon completion, the Candidate submits the report to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

ACTIVITY RESOURCES:

1. A meeting location with table and chairs
2. An easel with a large flip-over paper pad
3. One or two large markers
4. A recording device and/or a notebook

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ACTIVITY 10

THE BODY MASS INDEX

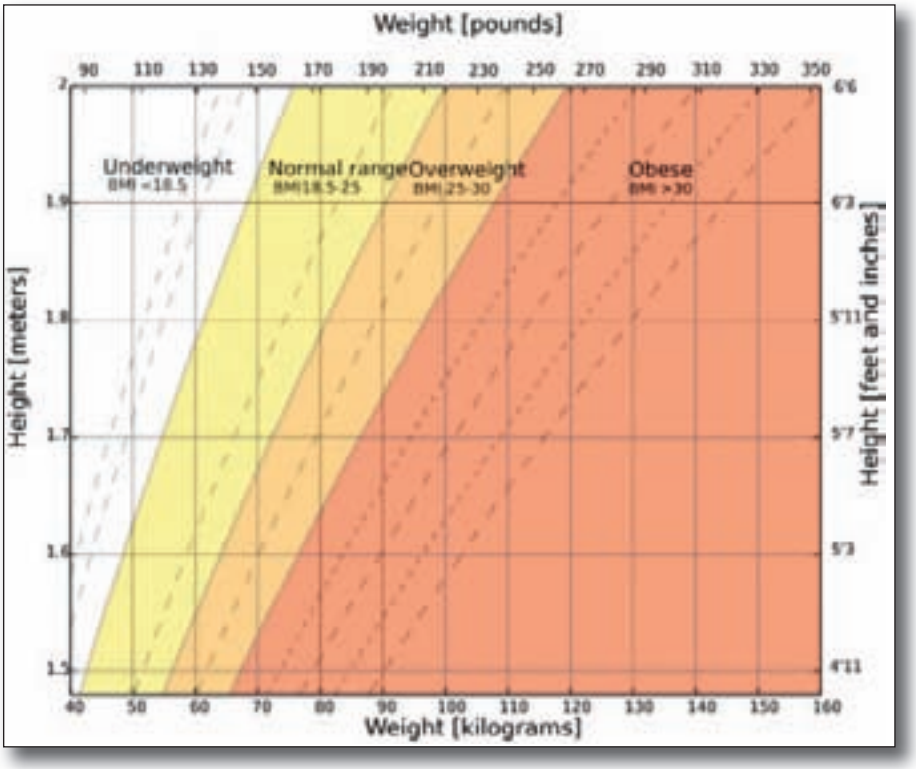
OBJECTIVE:

To raise the awareness of the standard used by the Food and Drug Administration to show the proper height-to-weight and mass ratio for a human body.

DISCUSSION – The Body Mass Index (BMI) is simply a mathematical guide that can be used to help CAP members understand what is considered to be a normal weight. The Candidate makes available a copy of the BMI chart to all members of the unit. The secondary goal is to provide recommendations for weight loss and a better health maintenance lifestyle by providing a list of health tips.

ACTIVITY RESOURCES:

1. *FIT FOR FLYING* book, Part Five



The body mass index chart.

(Illustration courtesy of the Food & Drug Administration.)

TASK 1.0 After reading Part Five of the *FIT FOR FLYING* book, the Candidate makes copies of the BMI chart to hand out to each member of the unit.

TASK 2.0 The Candidate also copies the following list of health recommendations for each member of the unit.

TIPS FOR MAINTAINING A HEALTHY WEIGHT

1. Drink more water. Water can be used to suppress appetite.
2. Try eating at least one vegetable per day.
3. Allow 10 minutes to pass before eating something you crave.
4. Stop eating white bread products.
5. Try fish instead of a red meat meal once a week.
6. Keep a food diary. Studies show that people who keep a food diary eat 15% less.
7. Add 1,000 walking steps every day. Get a pedometer to keep track of every step.
8. Get rid of any "fat clothes" you have in your closet.
9. Cut your portions by at least 10-20%.
10. Eat your lunch and dinner on smaller plates.
11. Use low fat milk in coffee drinks.
12. Start your day with a bowl of cereal. Study data shows that people who eat cereal for breakfast every day have a lower rate of obesity or diabetes.
13. Cut in half the number of times you eat out in a week.
14. Limit drive-through meals. Try going in, sitting down, and eating slowly.
15. Resist food courts, candy stores, cookie shops, and decadent specialty food places.
16. Limit fruit juices, which are very high in pure sugar.
17. Cycle or walk to work at least one day a week.
18. Eat a lower calorie dinner in the evening.
19. When given an option, always order the "smallest" portions.
20. Don't graze while you gaze. Studies show that people eat more while watching TV.

TERMS TO DEFINE:

1. Mass
2. Obese
3. Kilogram
4. Anorexic

TASK 3.0 The Candidate obtains permission from the Unit Commander and Mentor to post these suggestions on a bulletin board or other notification location.

TASK 4.0 The Candidate conducts a demonstration for unit members on how to calculate BMI using the chart, followed by a discussion of how to move BMI from the overweight or obese category into the normal category by using the list of health tips.

TASK 5.0 Upon completion, the Candidate submits the term definitions to the Mentor for review and approval. The Candidate answers the Mentor's questions per the Meaningful Learning Experience Rubric. The Candidate and Mentor must also discuss the effects that drug and alcohol use can have on body weight and a healthy lifestyle.

11

ACTIVITY 11

AN EMAIL INTERVIEW WITH CAPTAIN JOE BALZER

OBJECTIVE:

To give cadets an opportunity to interview an airline pilot who has written a book about alcoholism and flying.

DISCUSSION – For many years, Joe Balzer was an alcoholic. In 1991, he and two other airline pilots were arrested and sent to federal prison for flying while under the influence of alcohol. His story reveals tremendous courage, inner strength, and a resolve to overcome the seemingly impossible obstacles he faced during and after his time in prison. After arrest, conviction, and sentencing, the FAA took away all of his pilot certificates and he was left with only the logged flying hours he had accumulated during his career up to that point. According to Joe, he had many angels in his corner, including his beautiful wife Deborah, his family, and his church. With a strong faith in God and a will to fly again, Joe was eventually able to fly with American Airlines after 9 years of sobriety. Because he has such a strong conviction about alcohol abuse and its consequences in the aviation world, he has given the Candidates in the DDRx program a chance to interview him by email.

ACTIVITY RESOURCES:

1. *Flying Drunk* book
2. Internet

All of the steps necessary to make contact with Captain Balzer are listed below. The connection is made through CAP National Headquarters and everything between the Candidate and Captain Balzer is confidential. The Civil Air Patrol Drug Demand Reduction program welcomes Captain Joe Balzer, American Airlines, as part of our DDR Team.

TERMS TO DEFINE:

1. Blood Alcohol Content (BAC)
2. Felon

TASK 1.0 The Candidate obtains and reads a copy of *Flying Drunk* by Captain Joseph Balzer, American Airlines. This book is available from online book suppliers or your local library.

TASK 2.0 With the Mentor's assistance, the Candidate creates at least 10 questions that will be sent to Captain Balzer. These questions may refer to his life before, during, or after his ordeal of being arrested by federal authorities. Questions about his life as a teenager growing up with a burning desire to fly are also encouraged, as are questions about what Captain Balzer's life was like after prison and the way companies treated him after learning he was a convicted felon.

Joe Balzer, Captain, American Airlines.

(Image courtesy of the Balzer family.)

TASK 3.0 The Candidate emails National HQ/CAP to get Captain Balzer's email address.

TASK 4.0 Once the email address is received, the Candidate sends an introductory note to Captain Balzer similar to the following:

Dear Captain Balzer:

I am a Civil Air Patrol cadet and I'm participating in the DDR Excellence Program. I would like to request your permission to submit a set of questions as an interview for Activity 11. I understand you have a busy flying schedule and I will try to keep this interview as short and concise as possible.

My name is:_____and I am in the _____squadron located in (City)_____, (State)_____, (ZIP Code)_____. My email is _____. Thank you for your consideration and permission.

The Candidate is required to read the book *Flying Drunk* for this activity.

TASK 5.0 Once Captain Balzer has responded to the interview request, the Candidate submits the questionnaire as a return email to Captain Balzer.

TASK 6.0 After receiving Captain Balzer's interview responses, the Candidate utilizes them in a report that can be printed out and shown to members of the unit. Upon completion, the Candidate submits the term definitions and interview report to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

12

ACTIVITY 12

FAA PILOT SAFETY BROCHURES FOR A SQUADRON LIBRARY

OBJECTIVE:

To provide FAA Aeromedical Pilot Safety brochures to all members of the unit.

DISCUSSION – The FAA has an incredible selection of published information relating to aviation physiology, drugs, pilot performance, health maintenance and much more. In an effort to enlighten CAP members, this is an excellent resource for a Candidate to educate both senior members and cadets.

The Candidate must understand that the emphasis in the DDR Excellence program is about the world of aviation and aerospace. Any issue relating to airplanes, flying, and even aerospace has a place in these activities. The FAA has a division that is dedicated to the health and well-being of pilots. In order to educate pilots and support personnel, the FAA uses publications in the form of pamphlets. These pamphlets are professionally published, kept up-to-date, and of value to both cadets and senior members. They are free, including shipping.

ACTIVITY RESOURCES:

1. FAA Pilot Safety brochures

FAA Pilot Safety brochures.

TASK 1.0 The Candidate writes to the FAA CAMI division and requests at least one each of the Pilot Safety brochures. As long as they are available, the Candidate can order enough to create a library for the local unit and hand out copies to unit members. The address for material requests is:

Civil Aerospace Medical Institute (CAMI)
PILOT SAFETY BROCHURES CLERK
6500 South MacArthur, Room 302
Oklahoma City, OK 73169

http://www.faa.gov/pilots/safety/pilotsafetybrochures

Sample Pilot Safety topics currently available from the FAA include: *Obstructive Sleep Apnea; Acceleration in Aviation: G-Force; Alcohol and Flying: A Deadly Combination; Altitude-Induced Decompression Sickness; Aviation Safety Courses for Civil Aviation Pilots; Carbon Monoxide: A Deadly Menace; Circadian Rhythm Disruption and Flying; Deep Vein Thrombosis & Travel; Fatigue in Aviation; Fit For Flight; Hearing and Noise in Aviation; Hypoxia: The Higher You Fly...The Less Air In The Sky; Information for Pilots Considering Laser Eye Surgery; Medical Certification Questions and Answers; Medications and Flying; Obstructive Sleep Apnea; Oxygen Equipment Use in General Aviation Operations; Pilot Medical Certification Information for the Aviation Community; Pilot Vision; Seat Belts & Shoulder Harnesses: Smart Protection in Small Airplanes; Smoke; Spatial Disorientation: Why You Shouldn't Fly By the Seat of Your Pants;* and *Sunglasses for Pilots: Beyond the Image.*

Civilian CAP pilots participate in an FAA flight physiology workshop held in an altitude chamber on an Air Force base.

TASK 2.0 The Candidate creates bundles of Pilot Safety brochures that contain one copy of each topic. A rubber band around each stack will keep them organized.

TASK 3.0 The Candidate sets aside one bundle of Pilot Safety for the unit library. The Candidate should inform the unit members that these are available on a check-out basis, and N-Cards should be turned in to keep track of those out on loan.

TASK 4.0 The Candidate also offers any additional sets of brochures to unit members for their own personal libraries.

TASK 5.0 The Candidate reads either the brochure on *Alcohol and Flying* or *Medications and Flying*, and prepares a half-page report summarizing the information. Upon completion, the Candidate submits the report to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

The FAA's Virtual Reality Flight Simulator is used in Aviation Physiology workshops.

(Image courtesy of FAA.)

13

ACTIVITY 13

ENERGY DRINKS: ARE THEY REALLY SAFE?

OBJECTIVE:

To investigate the possibility that energy drinks may be a health hazard.

ACTIVITY RESOURCES:

1. Nutrition label information for selected energy drinks
2. Internet

TERMS TO DEFINE:

1. Caffeine
2. Guarana
3. Taurine
4. Insotol
5. Carbohydrate
6. L-Carnitine
7. Ginkgo Biloba

Popular energy drinks available to the public.

DISCUSSION – There is concern in the medical community about the effects of energy drinks on human health. There are always two sides to every issue, and it is up to the Candidate to investigate the facts, research the side effects, and then make a "judgment call" on whether or not she thinks that energy drinks are safe. Note: The author does not recommend that the Candidate try any of these drinks.

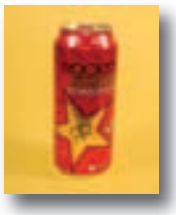
TASK 1.0 The Candidate contacts the Mentor to get approval before conducting this activity.

TASK 2.0 Using the internet, the Candidate researches and annotates findings on the following topics:

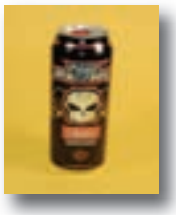
- "Energy Drink Health Concerns"
- "Energy Drinks and Health Risks"
- "Energy Drinks: Hazardous To Your Health?"
- "Energy Drinks May Put Teenagers At Risk"
- "Energy Drinks Pose Health Concerns for Athletes"

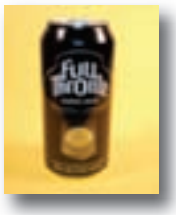
TASK 3.0 The Candidate selects four energy drinks with the help of an adult and fills in the required content information on the chart.

TASK 4.0 The Candidate searches the internet to find out if any of the contents of the four energy drinks have been banned in countries outside the United States. In the final report, the Candidate must include information found on which countries banned energy drinks and why they were banned.


Rockstar


Red Bull


No Fear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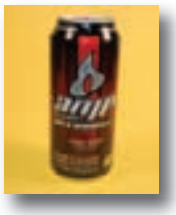
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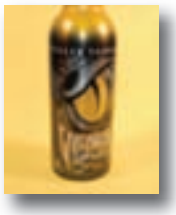
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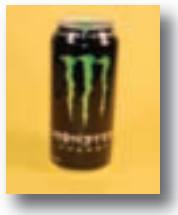

Monster Energy

	DRINK #1	DRINK #2	DRINK #3	DRINK #4
Name				
Caffeine				
Sugar				
Vitamins				
Calories				
Carbs				
Sodium				
Guarana				
Taurine				
L-Carnitine				
Ginseng				
Ginkgo Biloba				
Insotol				

TASK 5.0 Based on the research, the Candidate summarizes personal conclusions in a 1/2-page report regarding energy drinks as a health risk. The report must include whether the Candidate thinks energy drinks may be a risk to personnel during flight operations. Upon completion, the Candidate submits the term definitions and report to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

14

ACTIVITY 14

INNOCENT LOOKING, BUT POTENTIALLY ADDICTIVE!

OBJECTIVE:

To investigate several over-the-counter (OTC) products and determine if their alcohol content presents a potential health issue.

DISCUSSION – Some time ago, a high school teacher was discussing the effects of alcoholic drinks on reaction time, vision, the internal organs, etc. The class was a general physical science course and the students were all 13-15 years old. The school was only two blocks from a strip mall and drug store. The day following the discussion, the teacher took the students on a "field experience" to the drug store to see the alcoholic contents of OTC products. The students were astonished to find 19 products that contained the same alcohol as that found in bar drinks. This is known as ethyl alcohol or ethanol.

In just about every drugstore, you can find two very common substances, mouthwash and hand sanitizer. Both products can contain the same alcohol (ethanol) as found in strong alcoholic beverages.

ACTIVITY RESOURCES:

1. DDR Lesson Plans
2. *FIT FOR FLYING* book
3. *LET'S GO FLYING* book

TERMS TO DEFINE:

1. Ethanol
2. Methanol
3. Isopropanol
4. Proof (as related to alcohol)

TASK 1.0 The Candidate obtains permission from parents and the Mentor before beginning this activity.

TASK 2.0 The Candidate visits a local drugstore and locates 6 OTC products that contain ethyl alcohol.

TASK 3.0 The Candidate writes a 1/2-page overview about how an OTC product, such as mouthwash or hand sanitizer, could be abused or addictive.

Notice on the "Drug Facts" under the sub-heading of 'Inactive ingredients' that this mouthwash product contains 21.6% alcohol.

TASK 4.0 Using the DDR lesson plans on the resources page of the DDR website at www.capmembers.com/ddr or the *FIT FOR FLYING* book, the Candidate writes a 1/2-page overview on the effects of ethanol on the human body.

TASK 5.0 Using either the *LET'S GO FLYING* or *FIT FOR FLYING* book, the Candidate writes a 1/2-page overview of the effects of alcohol abuse on a pilot's career. Please include the role of the National Register in your overview.

TASK 6.0 Upon completion, the Candidate submits the term definitions and all three reports to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

15

ACTIVITY 15

A HIGH ALTITUDE EXPERIENCE

OBJECTIVE:

To gain a better understanding of the affects of high altitude on human performance.

DISCUSSION – A great deal of coverage in the *FIT FOR FLYING* book was dedicated to the effects of high altitude. This activity requires that the Candidate investigate this subject further, for the following reasons: (1) The FAA has very strict rules about flying and oxygen requirements. (2) In cooperation with the Air Force, the FAA has numerous aviation physiology courses conducted around the United States that utilize altitude chambers to demonstrate the effects of high altitude under controlled conditions. (3) If the Candidate plans to attend one of the CAP summer flight encampments, most of the flying will take place at higher altitudes, some as high as 10,000 feet. (4) If the Candidate plans to attend the U.S. Air Force Academy, she will be spending four years at a school which is more than 7,200 feet above sea level.

This activity is all about "altitude education." If a Candidate is aware of the potential problems that may occur at high altitude, she can educate others so they may know how to recognize the symptoms before someone starts to get sick.

The goal, therefore, is to study and understand how the body responds to a decrease in oxygen. Considering the popularity of snowboarding and skiing, especially in high altitude mountain areas, it is important that cadets and their family members understand what to do to avoid altitude sickness. This is win-win education for everyone.

ACTIVITY RESOURCES:

1. *FIT FOR FLYING* book, Part Two
2. Internet

TERMS TO DEFINE:

1. Hypoxia
2. Hypoxic hypoxia
3. Anoxia
4. Hypemic hypoxia
5. Hyperventilation
6. Decompression
7. Histotoxic
8. Anemic
9. Acclimatization

TASK 1.0 The Candidate reads Part Two of the *FIT FOR FLYING* book, paying special attention to high altitude considerations for flight and human activity.

Captain Corry Von Pinnon demonstrates the oxygen equipment in the Piaggio P180 that he flies for AdvantAir. Although the aircraft is pressurized to fly at extremely high altitudes, emergency oxygen is provided to the crew and passengers.

Although this device is located on the ground, it can simulate the conditions at very high altitudes. During FAA Physiology Conferences, pilots quickly learn the dramatic and potentially deadly effects of going without oxygen even for a very few minutes. Since most Civil Air Patrol cadets don't have access to these physiology courses, a more realistic approach has been taken with a simulated trip to a high elevation ski resort.

Captains Corry and Ann Marie Von Pinnon are getting operation instructions in preparation for a training session in the high altitude chamber at Peterson Air Force Base in Colorado Springs, Colorado. Both are professional pilots.

TASK 2.0 The Candidate plans a ski or snowboarding trip to a western ski resort in Utah, Colorado, Wyoming, or Montana. The chosen resort must have an elevation of at least 7,500 feet above sea level. Regarding this trip:

1. Find your hometown elevation.
2. Select a ski resort you'd like to visit.
3. Find the elevation of the area where you will be skiing or snowboarding.
4. Conduct research to find out more about the resort using the following questions:
    a. What is the elevation of the base?
    b. What is the approximate elevation of the seasonal lodging area?
    c. What is the highest elevation where your chairlift ends and you will be skiing or snowboarding?
    d. How many days will you spend at this resort?

If Corry and Anne Marie want to have fun at high altitude, they go skiing or snowboarding at a place like Keystone (shown here) or Breckenridge, Colorado (shown below).

The ski resort town of Breckenridge, Colorado. The ski trails can be seen on the mountain behind the town itself. The base elevation is 9,600 feet above sea level. At the top, it is 12,998 feet. Breckenridge is one of the most popular ski resorts in America, with 1.63 million skiers and snowboarders during the 2007-2008 annual ski season.

TASK 3.0 The Candidate prepares a one-page report about the planned high altitude vacation. Upon completion, the Candidate submits the term definitions and report to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric. The report should include information on:

1. High altitude sickness.
2. Some possible problems you may encounter due to skiing or snowboarding at high altitude.
3. What precautions you and your family members should take to help diminish or eliminate the possible problems of high altitude sickness while on vacation at high altitude.
4. How the symptoms of hypoxia could happen on a ski trip or to pilots.
5. When the FAA requires pilots and passengers to use supplemental oxygen.
6. How the use of drugs or alcohol would affect the body's response at high altitude.

Captain Corry Von Pinnon flies the Piaggio P180 corporate aircraft. His training in the FAA aviation physiology course made him more aware of the dangers of flying at the extremes this airplane is capable of. It has a service ceiling of 41,000 feet!

This is a sign that warns visitors of the potential hazard of mountain or altitude sickness. It stands at the overlook on Mt. Evans. This mountain is clearly visible west of Denver and it is one of the 54 "fourteeners," or mountains which have peaks at or over 14,000 feet.

16

ACTIVITY 16

GET TO KNOW AN AEROSPACE HERO

OBJECTIVE:

To raise awareness of the DDR aerospace biographies and subsequently gain a better understanding of the rich heritage America has in aviation and space exploration.

ACTIVITY RESOURCES:

1. 'Famous Flier' biographies
2. Internet

TERMS TO DEFINE:

1. Hero
2. Heroine
3. Emulate

DISCUSSION – The DDR program has published 'Famous Flier' biographies for 20 aviation and space pioneers who, living a life free of drugs, were able to achieve legendary fame and world-wide admiration. Some, like Chuck Yeager and Sally Ride, are household figures. Others, like Marta Bohn Meyer, achieved greatness by just doing their job and "pushing the envelope" to its limit.

TASK 1.0 The Candidate selects three of the aerospace pioneers from the 'Famous Flier' biographies. These are found on the Resources page of the Drug Demand Reduction web site at www.capmembers.com/ddr.

SR-71 Blackbird.

(Image courtesy of NASA.)

Do you know about Marta Bohn Meyer? She was the first woman flight crew member of the famed SR-71 Blackbird.

(Image courtesy of NASA.)

TASK 2.0 The Candidate prepares a one-page essay on the common aspects of the selected pioneers. This essay should focus the positive traits of the three pioneers. Upon completion, the Candidate submits the term definitions and essay to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

Amelia Earhart and our first female astronaut, Sally Ride, are two great women in aerospace.

(Earhart image courtesy of AP; Ride image courtesy of NASA.)

Burt Rutan (left) is considered to be one of the greatest aircraft designers of all time. Charles A. Lindbergh (right) flew solo from New York to Paris in 1927. Both are legends in America's great aerospace history.

(Images courtesy of EAA.)

A. Scott Crossfield was the first man to fly at Mach 2 and Mach 3 speeds, climb to the edge of space, and return in a fully controlled rocket powered aircraft, the X-15. Scott was a great supporter of Civil Air Patrol. His award, "The A. Scott Crossfield Aerospace Teacher of the Year" award, is CAP's top recognition for aerospace educators.

(Image courtesy of NACA.)

17

ACTIVITY 17

INTERVIEWING A PHARMACIST

OBJECTIVE:

To conduct an interview with a licensed pharmacist, discussing issues involving prescription and over-the-counter drugs.

DISCUSSION – Very often, teenagers don't get an opportunity to talk to professional pharmacists because prescription drugs are usually taken care of by adult members of the family. Unless it pertains to their personal health issues, teenagers rarely ask a pharmacist questions about drugs.

On the other hand, certain over-the-counter (OTC) drugs, such as certain cold medicines and allergy tablets, can only be obtained by asking a pharmacist. Some OTC drugs have age restrictions, while others carry a risk that the drug may be used in unsafe ways by the public; however, these drugs don't require a prescription. Cadets should be aware of the risks of both prescription and OTC drugs.

This interview provides a valuable lesson on what it takes to be a pharmacist, to include education requirements and state licensing and government controls for someone who handles narcotics, such as painkillers. For this and overall drug awareness issues, the Candidate is given the opportunity to meet one of the most respected hometown professionals.

ACTIVITY RESOURCES:

1. A recording device (optional)
2. A notebook or tablet

TERMS TO DEFINE:

1. Pharmaceutical
2. Medical marijuana
3. Pharmacy

TASK 1.0 The Candidate identifies and schedules an interview with a local pharmacist.

TASK 2.0 The Candidate then meets with the Mentor to discuss the questions (at least 10) that will be asked during the interview.

TASK 3.0. The Candidate prepares required questions and conducts the interview at the appointed time, using the tips found at the end of this volume.

TASK 4.0 Upon completion, the Candidate submits the term definitions and written report of the full interview to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

A cadet conducts an interview with her local pharmacist.

18

ACTIVITY 18

WHEN WE GO UP, THE PRESSURE GOES DOWN

OBJECTIVE:

To gain a greater understanding of how the pressure dramatically drops as an airplane (crew and passengers) climbs higher in altitude. The secondary objective is to gain a greater understanding of how this pressure drop affects human performance.

DISCUSSION – This is a study in aviation physiology, which is a complete chapter in the *FIT FOR FLYING* book. The text describes how pressure dramatically changes with altitude. In this activity, the Candidate calibrates a barometer for his/her home location. Using the available resources, such as an FAA Flight Service Station, Internet, and TV Weather news, the Candidate records the local pressure during the activity period. The real activity occurs when the Candidate is given a chance to go on an orientation flight. The Candidate takes the barometer along on the flight and confirms what the textbook says about pressure changes with altitude.

This is an exciting activity that takes planning. The Candidate has to have the barometer ready when the flight is scheduled. The Candidate must record the barometer readings at the beginning, two midpoints, and end of the flight as proof for the Mentor. The readings should be initialed by an air crew member for validation.

ACTIVITY RESOURCES:

1. Small barometer
2. Orientation flight
3. A notebook or tablet

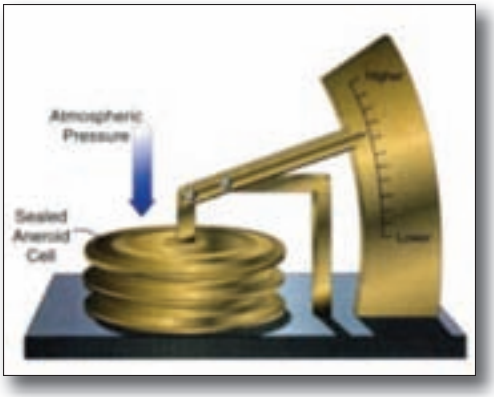
TERMS TO DEFINE:

1. Aneroid
2. Torricelli
3. Mean Sea Level (MSL)
4. Above Ground Level (AGL)
5. Pressure altitude
6. Standard pressure
7. Pressure differential

TASK 1.0 The Candidate acquires a hand-held barometer.

TASK 2.0 The Candidate should plan this activity in conjunction with a scheduled CAP orientation ride. To complete this activity, the Candidate must go flying.

TASK 3.0 Once an orientation flight is confirmed, the Candidate records pressure readings for several days to make sure that the barometer is working.



Aneroid barometer.
(Illustration courtesy of FAA.)

This activity involves an orientation flight. This is a very exciting moment for both aircrew and cadets.
(Image courtesy of Alex McMahon.)

Weather and altimeter information can be obtained from a local Flight Service Station. The phone numbers can be found on the Internet or local directory.

TASK 4.0 The day before the scheduled flight, the Candidate records the exact barometric pressure at the airport where the flight is going to take place. The Candidate can get this information by calling the FAA air traffic control tower or Flight Service Station, or visiting the airport to get the current "altimeter reading" from a Fixed Base Operator. The Candidate should consult with the Mentor if help is needed to get exact barometric pressure readings from reliable local sources.

TASK 5.0 When the Candidate boards the aircraft, she tells the pilot or crewmember that a correct altimeter reading is needed. During the pre-flight checklist, the pilot will get this information from a source on the field or make the correction based on field elevation. The pilot knows the exact field elevation of the airport from which they are departing. Using a knob on a traditional altimeter, the pilot sets the altimeter to the known field elevation. A small window on the altimeter will show the current pressure. This is the information the Candidate needs to set the barometer.

This student reviews instrumentation before beginning her orientation flight. The altimeter is just to the right of the instrument showing the blue horizon arc.

TASK 6.0 During takeoff and climb, the Candidate watches the barometer and records a series of barometer readings. If the Candidate is in the front seat, she may also watch the aircraft altimeter climb. Care must be taken not to bump the mechanism during flight and reading.

TASK 7.0 When the airplane has climbed to 1,000 above ground level (AGL), the Candidate asks the pilot to level off. The Candidate takes a barometer reading. The device should read almost exactly one inch lower than what the reading taken on the ground before takeoff. (Example: A reading of 29.92 inches on the ground should yield a reading of 28.92 inches at 1,000 feet AGL.)

TASK 8.0 As the pilot climbs higher, the Candidate takes another reading at 2,000 AGL. The reading should confirm that the pressure has now dropped 2 inches.

TASK 9.0 As the aircraft descends for a return to the airport, the Candidate watches the change in barometric pressure. The pressure reading should continue to increase back to the setting that it had prior to departure. The candidate records the pressure again after landing.

TASK 10.0 The Candidate writes a one-page report of this activity. Upon completion, the Candidate submits the term definitions and report to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric. The following information should be included in the report:

1. What was the pressure at the field just before departure?
2. What was the field elevation of the airport?
3. What did the pilot do to the altimeter to set it for current conditions?
4. What did your barometer record when you climbed in the airplane?
5. Did your barometer show a one-inch drop as the plane leveled off at 1,000 feet?
6. Did your barometer show another one-inch drop as the plane went to 2,000 feet?
7. Describe any changes you experienced in the human body during the pressure changes. How would your body's performance during pressure changes be affected by the use of drugs or alcohol?

19

ACTIVITY 19

IMPAIRMENT GOGGLES AND THE SNELLEN EYE CHART

OBJECTIVE:

To gain a good understanding of how human vision is impaired by elevated blood-alcohol content.

DISCUSSION – This is a very short, but highly effective activity. While multiple activities use impairment goggles, this one is so dramatic that it is featured all by itself. While testing the impairment goggles in various ways, cadets remembered this activity more than all others. Because of the importance of good eyesight for pilots, this activity reinforces for cadets who want to fly just how much eyesight is impaired by alcohol. Using the impairment goggles and a posted Snellen Eye Chart, cadets attempt to read the chart to gain an understanding of how vision is affected by alcohol.

If this is the first time that the N-Cards are used: Before beginning the activity, the Candidate sets the N-Cards out on a table and ask everyone to pick up their own card. Their personal "N Number" is put in the upper left corner of the card, and the Mentor records each member's name and N number in a private log file. After the activity is completed, the Candidate collects the completed N-Cards.

ACTIVITY RESOURCES:

1. Impairment goggles
2. Snellen Eye Chart
3. Masking tape

TERMS TO DEFINE:

1. Snellen (the scientist)
2. Distortion
3. Visually impaired

TASK 1.0 The Candidate acquires a set of impairment goggles. These are available in every wing by contacting your Drug Demand Reduction Administrator, or you can make your own in Activity 21.

TASK 2.0 The Candidate acquires a Snellen Eye Chart. These charts are available for purchase online for about $6-10. The Candidate posts the chart on a convenient wall, then lays down a strip of masking tape 20 feet from the chart and parallel to the wall.

TASK 3.0 The Candidate hands out the N-Cards to participants.

TASK 4.0 The Candidate lines up participants and tests their visual acuity using the Snellen Eye Chart. The Candidate instructs participants to annotate the results on their N-Cards.

TASK 5.0 The Candidate takes a second visual acuity reading while each participant is wearing the impairment goggles. The Candidate instructs participants to annotate the impaired vision results on their N-Cards.

TASK 6.0 After the activity, the Candidate leads participants is a discussion of their personal experiences. Upon completion, the Candidate submits the term definitions to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

One by one, participants read the Snellen Eye Chart and record which line they were able to see with their normal vision. Then the test is repeated with the impairment goggles.

The classic reaction to the visual acuity test with the impairment goggles on is, "You're kidding!" Most participants can hardly see the large "E."

Goggles that simulate visual impairment are available from several companies. The high quality versions cost about $100, but you can also make your own.

20

ACTIVITY 20

OPEN DISCUSSION WITH AN AVIATION MEDICAL EXAMINER

OBJECTIVE:

To give Candidates the opportunity to have an open discussion with an Aviation Medical Examiner.

DISCUSSION – It is a rare opportunity for anyone to actually have one-on-one contact with a Medical Doctor who shares the same enthusiasm for aviation and flying. Doctors are often so busy that they only have time for the medical problems of patients in their clinic, surgery, or hospital. By contacting the Federal Aviation Administration (FAA), the Candidate and/or Mentor can get a list of Aviation Medical Examiners (AME) in or near their hometown. A sincere letter of request will, in most cases, bring a response from the doctor and a visit to the unit. A new policy with the FAA encourages AMEs to become more involved in the health maintenance of their pilots. This extends to aviation medical education, so the vast majority of AMEs are quite willing to talk to both current flight crews and future pilots. If the unit is lucky enough to find a physician who is active in general aviation, like Dr. Jeffrey Cain, then it makes it even more exciting.

ACTIVITY RESOURCES:

1. A meeting room with necessary audiovisual equipment (projector, screen, and sound system if needed)

TERMS TO DEFINE:

1. M.D.
2. D.O.
3. AME
4. EAA
5. FAA

TASK 1.0 The Candidate contacts the FAA via telephone or internet and get a list of AMEs within their area, then selects a guest speaker from the list.

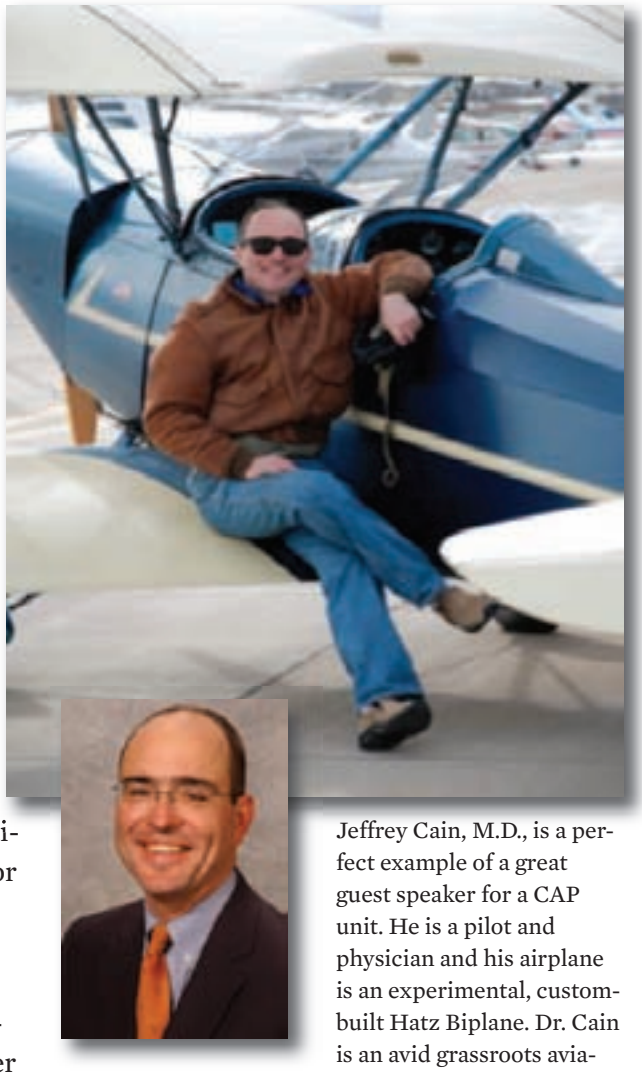
TASK 2.0 The Candidate mails an invitation, preferably on CAP letterhead, to the selected AME. This is a more professional way than email to communicate with the AME. The Mentor and the Unit Commander should be involved in this process. In this way, dates, times, and equipment for the presentation can be scheduled to ensure maximum participation.

TASK 3.0 The Candidate notifies the AME of the normal unit meeting schedule, and offers at least three possible presentation dates to allow ease of scheduling.

TASK 4.0 The Candidate, with the Mentor's oversight, develops questions that allow the doctor to share his views on drugs and alcohol in relation to the FAA pilot medical certification. These questions should be provided to the AME prior to the presentation.

TASK 5.0 On the date of the AME's visit, the Candidate introduces the guest speaker and moderates a question-and-answer period after the presentation. If the AME did not provide answers to the Candidate's prepared questions, the Candidate should ask them now.

TASK 6.0 Upon completion, the Candidate submits the term definitions to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.



Jeffrey Cain, M.D., is a perfect example of a great guest speaker for a CAP unit. He is a pilot and physician and his airplane is an experimental, custom-built Hatz Biplane. Dr. Cain is an avid grassroots aviation supporter and has flown over 600 young people in the EAA's Young Eagles program. Dr. Cain has made a spectacular and very courageous comeback after he lost both legs in an aircraft crash. He continues to fly with a special FAA Medical waiver and his story is one of tremendous inner strength.

(Images Courtesy of Jeffrey Cain.)

ACTIVITY 21

FOGGY GOGGLES

OBJECTIVE:

To create "simulated inebriation" eyewear, or impairment goggles, that can be used in several activities related to alcoholic impairment.

ACTIVITY RESOURCES:

1. Can of clear flat hobby spray paint
2. Protective eyewear that wraps around the eyes
3. Snellen Eye Chart
4. Soft dodge ball

The best impairment goggles are the ones that cover eye glasses. These can be "fogged" to give the best results.

When purchasing clear flat spray paint, notice the color of the cap. That gives you an idea of how the foggy goggles will look once sprayed.

DISCUSSION – Professional impairment goggles used to simulate changes in human situational awareness are expensive. Using a pair of protective goggles that have been sprayed with clear flat hobby paint can produce an effective alternative and give cadets an idea of how human performance is altered by the effects of alcohol. For the sake of safety, the Mentor should be involved in all activities requiring the use of impairment goggles.

It is quite easy to find protective eyewear that wraps around the eyes completely. A pair of wraparound clear protection goggles can be purchased from a hardware store for around $6. By spraying the goggles with layers of clear flat hobby paint, varying degrees of simulated inebriation can be obtained, all for less than $10. Of course, it is impossible to simulate all of the side effects of alcohol, but experiencing even a small amount of visual impairment will help participants gain a greater appreciation of any impairment while flying an airplane or driving a car.

Sadly, alcoholism is a major problem in America. Although this activity can be fun, the learning experience is serious. When a cadet puts on a pair of goggles that have been altered, they begin to see what it's like in the "world" of substance abuse. In any career, aviation-related or otherwise, alcohol abuse can bring about terrible results. If you want to live a better life, and have a career of excellence, just keep saying no to drinking and you'll never have to worry about alcoholic impairment.

TASK 1.0 The Candidate acquires a set of eye protection goggles that have the ability to cover the eyes even if a person is wearing glasses, and a spray can of clear flat hobby paint.

TASK 2.0 The Candidate sprays the outside surface of the goggles with just one mist coat, letting it dry completely. By doing single coat steps, you can get an idea of how much light gives the best effect for activities. After each coat is dry, put on the goggles and attempt to read the Snellen Eye Chart. To get just the right effect, you want a pair of goggles that allow you to just barely be able to see the largest letter on the Snellen Eye chart from 20 feet away.

Although these aren't the recommended type of goggles, they do show how 1-3 coats of flat clear can alter the light. From left to right, you can see first a very light mist coat, then two coats near the center, and three coats on the right.

This is how your foggy goggles should look. They can also be used with cadets who wear glasses.

You can use the Snellen Eye Chart to judge the amount of light you want. If your foggy goggles allow you to just barely make out the "E" at the top from a distance of 20 feet, they will work well in activities.

TASK 3.0 The Candidate lays down a piece of masking tape about 30 feet long on the floor in an open area. The Candidate instructs participants to put on the foggy goggles and try to "walk the line," much like a police officer would do during a suspected drunk driving stop.

TASK 4.0 Using a soft ball like the one pictured, the Candidate arranges and monitors a game of dodge ball with the participants wearing foggy goggles.

TASK 5.0 The Candidate answers the Mentor's questions per the Meaningful Learning Experience Rubric.

It's fun, but the lesson is very serious.

A soft ball like this can be used in a game of dodge ball. Think about actually being impaired and trying to avoid "traffic" with the foggy goggles on.

22

ACTIVITY 22

HOW TO UNDERSTAND AND USE THE NUTRITION FACTS LABEL

OBJECTIVE:

To learn how to comprehend nutrition labels.

ACTIVITY RESOURCES:

1. The nutrition facts label from two different beverages

TERMS TO DEFINE:

1. Cholesterol
2. Saturated fat
3. Trans fat
4. Dietary fiber
5. Nutrient
6. Vitamin
7. DV

DISCUSSION – This is a comprehensive activity that requires the Candidate to first read the Food and Drug Administration (FDA) document on food labels and then give evidence to the Mentor that she knows how to read and understand the nutrition label. This is a very important project and it will give the Candidate a thorough understanding of what is meant by "good" or "bad" foods, drugs, and other products that are consumed on a daily basis.

TASK 1.0 The Candidate reads "How to Understand and Use the Nutrition Facts Label" from the FDA, which has been reproduced here (http://www.fda.gov/food/labelingnutrition/consumerinformation/ucm078889.htm, accessed September 2011).

People look at food labels for different reasons. But whatever the reason, many consumers would like to know how to use this information more effectively and easily. The following label-building skills are intended to make it easier for you to use nutrition labels to make quick, informed food choices that contribute to a healthy diet.

Nutrition facts labels are the only resource needed for this activity.

The Nutrition Facts Label - An Overview:

The information in the main or top section (see #1-4 and #6 on the sample nutrition label below), can vary with each food product; it contains product-specific information (serving size, calories, and nutrient information). The bottom part (see #5 on the sample label below) contains a footnote with Daily Values (DVs) for 2,000 and 2,500 calorie diets. This footnote provides recommended dietary information for important nutrients, including fats, sodium and fiber. The footnote is found only on larger packages and does not change from product to product.

In the following Nutrition Facts label we have colored certain sections to help you focus on those areas that will be explained in detail. You will not see these colors on the food labels on products you purchase.

1 The Serving Size

Serving Size 1 cup (228g)
Servings Per Container 2

The first place to start when you look at the Nutrition Facts label is the serving size and the number of servings in the package. Serving sizes are standardized to make it easier to compare similar foods; they are provided in familiar units, such as cups or pieces, followed by the metric amount, e.g., the number of grams.

The size of the serving on the food package influences the number of calories and all the nutrient amounts listed on the top part of the label. Pay attention to the serving size, especially how many servings there are in the food package. Then ask yourself, "How many servings am I consuming?" (e.g., 1/2 serving, 1 serving, or more) In the sample label, one serving of macaroni and cheese equals one cup. If you ate the whole package, you would eat two cups. That doubles the calories and other nutrient numbers, including the %Daily Values as shown in the sample label.

Example

	Single Serving	%DV	Double Serving	%DV
Serving Size	1 cup (228g)		2 cups (456g)	
Calories	250		500	
Calories from Fat	110		220	
Total Fat	12g	18%	24g	36%
Trans Fat	1.5g		3g	
Saturated Fat	3g	15%	6g	30%
Cholesterol	30mg	10%	60mg	20%
Sodium	470mg	20%	940mg	40%
Total Carbohydrate	31g	10%	62g	20%
Dietary Fiber	0g	0%	0g	0%
Sugars	5g		10g	
Protein	5g		10g	
Vitamin A		4%		8%
Vitamin C		2%		4%
Calcium		20%		40%
Iron		4%		8%

2 Calories (and Calories from Fat)

Amount Per Serving
Calories 250 Calories from Fat 110

Calories provide a measure of how much energy you get from a serving of this food. Many Americans consume more calories than they need without meeting recommended intakes for a number of nutrients. The calorie section of the label can help you manage your weight (i.e., gain, lose, or

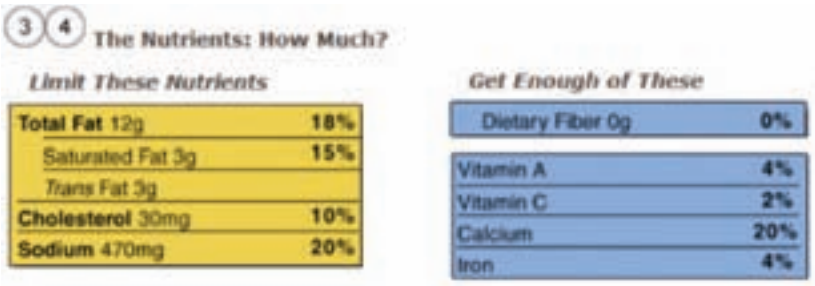
maintain.) Remember: the number of servings you consume determines the number of calories you actually eat (your portion amount).

In the example, there are 250 calories in one serving of this macaroni and cheese. How many calories from fat are there in ONE serving? Answer: 110 calories, which means almost half the calories in a single serving, come from fat. What if you ate the whole package content? Then, you would consume two servings, or 500 calories, and 220 would come from fat.

General Guide to Calories

- 40 Calories is low
- 100 Calories is moderate
- 400 Calories or more is high

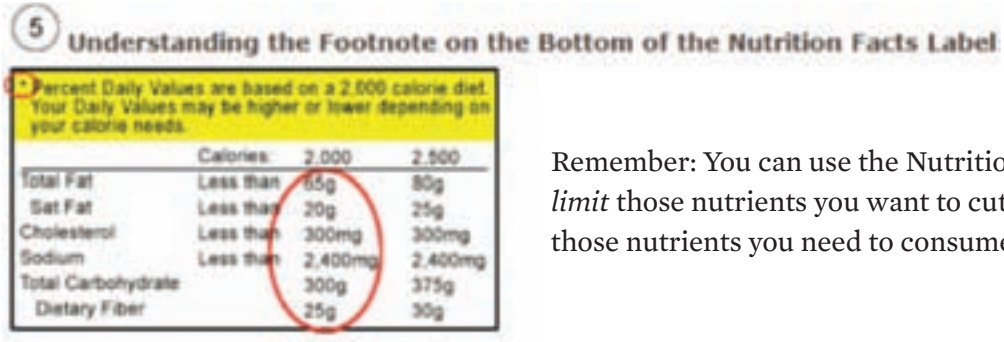
The General Guide to Calories provides a general reference for calories when you look at a Nutrition Facts label. This guide is based on a 2,000 calorie diet. Eating too many calories per day is linked to overweight and obesity.



The nutrients listed first are the ones Americans generally eat in adequate amounts, or even too much. They are identified in yellow as Limit these Nutrients. Eating too much fat, saturated fat, trans fat, cholesterol, or sodium may increase your risk of certain chronic diseases, like heart disease, some cancers, or high blood pressure.

Important: Health experts recommend that you keep your intake of saturated fat, trans fat and cholesterol as low as possible as part of a nutritionally balanced diet.

Most Americans don't get enough dietary fiber, vitamin A, vitamin C, calcium, and iron in their diets. They are identified in blue as Get Enough of these Nutrients. Eating enough of these nutrients can improve your health and help reduce the risk of some diseases and conditions. For example, getting enough calcium may reduce the risk of osteoporosis, a condition that results in brittle bones as one ages (see *calcium section* below). Eating a diet high in dietary fiber promotes healthy bowel function. Additionally, a diet rich in fruits, vegetables, and grain products that contain dietary fiber, particularly soluble fiber, and low in saturated fat and cholesterol may reduce the risk of heart disease.



Remember: You can use the Nutrition Facts label not only to help *limit* those nutrients you want to cut back on but also to *increase* those nutrients you need to consume in greater amounts.

Note the * used after the heading "%Daily Value" on the Nutrition Facts label. It refers to the Footnote in the lower part of the nutrition label, which tells you "%DVs are based on a 2,000 calorie diet." This statement must be on all food labels. But the remaining information in the full footnote may not be on the package if the size of the label is too small. When the full footnote does appear, it will always be the same. It doesn't change from product to product, because it shows recommended dietary advice for all Americans—it is not about a specific food product.

Look at the amounts circled in red in the footnote—these are the Daily Values (DV) for each nutrient listed and are based on public health experts' advice. DVs are recommended levels of intakes. DVs in the footnote are based on a 2,000 or 2,500 calorie diet. Note how the DVs for some nutrients change, while others (for cholesterol and sodium) remain the same for both calorie amounts.

How the Daily Values Relate to the %DVs

Look at the example at right for another way to see how the Daily Values (DVs) relate to the %DVs and dietary guidance. For each nutrient listed there is a DV, a %DV, and dietary advice or a goal. If you follow this dietary advice, you will stay within public health experts' recommended upper or lower limits for the nutrients listed, based on a 2,000 calorie daily diet.

Examples of DVs versus %DVs
Based on a 2,000 Calorie Diet

Nutrient	DV	%DV	Goal
Total Fat	65g	= 100%DV	Less than
Sat Fat	20g	= 100%DV	Less than
Cholesterol	300mg	= 100%DV	Less than
Sodium	2400mg	= 100%DV	Less than
Total Carbohydrate	300g	= 100%DV	At least
Dietary Fiber	25g	= 100%DV	At least

Upper Limit - Eat "Less than"...

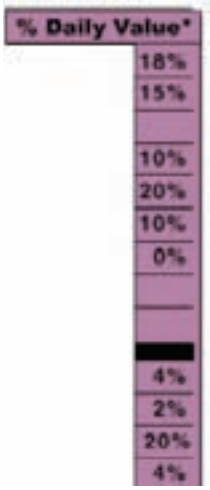
The nutrients that have "upper daily limits" are listed first on the footnote of larger labels and on the example above. Upper limits means it is recommended that you stay below - eat "less than" - the Daily Value nutrient amounts listed per day. For example, the DV for Saturated fat (in the yellow section) is 20g. This amount is 100% DV for this nutrient. What is the goal or dietary advice? To eat "less than" 20 g or 100%DV for the day.

Lower Limit - Eat "At least"...

Now look at the section in blue where dietary fiber is listed. The DV for dietary fiber is 25g, which is 100% DV. This means it is recommended that you eat "at least" this amount of dietary fiber per day.

The DV for Total Carbohydrate (section in white) is 300g or 100%DV. This amount is recommended for a balanced daily diet that is based on 2,000 calories, but can vary, depending on your daily intake of fat and protein.

Now let's look at the %DVs.



6 The Percent Daily Value (%DV):

The % Daily Values (%DVs) are based on the Daily Value recommendations for key nutrients but only for a 2,000 calorie daily diet—not 2,500 calories. You, like most people, may not know how many calories you consume in a day. But you can still use the %DV as a frame of reference whether or not you consume more or less than 2,000 calories.

The %DV helps you determine if a serving of food is high or low in a nutrient. Note: a few nutrients, like trans fat, do not have a %DV—they will be discussed later.

Do you need to know how to calculate percentages to use the %DV? No, the label (the %DV) does the math for you. It helps you interpret the numbers (grams and milligrams) by putting them all on the same scale for the day (0-100%DV). The %DV column doesn't add up vertically to 100%. Instead each nutrient is based on 100% of the daily requirements for that nutrient (for a 2,000 calorie diet). This way you can tell high from low and know which nutrients contribute a lot, or a little, to your daily recommended allowance (upper or lower).

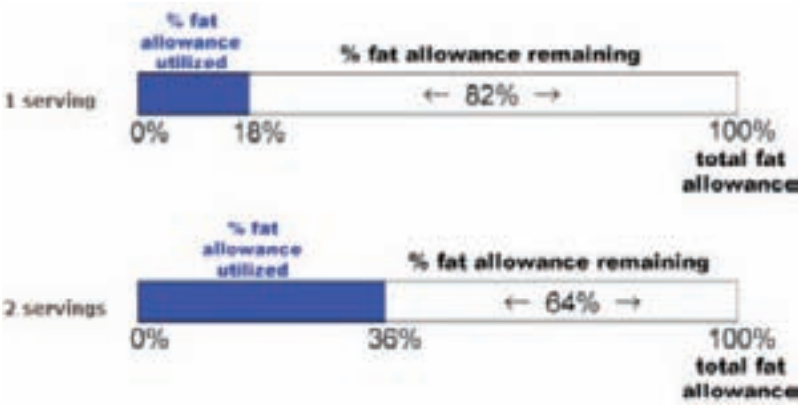
Quick Guide to %DV:

	% Daily Value*
Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 3g	
Cholesterol 30mg	10%
Sodium 470mg	20%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	
Protein 5g	
Vitamin A	4%
Vitamin C	2%
Calcium	20%
Iron	4%

5%DV or less is low and 20%DV or more is high.

This guide tells you that 5%DV or less is low for all nutrients, those you want to limit (e.g., fat, saturated fat, cholesterol, and sodium), or for those that you want to consume in greater amounts (fiber, calcium, etc). As the Quick Guide shows, 20%DV or more is high for all nutrients.

Example: Look at the amount of Total Fat in one serving listed on the sample nutrition label. Is 18%DV contributing a lot or a little to your fat limit of 100% DV? Check the Quick Guide to %DV. 18%DV, which is below 20%DV, is not yet high, but what if you ate the whole package (two servings)? You would double that amount, eating 36% of your daily allowance for Total Fat. Coming from just one food, that amount leaves you with 64% of your fat allowance (100%-36%=64%) for all of the other foods you eat that day, snacks and drinks included.



Using the %DV for:

Comparisons: The %DV also makes it easy for you to make comparisons. You can compare one product or brand to a similar product. Just make sure the serving sizes are similar, especially the weight (e.g. gram, milligram, ounces) of each product. It's easy to see which foods are higher or lower in nutrients because the serving sizes are generally consistent for similar types of foods (see the comparison example at the end), except in a few cases like cereals.

Nutrient Content Claims: Use the %DV to help you quickly distinguish one claim from another, such as "reduced fat" vs. "light" or "nonfat." Just compare the %DVs for Total Fat in each food product to see which one is higher or lower in that nutrient—there is no need to memorize definitions. This works when comparing all nutrient content claims, e.g., less, light, low, free, more, high, etc.

Dietary Trade-Offs: You can use the %DV to help you make dietary trade-offs with other foods throughout the day. You don't have to give up a favorite food to eat a healthy diet. When a food you like is high in fat, balance it with foods that are low in fat at other times of the day. Also, pay attention to how much you eat so that the total amount of fat for the day stays below 100%DV.

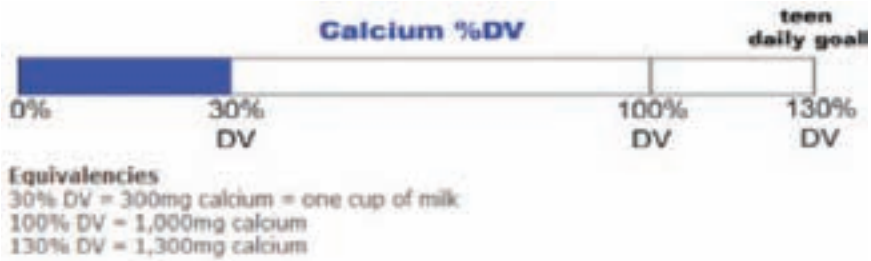
Nutrients With a %DV but No Weight Listed - Spotlight on Calcium:

Calcium: Look at the %DV for calcium on food packages so you know how much one serving contributes to the *total amount you need* per day. Remember, a food with 20%DV or more contributes a lot of calcium to your daily total, while one with 5%DV or less contributes a little.

Experts advise adult consumers to consume adequate amounts of calcium, that is, 1,000mg or 100%DV in a daily 2,000 calorie diet. This advice is often given in milligrams (mg), but the Nutrition Facts label only lists a %DV for calcium.

For certain populations, they advise that adolescents, especially girls, consume 1,300mg (130%DV) and post-menopausal women consume 1,200mg (120%DV) of calcium daily. The DV for calcium on food labels is 1,000mg.

Don't be fooled — always check the label for calcium because you can't make assumptions about the amount of calcium in specific food categories. Example: the amount of calcium in milk, whether skim or whole, is generally the same per serving, whereas the amount of calcium in the same size yogurt container (8oz) can vary from 20-45%DV.



Nutrients Without a %DV: Trans Fats, Protein, and Sugars:

Note that Trans fat, Sugars and, Protein do not list a %DV on the Nutrition Facts label.

Plain Yogurt

Nutrition Facts

Serving Size 1 container (226g)

Amount Per Serving

Calories 110 Calories from Fat 0

% Daily Value*

Total Fat 0g 0 %

Saturated Fat 0g 0 %

Trans Fat 0g

Cholesterol Less than 5mg 1 %

Sodium 160mg 7 %

Total Carbohydrate 15g 5 %

Dietary Fiber 0g 0 %

Sugars 10g

Protein 13g

Vitamin A 0 % • Vitamin C 4 %

Calcium 45 % • Iron 0 %

*Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.

Fruit Yogurt

Nutrition Facts

Serving Size 1 container (227g)

Amount Per Serving

Calories 240 Calories from Fat 25

% Daily Value*

Total Fat 3g 4 %

Saturated Fat 1.5g 9 %

Trans Fat 0g

Cholesterol 15mg 5 %

Sodium 140mg 6 %

Total Carbohydrate 46g 15 %

Dietary Fiber Less than 1g 3 %

Sugars 44g

Protein 9g

Vitamin A 2 % • Vitamin C 4 %

Calcium 35 % • Iron 0 %

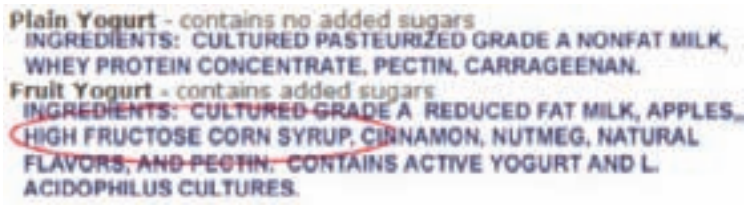
*Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.

Trans Fat: Experts could not provide a reference value for trans fat nor any other information that FDA believes is sufficient to establish a Daily Value or %DV. Scientific reports link trans fat (and saturated fat) with raising blood LDL ("bad") cholesterol levels, both of which increase your risk of coronary heart disease, a leading cause of death in the US.

Important: Health experts recommend that you keep your intake of saturated fat, trans fat and cholesterol as low as possible as part of a nutritionally balanced diet.

Protein: A %DV is required to be listed if a claim is made for protein, such as "high in protein." Otherwise, unless the food is meant for use by infants and children under 4 years old, none is needed. Current scientific evidence indicates that protein intake is not a public health concern for adults and children over 4 years of age.

Sugars: No daily reference value has been established for sugars because no recommendations have been made for the total amount to eat in a day. Keep in mind, the sugars listed on the Nutrition Facts label include naturally occurring sugars (like those in fruit and milk) as well as those added to a food or drink. Check the ingredient list for specifics on added sugars.



Plain Yogurt - contains no added sugars

INGREDIENTS: CULTURED PASTEURIZED GRADE A NONFAT MILK, WHEY PROTEIN CONCENTRATE, PECTIN, CARRAGEENAN.

Fruit Yogurt - contains added sugars

INGREDIENTS: CULTURED GRADE A REDUCED FAT MILK, APPLES, HIGH FRUCTOSE CORN SYRUP, CINNAMON, NUTMEG, NATURAL FLAVORS, AND PECTIN. CONTAINS ACTIVE YOGURT AND L. ACIDOPHILUS CULTURES.

Take a look at the Nutrition Facts label for the two yogurt examples. The plain yogurt on the left has 10g of sugars, while the fruit yogurt on the right has 44g of sugars in one serving.

Now look at the ingredient lists for the two yogurts. Ingredients are listed in descending order of weight (from most to least). Note that no added sugars or sweeteners are in the list of ingredients for the plain yogurt, yet 10g of sugars were listed on the Nutrition Facts label. This is because there are no added sugars in plain yogurt, only naturally occurring sugars (lactose in the milk).

If you are concerned about your intake of sugars, make sure that added sugars are not listed as one of the first few ingredients. Other names for added sugars include: corn syrup, high-fructose corn syrup, fruit juice concentrate, maltose, dextrose, sucrose, honey, and maple syrup.

To limit nutrients that have no %DV, like trans fat and sugars, compare the labels of similar products and choose the food with the lowest amount.

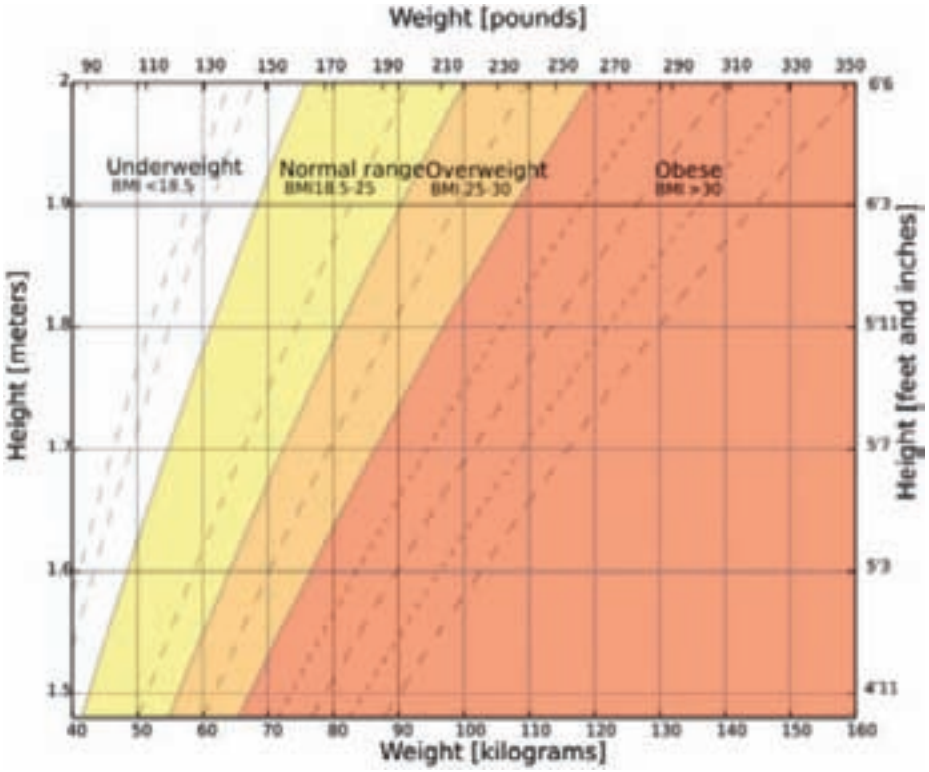
Comparison Example

Shown here are two kinds of milk: one is "Reduced Fat," the other is "Nonfat" milk. Each serving size is one cup. Which has more calories and more saturated fat? Which one has more calcium?

Answer: As you can see, they both have the same amount of calcium, but the nonfat milk has no saturated fat and has 40 calories less per serving than the reduced fat milk.

TASK 2.0 The Mentor provides the Candidate with copies of two nutrition fact labels, one from a fruit juice beverage and one from an alcoholic beverage. The Candidate must demonstrate that he/she understands how to read the labels according to the issues presented in the FDA article, and the Mentor must be satisfied that the Candidate understands the content labels. The Candidate and Mentor must also discuss the nutritional differences between the two beverages.

TASK 3.0 Upon completion, the Candidate submits the term definitions to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.



(BMI illustration courtesy of the Food and Drug Administration.)

Staying slim and trim is a lifelong dedication. Lt Col Ron Gendron (C5 Galaxy pilot) is 74" tall, 47 years old, and weighs 203 pounds. He has to take an Air Force physical examination every year and he must maintain top physical condition and weight control if he wants to continue flying.

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ACTIVITY 23

WHAT DOES IT TAKE TO BE AN AIR FORCE PILOT?

OBJECTIVE:

To raise the awareness of what it takes, both physically and mentally, to become an Air Force pilot.

DISCUSSION – The Candidate is required to prepare a report for the Mentor which will outline the basic requirements to meet the U.S Air Force standards for pilot training. While numerous resources can be found to research this topic, one of the most valuable is a copy of *To Be a U.S. Air Force Pilot* by Henry M. Holden. This book can be purchased from online book sellers or from the publishing company, Motorbooks International, at www.motorbooks.com.

This book, *To Be a U.S. Air Force Pilot*, can be used to research this activity.

TASK 1.0 The Candidate acquires the book *To Be a U.S. Air Force Pilot*. This book can be purchased or checked out through a local library. If the book cannot be found, reliable print and internet resources for Air Force pilot training requirements can be used.

TASK 2.0 The Candidate writes a 1.5-page report. Upon completion, the Candidate submits the term definitions and report to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric. The report must include the following:

1. Requirements for candidacy
2. Physical and mental training
3. Air Force policies on drug and alcohol use by pilots
4. Flight simulation
5. Formal pilot training

ACTIVITY RESOURCES:

1. *To Be a U.S. Air Force Pilot* book
2. Internet

TERMS TO DEFINE:

1. USAFA
2. UPT

American Airpower: F-15, P-51, F-86, and F-16 in formation.

(Image courtesy of Adam Wright.)

24

ACTIVITY 24

DO WE HAVE A PROBLEM HERE IN OUR HOMETOWN?

OBJECTIVE:

To conduct an open discussion with both senior members and cadets regarding drug or alcohol-related issues within the community.

DISCUSSION – Time and again, teens tell adults, "You have no idea what's going on." Unfortunately, in many cities and town across America, this statement is true. Since there is usually a good bond of communication between cadets and senior members in the majority of CAP units, this activity gives the unit membership an opportunity to sit down and discuss the "drug scene" in their hometown. Fortunately, there are many towns across the heartland of America where a sincere and effective anti-drug taskforce has been able to keep the drug problems within their younger populations to a minimum. In many small towns, the use of marijuana, cocaine, and heroin are almost non-existent. Of course, the opposite is true in most larger cities.

A town is not just buildings, streets, stores, homes, and schools. If everyone left, there wouldn't be a town, although you would still have buildings, streets, stores, homes, and schools. A town consists of people, and where there are people, there are problems. The issue that this activity addresses is, "Do we have a problem?"

If this is the first time that the N-Cards are used: Before beginning the activity, the Candidate sets the N-Cards out on a table and ask everyone to pick up their own card. Their personal "N Number" is put in the upper left corner of the card, and the Mentor records each member's name and N number in a private log file. After the activity is completed, the Candidate collects the completed N-Cards.

TASK 1.0 The Candidate contacts the local police department to find out how many drug-related arrests have been made within the past 12 months.

TASK 2.0 The Candidate contacts at least one local elementary school principal to find out if there have been any drug-related incidents within the past 12 months.

TASK 3.0 The Candidate contacts at least one local middle school or junior high school principal to find out if there have been any drug related issues at their school within the past 12 months.

TASK 4.0 The Candidate contacts at least one local high school principal to find out if there have been any drug-related issues at their school within the past 12 months.

ACTIVITY RESOURCES:

1. Meeting room with table and chairs
2. A recording device or notebook

TASK 5.0 The Candidate makes arrangements with the Unit Commander to set up a 30-minute roundtable discussion with the unit.

TASK 6.0 At the designated time and place, the Candidate and Mentor are seated at a table and the rest of the participants are seated in a semi-circle around the table. If the Candidate elects to do so, N-Cards can be passed out in case participants would like to contribute but not in front of others.

TASK 7.0 The Candidate opens the discussion with a statement like the following:

> "I recently contacted local schools, from elementary through high school. I asked each principal for information about drug-related issues over the past 12 months. I also contacted our local police department with the same question. Tonight, I would like to ask all of you to contribute to a discussion on the question, 'Do we have a significant drug or alcohol problem here in our town?'"

TASK 8.0 The Mentor's responsibility is to help keep the discussion balanced. In many open forums like this, one or two people will dominate the conversation and it is up to the Mentor to keep this in check. The Mentor may want to continue beyond 30 minutes if the dialog moves much better than expected.

TASK 9.0 It is up to the Candidate to decide how to close the discussion. It may be ended with a "show of hands." The question would be, "How many of you think we have a significant drug and alcohol problem?" Then the Candidate shares the information on actual alcohol and drug issues received from the local schools and police.

TASK 10.0 There is no report or assignment in this activity. The Mentor and the Candidate work together to make it a meaningful learning experience. The Candidate must answer the Mentor's questions per the Meaningful Learning Experience Rubric.

ACTIVITY 25

OBSTACLES IN LIFE

OBJECTIVE:

To provide trustworthy references for drug and alcohol information. The discussion and directory should provide general and specific examples of adult and community resources for information about drugs and alcohol.

DISCUSSION – In addition to trusting someone, when you're seeking guidance you need to use reliable and well-informed sources. You wouldn't ask advice from a plumber for guidance in performing brain surgery, nor would you attempt to learn how to fly an aircraft from a 6-year-old.

The scenario for this activity, developed by Lt Col Kacy Harsha in OK wing, is based on a ground search and rescue exercise in a jungle. The jungle has dangerous quicksand areas that need to be avoided. The area is mapped out, and the ground team leader has a plan of action to avoid the dangerous areas. But the team runs into an unexpected problem: while camped out the first night, the team is attacked by a nasty swarm of Giant Texas Mosquitoes. Many cadets and senior members are stung near the eyes and cannot see through their swollen eyelids. Because of this, the mission has been compromised and a trustworthy, knowledgeable, and reliable ground team leader needs to bring the team home through the swamp and back to safety. Cold weather is approaching and waiting out the mosquito bites is not an option. Team members must be taken through the area as a group, not individually.

ACTIVITY RESOURCES:

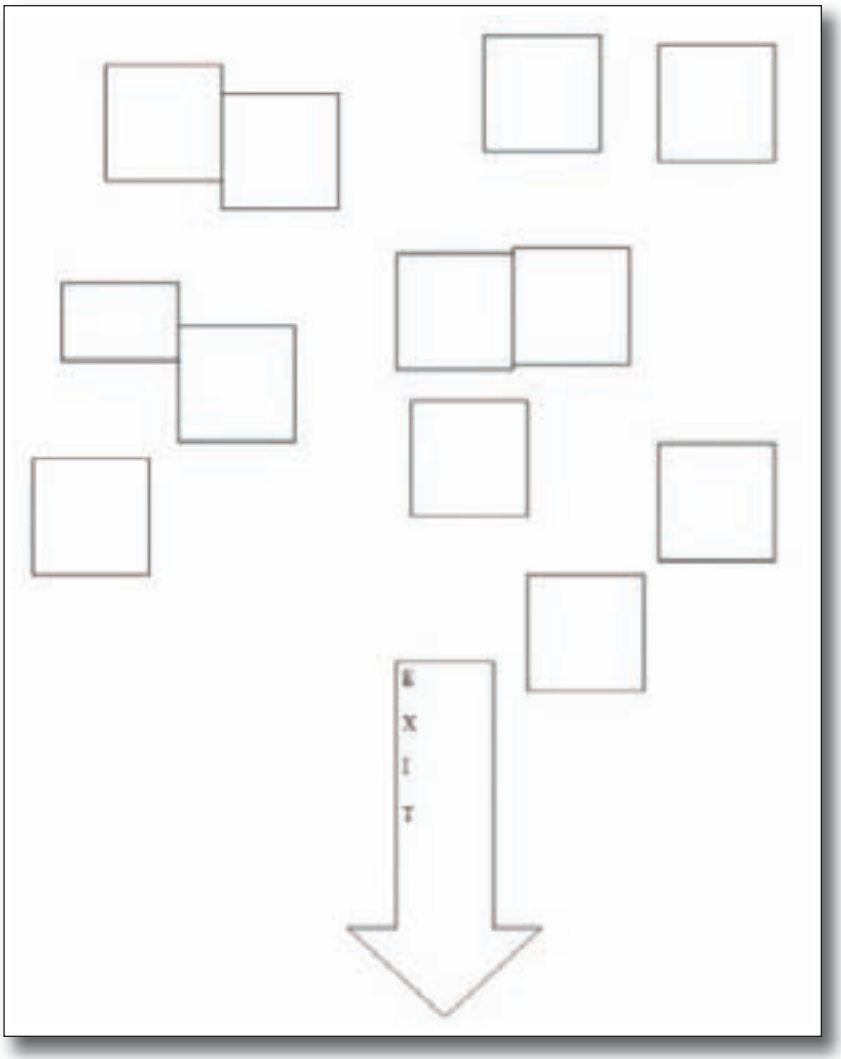
1. Several sheets of flexible foam board, felt, and/or carpet squares
2. Blacked-out goggles or blindfolds for each participant
3. Spotter for each participant
4. Group leader

TASK 1.0 Prior to completing the "Quicksand" activity, the Candidate creates a Directory of Trust, which is a document containing a list of local community resources which may include addresses, phone numbers, and websites for drug information, as well as phone numbers or email addresses of senior members willing to talk to cadets if they have questions about drugs or alcohol. The Directory may include names of pastors, priests, teachers, school counselors, personal physicians, and other trusted medical professionals. The Directory may also include contact information for unplanned pregnancy.

TASK 2.0 The Candidate gathers the participants and briefs them on the "Quicksand" scenario. The Candidate briefs Spotters on their role of making sure the blindfolded cadets remain safe before, during, and after their "trek" through the quicksand field. Maximum recommended participants for safety and supervision should not exceed one leader, five spotters, and five blindfolded participants.

TASK 3.0 The Candidate blindfolds "impaired" participants and assigns each of them an individual Spotter for safety purposes. Spotters walk with their hands in front of them (next to the blindfolded cadet), ready to stop any potential falls. All real hazards should be removed from the training area.

TASK 4.0 The Candidate lays out the quicksand pieces after the participants are blindfolded. The group leader studies the pattern and then decides the best way to get the team through the area. A sample arrangement of the area is provided below, with quicksand represented by carpet squares or taped-down foam or felt. Walls of the room can be described as rivers or other non-crossable areas. Large outside areas can be limited by natural obstacles or rope boundaries.



TASK 5.0 The difficulty in this exercise is determined by the arrangement of the hazards, which controls the ease with which multiple team members can navigate the course without stepping in quicksand." The most successful leaders are the ones who make a plan before acting out the plan. The Candidate can advise the leader to make a verbal plan with the group, such as using a "Simon says" approach to taking steps; having cadets grasp the shoulders of the individual in front of them; having the leader use the terms "baby steps" and "giant steps"; or agreeing on a "freeze" term for when someone starts a wrong move. Any blindfolded cadet who steps in the quicksand is eliminated from the group, and may take off the blindfold while sitting out the remainder of the exercise. Eliminated cadets cannot talk or offer advice. This rule does not apply to Spotters, who may step in the quicksand as non-verbal, "safety only" members of this group.

TASK 6.0 The Candidate can split large groups of participants into multiple teams to compete for time through the quicksand course. Regardless of finish time, any team that loses a member to stepping in quicksand is disqualified from the competition. Teams should not watch other teams navigate the quicksand prior to their own performance, but can be allowed to watch teams after they have finished navigating the course.

TASK 7.0 Once the action is over, the Candidate leads a debrief session for the participants, with support from the Mentor. Questions for the debriefing can include:

1. Why is it important for the leader or a source of information to be knowledgeable? Did the participants feel better knowing the leader could "see" the problem and had a "map" as well as "experience" with the area? Would a peer (fellow blind person) would have been a better choice as leader? Why or why not?
2. When faced with real life issues, would it be better to use leaders who have "been there, done that" as well as those who have been educated in the classroom? Why do you want an expert or someone with more information? What about advice from "non-experts"?
3. What kinds of "quicksand" do we have in our lives? What things can sink us in our quest to reach our goals?
4. Who can help identify and help you avoid the obstacles that will appear in your life?
5. What would happen if we never asked for guidance?
6. In a real life situation, who can you ask for help? Who are your leaders? The Candidate describes the Directory of Trust that has been developed to answer this question.

TASK 8.0 Upon completion, the Candidate submits the Directory of Trust to the Mentor for review and approval. The Mentor makes this resource available to all unit members. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

Cadets at the Oklahoma Wing Encampment are guided through a "swamp" that has "quicksand." They are totally dependent upon a trustworthy and knowledgeable guide.

(Image courtesy of Kacy Harsha.)

ACTIVITY 26

BUILDING AN ANTI-DRUG BILLBOARD

OBJECTIVE:

To create an anti-drug message to display on a miniature scale model billboard.

ACTIVITY RESOURCES:

1. Cardboard or cardstock
2. Scissors and glue
3. Small hobby dowel rods or wooden stir sticks
4. Art supplies or computer with a color printer
5. A small toy of model car
6. Shoe box

DISCUSSION – Education is one of the most effective ways of getting a drug-free message out. Advertising can also be an excellent educational tool. As everyone knows, "free" television is made available by commercials. It seems like advertising is everywhere. America is a big country: from east to west, it's almost 3,000 miles wide. Posted along the small roads, big roads, highways, and byways across America are billboards. It seems like they are everywhere, and they do work. When viewer numbers are considered, billboards are even cost effective. A 30-day billboard, with thousands of cars passing by hourly or daily, can be rented for less than $1,000. Anti-drug messages can be a very effective use of billboards. "This is what your brain looks like..." was one of America's most effective anti-drug messages, and it started on a billboard. This activity is about coming up with a great anti-drug message and putting it on a billboard - only in small scale!

This miniature billboard communicates an effective anti-drug message.

Just about every cadet has built a model airplane or a model car. Models have been around for a long time, so the object of this activity is to create a small billboard in a diorama that can displayed in the unit meeting area. If done correctly, it can attract attention and be a lot of fun. The Candidate has to first come up with a drug-free message, print it out with graphics, and then make a scale model billboard to fit inside a shoebox diorama.

The billboard can be constructed of simple materials like foam, wood sticks, and paper.

The sign can be about the size of a half-sheet of paper or index card, with a highway and a small car motoring by. It can also be fun to have a unit contest to see who can come up with the best billboard. The Candidate can tell the other cadets, "If you think you can make a better billboard, try it!"

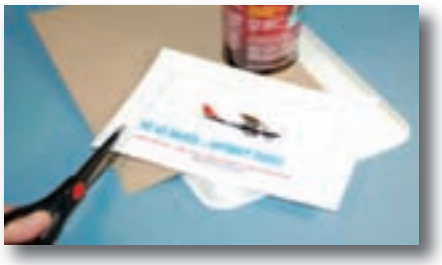
TASK 1.0 The Candidate designs a drug-free message, either hand-drawn or printed on computer. The entire sign should be about as large as an index card. When complete, the sign is glued to a cardboard backing.

TASK 2.0 The Candidate glues "legs" to the back of cardboard using stir sticks or dowel rods.

TASK 3.0 The Candidate mounts the billboard in a three-dimensional diorama using a shoe box, art supplies, and a model car. The completed scene should look like a real roadside billboard. Scenery such as animals and trees can also be used in the diorama.

TASK 4.0 (Optional) The Candidate can encourage cadets to make billboard dioramas for a unit contest. The Candidate should grade billboards on the following: the most original anti-drug message, the most authentic billboard, and the best design and construction.

TASK 5.0 The Candidate answers the Mentor's questions per the Meaningful Learning Experience Rubric.



The graphic is cut out and glued to a piece of card-stock or cardboard.

Coffee shop stir sticks are glued to the back of the cardboard billboard.

A support stick is glued to keep the billboard from falling over.

This is a shoebox diorama. The billboard has to be mounted in the box and made to look like a real road sign, car and all!

ACTIVITY 27

DRIVING IN THE CONE ZONE

OBJECTIVE:

To raise awareness of how motor skills are impaired with elevated blood alcohol levels.

DISCUSSION – Drunk driving is certainly no laughing matter, but having some fun "driving while impaired" on a small electric scooter at a unit meeting can be an activity that everyone enjoys. When a cadet or senior member puts on a pair of impairment goggles and tries to drive a scooter around the course, things can get exciting. When a challenge is added, such as putting some orange cone zones around the course, it's harder than it looks. The goggles distort the viewing area, so the driver soon learns that impaired driving is difficult even at shopping cart speeds.

A sample pair of impairment goggles.

One problem might be getting someone to loan out their scooter for the activity. There are several ways to solve this: (1) The Candidate and Mentor can visit a business where scooters are sold, explain the activity and its drug-free message to the owner, and invite the owner to attend a meeting as guest. If the scooter store owner can be assured that no damage will occur, there is a chance that she will help the unit. (2) Ask members of the unit if they have a relative with a scooter, who can be invited to a meeting and asked to loan the scooter. (3) The Candidate and Mentor can visit a local senior citizens center, greet senior citizens, explain the activity and its drug-free message, and ask for the loan of a scooter. Whatever source you find for a scooter, be sure to formally invite the scooter owner to attend a unit meeting before the actual day the scooter activity will be conducted.

The scooter and zone cone.

When the guest arrives, everyone is asked to show respect to the scooter owner. If the scooter owner is a veteran, every cadet should introduce themselves and thank the vet for her service to our country. The visistor is then told that this is an anti-drug/alcohol activity and shown how the scooter is involved. The lesson about impairment due to alcohol should be explained. Scooters are expensive machines, so their owners tend to be very cautious. The Candidate, Mentor, and all of the unit volunteers should make every effort to show kindness and consideration to the visitor. If the visitor agrees to loan the scooter, a time and place is set for the activity visit.

On the scheduled activity date, the scooter owner is the first to run the course to show the cadets how to operate the controls. If she agrees that everything is safe and acceptable, the activity can be started. From there, everyone should get a chance to try the activity. Attention should be paid to the amount of power left in the battery during the later part of the event. It is up to the Candidate to explain to all that the impairment goggles simulate a range of blood alcohol content (BAC) im-

pairment from about 0.06 to 0.25. The Candidate is then tasked to explain to the unit what the "acceptable" BAC limits are for driving in their home state.

When the activity is over, every effort should be made to help the scooter owner reload the cart into his/her personal vehicle. A gift certificate, card of thanks, or honorary squadron member certificate can be offered to the scooter owner for helping the unit. This is a great activity but it does have a serious message.

ACTIVITY RESOURCES:

1. Impairment goggles
2. Electric scooter
3. Orange cones

TASK 1.0 The Candidate acquires a set of impairment goggles. These are available in every wing by contacting your Drug Demand Reduction Administrator, or you can make your own in Activity 21.

TASK 2.0 The Candidate makes arrangements for getting an electric scooter, orange cones, and a large, flat area to conduct the activity.

TASK 3.0 The Candidate and Mentor set up a driving range. The Candidate can use multiple orange cones and marking tape to make the range as simple or complicated as desired.

TASK 4.0 One at a time, each member of the unit, both senior members and cadets, get a chance to drive the scooter around the course. These scooters have a potentiometer, which allows for a variable speed selection. In the beginning, the Candidate should test the cart to determine how fast it should be set. The candidate explains the simulated BAC provided by the impairment goggles, as well as the local acceptable BAC limits for driving.

TASK 5.0 The Candidate answers the Mentor's questions per the Meaningful Learning Experience Rubric.

This cadet did a great job "driving while impaired."

ACTIVITY 28

DRUG ABUSE IS ALL ABOUT CHOICES

OBJECTIVE:

To raise the awareness that drug abuse and alcohol addiction is about making poor choices.

DISCUSSION – When called upon to speak at a pilot's workshop, a physician, who specializes in drug rehabilitation, opened his presentation with the statement, "Drug abuse doesn't happen without someone first making a bad choice. Consider the alcoholic: in the beginning, that person makes a choice to drink, or not drink. They become an alcoholic by continually making poor choices." Another example might be a painkiller addict: at first, he may have a legitimate injury requiring pain medications. But long after the pain subsides, the addict continues taking the prescription painkiller in ever-increasing dosages. He seeks prescriptions from multiple physicians, and fills them at multiple pharmacies. Rather than stopping the drinking, or tapering off the pain medication, the addict or alcoholic continues to make bad choices. The physician ended his talk with, "If you don't start drinking, you won't have to quit drinking. Life is all about choices."

This activity involves a discussion between a group of cadets about choices. These choices are not just about drugs or alcohol, but about life and a never-ending stream of options. A very important part of CAP's Drug Demand Reduction program is about education, and learning how to make good choices when it comes to substance abuse. During the time when a young person is eligible to enter the CAP cadet program, there is very strong peer pressure in school, at the mall, and in the neighborhood that can lead the cadet down the wrong path. Making good choices is about "will power" but, more importantly, it's about "won't power."

ACTIVITY RESOURCES:

1. Meeting location with table and chairs
2. Chalkboard or easel-mounted fold-over display
3. Markers or chalk

CAP cadets can be taught how to make good choices. The key word in that sentence is "taught." This goes back to one of DDR Program's fundamental elements: education. In this activity, education starts with peer discussion.

TASK 1.0 The Candidate asks for cadet volunteers in the unit.

TASK 2.0 The Candidate arranges a discussion time and place with the Unit Commander and the Mentor, and invites the participating cadets.

TASK 3.0 The Candidate divides the participants into two equal sized groups. Group Alpha is assigned to Category 1, Group Bravo is assigned to Category 2, and both groups will discuss Category 3.

Category 1	Category 2	Category 3
Ages 12-14	Ages 15-18	Ages 19+

TASK 4.0 The Candidate starts the discussion with a statement such as: "We are going to discuss choices in life—the topic is what we think are good or bad choices. We know that many changes occur when a person reaches age twelve. During the Category 1 age range, there will be many changes including school, friends, and family. These changes present many new choices. Based on the list of 10 choices below, Alpha Group discusses good choices that Category 1 teenagers should make in response to those changes. Group Bravo will do the same for Category 2 teens. And finally, both Alpha and Bravo groups will discuss good choices Category 3 teens and adults can make after high school."

TASK 5.0 During the discussion, the Candidate records the input on the flip-over paper or chalkboard. Since the topic is subjective, examples of good choices can be started with:

1. Friends at school
2. Clothing
3. Music
4. Food
5. Hobbies and pastimes
6. Spiritual beliefs
7. Sports
8. Youth Organizations
9. Internet "browsing" selections
10. Books, movies and choices outside of school

TASK 6.0 After recording the responses regarding good choices, the Candidate addresses both groups with a statement such as: "We have three age categories and ten areas for choice in our discussion. Let's now turn to the bad choices in our three age ranges. Repeat the discussion for the same age, but this time give your input considering bad choices for each category."

TASK 7.0 All of the discussion is subjective and will depend upon many factors. Different areas of the United States will have different opinions on what is a good choice and what is a bad choice. The Mentor monitors this discussion and, only when asked, gives opinions. This dialog will reveal such things as "Who is a good friend," or "What is a good book," or "Who is an example of a bad sport," and so on.

The most important thing is to keep the Civil Air Patrol value system firmly in the discussion. Although the cadets have many opinions about certain issues, CAP core values should guide them. In the world of aerospace, zero tolerance for drugs and alcohol is fundamental and can't be ignored. The Candidate must let the two groups know, right up front, that the reason for this discussion is to be aware of how to make good choices so that the cadets will stay clean, strong, focused, and committed to a rewarding future.

TASK 8.0 The Candidate prepares a 1/2-page report with a list of at least 10 good and 10 bad life choices in each age range that were discussed by the cadets. Upon completion, the Candidate submits the report to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

ACTIVITY 29

INTERVIEWING A MEDICAL DOCTOR

OBJECTIVE:

To conduct an interview with a physician to discuss drug-related issues.

DISCUSSION – The Candidate must set up a formal appointment to interview a medical doctor and ask a series of at least 10 questions. The Candidate must use the opportunity to ask the physician about drugs, lifestyles, threats, and other issues facing teenagers today. The questions should also address health maintenance, advice on over-the-counter medications, and the background of the physician and the required schooling. The Candidate should ask the Mentor's help in preparing the questions. Once the questions are compiled, a parent may be asked to look them over one last time.

Once the interview is finished, the Candidate prepares a report to be submitted to the Mentor for evaluation. This is an excellent opportunity for the Candidate to talk to a medical professional on a basis other than personal medical care issues.

A carefully planned interview with a medical doctor will help establish a new background of knowledge for a teenaged cadet. Under normal circumstances, the only time a teen sees a physician is on a professional visit or a sick call to an emergency room.

TASK 1.0 The Candidate arranges an interview with a medical doctor. This must be an M.D. or D.O., not an O.D., massage therapist, physician's assistant, or chiropractor.

TASK 2.0 With help from the Mentor, the Candidate prepares a list of at least 10 questions that will be asked during the interview with the physician.

TASK 3.0 The Candidate conducts the interview at the appointed time, using the tips found at the end of this volume.

TASK 4.0 The Candidate prepares a one-page report on the interview. Upon completion, the Candidate submits the term definitions and report of the full interview to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

ACTIVITY RESOURCES:

1. Portable recording device (optional)
2. Notebook or tablet

TERMS TO DEFINE:

1. M.D.
2. D.O.
3. Surgeon
4. Intern
5. Resident
6. Residency
7. Pre-Med
8. Specialty

30

ACTIVITY 30

CONSTRUCTING A PORTABLE EXERCISE MACHINE

OBJECTIVE:

To demonstrate how a simple, portable exercise machine can be made from inexpensive components.

DISCUSSION – Here on planet Earth, our muscles and bones work as a unit against the forces of gravity. Exercise helps keeps our muscles and other systems working at peak performance. It was once said that animal bodies need animal exercise. Our bodies need a workout constantly to maintain maximum performance. When we travel or change our normal situation, like going off to college and living in a dorm, our normal routines can change. For instance, college students might have to go across campus to get to a gym.

Another factor is money. Enrolling in a commercial fitness center can require money cadets don't have. If the school has some restrictions about the use of the weight room or other workout facility, then an attitude of "ah, forget it" might surface, and the whole idea of staying in shape is put on the shelf. This same thing can happen to someone who is flying professionally. A commercial pilot's hours may be irregular, and it's not uncommon to be billeted in a hotel that doesn't have a workout facility.

In his interview in the *LET'S GO FLYING* book, First Officer Adam Wright mentioned that he throws a pair of running shoes in his overnight case. As soon as he's checked into the hotel, he goes out for a run. Running is a great cardiovascular activity, but what about the arms, back, and abs? These muscles require resistance training, which means weights or stretching.

This activity shows the Candidate how to use a common bicycle tube and a stick to make a very effective workout machine. It can be used for the arms, back, legs, and abdominal muscles. As with any workout equipment, caution must be taken so the Candidate doesn't get smacked by a band that comes loose. But with the proper caution, it can be a maximum workout at minimum cost.

TASK 1.0 The Candidate builds a simple resistance machine by slipping a bicycle tube around the dowel rod or broom stick to make a slip knot as shown in the image below. The Candidate uses the second bicycle tube for resistance exercises "as-is."

TASK 2.0 The Candidate develops a series of exercises using the tube and resistance machine. The image below can be used for ideas.

TASK 3.0 The Candidate demonstrates to the Mentor and/or unit members a minimum of 6 different exercises using the portable exercise machine.

TASK 4.0 Upon completion, the Candidate submits the term definitions and a written description of the workout routine to the Mentor for review and approval. The Candidate answers the Mentor's questions per the Meaningful Learning Experience Rubric. The Candidate and Mentor must also discuss the effects of anabolic steroid use on the body.

ACTIVITY RESOURCES:

1. Two standard small, thin bicycle tubes
2. Broom handle, or dowel rod, or piece of PVC piping 12-14" long

TERMS TO DEFINE:

1. Aerobic exercise
2. Anaerobic exercise
3. Weight training
4. Resistance training
5. Anabolic steroids

These cadets demonstrate resistance exercises using stretchable bands and a bicycle tube that can be used in a training regimen.

A cadet forms a slip knot around the dowel rod or stick using the bicycle tube.

ACTIVITY 31

ARE YOU FIT FOR FLYING?

OBJECTIVE:

To raise awareness of the medical standards a pilot must maintain throughout a flying career.

DISCUSSION – If you are an airline captain, you will have to pass a medical examination every 6 months throughout your career while you are the pilot in command of a scheduled airliner. If you are a co-pilot, or fly professionally in a capacity other than being the captain of an airliner, you are required to take a medical certification examination every year. For all other operations, a third class medical examination is required every two to five years throughout a pilot's flying experience.

In Part One of the *FIT FOR FLYING* book, Dr. Robert Sancetta, one of the FAA's top medical examiners, gives complete coverage of every aspect of the test instrument known as the 8500-8. Part One is required reading for this activity.

Once the Candidate reads the required section of the textbook, she must give a presentation to the unit. This talk will be about pilot medical certification at all levels. Since medical certification is on an equal basis with the actual pilot's license, also known as a certificate, the Candidate must convey this message to the unit during the presentation. The 8500-8 has some very specific restrictions involving drug and alcohol use and abuse. There are also 15 disqualifying issues that must be covered in the Candidate's presentation.

The ear examination is an important component of the FAA 8500-8 examination.

TASK 1.0 The Candidate is required to read Part One, Human Airworthiness, in the *FIT FOR FLYING* book. The Candidate should take special note of:

a. Drug and alcohol abuse

b. The 15 disqualifying issues

c. Waivers

d. The National Register for DUI/DWI arrests

ACTIVITY RESOURCES:

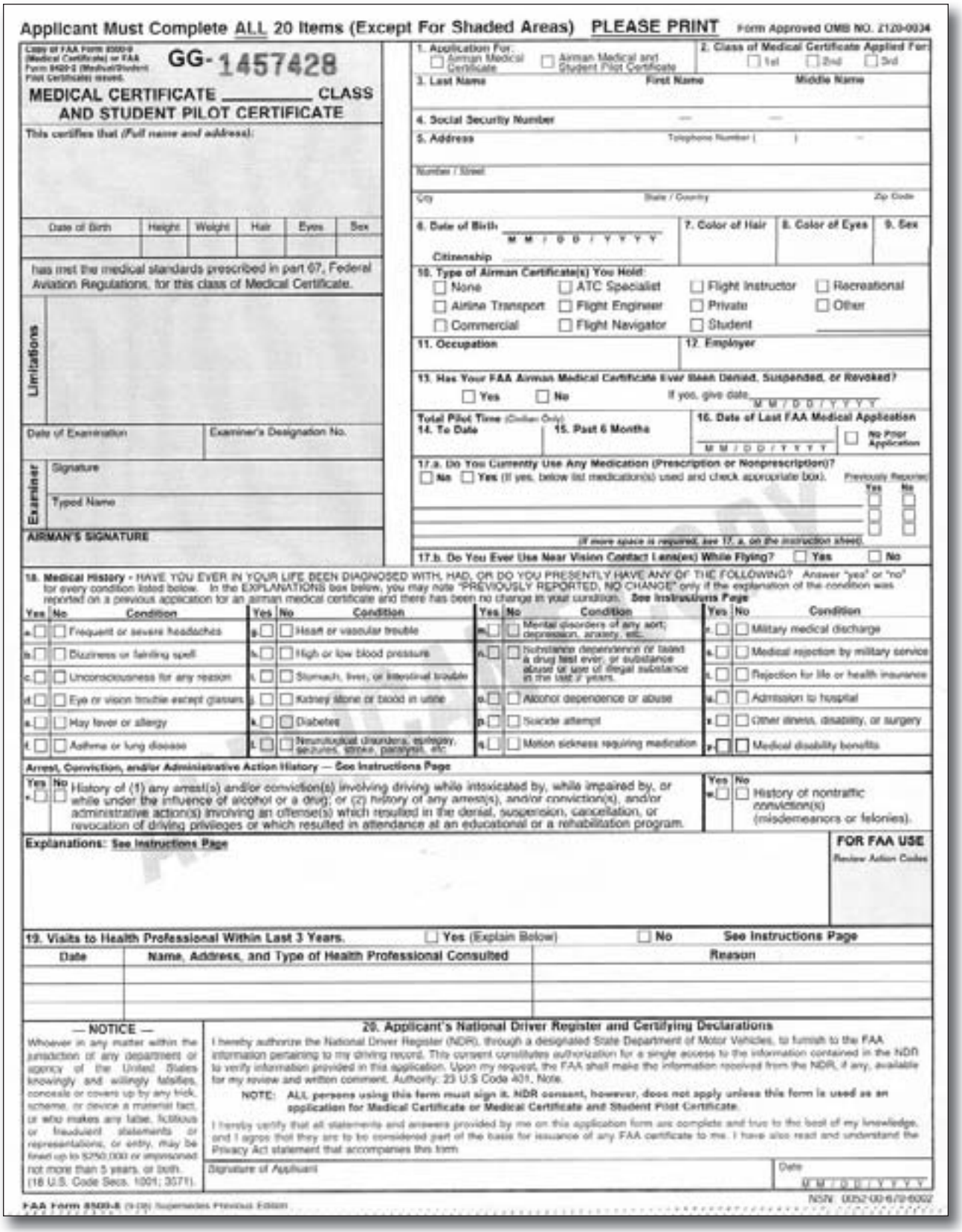
1. *FIT FOR FLYING* book, Part One
2. FAA Form 8500-8
3. Internet

TASK 2.0 The Candidate downloads a copy of the FAA's Medical Examination form 8500-8 and makes copies available to all who would like to review it. A copy can be placed in the hands of each unit member or posted on the unit bulletin board.

TASK 3.0 The Candidate gives an oral presentation to the unit on the FAA Medical Standards using the instrument known as Medical Certification 8500-8.

TASK 4.0 The Candidate prepares a one-page report on the 8500-8 test instrument, including which medical certifications are required for various levels of professional piloting. Upon completion, the Candidate submits the term definitions and report to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

A cadet receives a Class 3 medical examination.



Applicant Must Complete ALL 20 Items (Except For Shaded Areas) PLEASE PRINT Form Approved OMB NO. 2120-0034

Copy of FAA Form 8500-9 (Medical Certificate) or FAA Form 8420-2 (Medical/Student Pilot Certificate) issued.

GG-1457428

MEDICAL CERTIFICATE _____ CLASS AND STUDENT PILOT CERTIFICATE

This certifies that (Full name and address):

Date of Birth	Height	Weight	Hair	Eyes	Sex

has met the medical standards prescribed in part 67, Federal Aviation Regulations, for this class of Medical Certificate.

Limitations

Date of Examination | Examiner's Designation No.

Examiner: Signature; Typed Name

AIRMAN'S SIGNATURE

1. Application For: ☐ Airman Medical Certificate ☐ Airman Medical and Student Pilot Certificate
2. Class of Medical Certificate Applied For: ☐ 1st ☐ 2nd ☐ 3rd
3. Last Name | First Name | Middle Name
4. Social Security Number
5. Address — Telephone Number ( ) - — Number / Street — City — State / Country — Zip Code
6. Date of Birth M M / D D / Y Y Y Y — Citizenship
7. Color of Hair
8. Color of Eyes
9. Sex
10. Type of Airman Certificate(s) You Hold: ☐ None ☐ ATC Specialist ☐ Flight Instructor ☐ Recreational ☐ Airline Transport ☐ Flight Engineer ☐ Private ☐ Other ☐ Commercial ☐ Flight Navigator ☐ Student
11. Occupation
12. Employer
13. Has Your FAA Airman Medical Certificate Ever Been Denied, Suspended, or Revoked? ☐ Yes ☐ No — If yes, give date M M / D D / Y Y Y Y
Total Pilot Time (Civilian Only) 14. To Date 15. Past 6 Months
16. Date of Last FAA Medical Application M M / D D / Y Y Y Y ☐ No Prior Application
17.a. Do You Currently Use Any Medication (Prescription or Nonprescription)? ☐ No ☐ Yes (If yes, below list medication(s) used and check appropriate box). Previously Reported: Yes / No
(If more space is required, see 17. a. on the instruction sheet).
17.b. Do You Ever Use Near Vision Contact Lens(es) While Flying? ☐ Yes ☐ No

18. Medical History - HAVE YOU EVER IN YOUR LIFE BEEN DIAGNOSED WITH, HAD, OR DO YOU PRESENTLY HAVE ANY OF THE FOLLOWING? Answer "yes" or "no" for every condition listed below. In the EXPLANATIONS box below, you may note "PREVIOUSLY REPORTED, NO CHANGE" only if the explanation of the condition was reported on a previous application for an airman medical certificate and there has been no change in your condition. See Instructions Page

Yes	No	Condition
a.		Frequent or severe headaches
b.		Dizziness or fainting spell
c.		Unconsciousness for any reason
d.		Eye or vision trouble except glasses
e.		Hay fever or allergy
f.		Asthma or lung disease
g.		Heart or vascular trouble
h.		High or low blood pressure
i.		Stomach, liver, or intestinal trouble
j.		Kidney stone or blood in urine
k.		Diabetes
l.		Neurological disorders, epilepsy, seizures, stroke, paralysis, etc.
m.		Mental disorders of any sort; depression, anxiety, etc.
n.		Substance dependence or failed a drug test ever, or substance abuse or use of illegal substance in the last 2 years.
o.		Alcohol dependence or abuse
p.		Suicide attempt
q.		Motion sickness requiring medication
r.		Military medical discharge
s.		Medical rejection by military service
t.		Rejection for life or health insurance
u.		Admission to hospital
v.		Other illness, disability, or surgery
w.		Medical disability benefits

Arrest, Conviction, and/or Administrative Action History — See Instructions Page

Yes	No	
x.		History of (1) any arrest(s) and/or conviction(s) involving driving while intoxicated by, while impaired by, or while under the influence of alcohol or a drug; or (2) history of any arrest(s), and/or conviction(s), and/or administrative action(s) involving an offense(s) which resulted in the denial, suspension, cancellation, or revocation of driving privileges or which resulted in attendance at an educational or a rehabilitation program.
y.		History of nontraffic conviction(s) (misdemeanors or felonies).

Explanations: See Instructions Page

FOR FAA USE — Review Action Codes

19. Visits to Health Professional Within Last 3 Years. ☐ Yes (Explain Below) ☐ No See Instructions Page

Date	Name, Address, and Type of Health Professional Consulted	Reason

— NOTICE —

Whoever in any matter within the jurisdiction of any department or agency of the United States knowingly and willingly falsifies, conceals or covers up by any trick, scheme, or device a material fact, or who makes any false, fictitious or fraudulent statements or representations, or entry, may be fined up to $250,000 or imprisoned not more than 5 years, or both. (18 U.S. Code Secs. 1001; 3571).

20. Applicant's National Driver Register and Certifying Declarations

I hereby authorize the National Driver Register (NDR), through a designated State Department of Motor Vehicles, to furnish to the FAA information pertaining to my driving record. This consent constitutes authorization for a single access to the information contained in the NDR to verify information provided in this application. Upon my request, the FAA shall make the information received from the NDR, if any, available for my review and written comment. Authority: 23 U.S Code 401, Note.

NOTE: ALL persons using this form must sign it. NDR consent, however, does not apply unless this form is used as an application for Medical Certificate or Medical Certificate and Student Pilot Certificate.

I hereby certify that all statements and answers provided by me on this application form are complete and true to the best of my knowledge, and I agree that they are to be considered part of the basis for issuance of any FAA certificate to me. I have also read and understand the Privacy Act statement that accompanies this form.

Signature of Applicant — Date M M / D D / Y Y Y Y

FAA Form 8500-8 (9-08) Supersedes Previous Edition

NSN: 0052-00-670-6002

NOTE: FAA/Original Copy of the Report of Medical Examination Must be TYPED.

REPORT OF MEDICAL EXAMINATION

21. Height (inches)	22. Weight (pounds)	23. Statement of Demonstrated Ability (SODA) ☐ YES ☐ NO Defect Noted:	24. SODA Serial Number

CHECK EACH ITEM IN APPROPRIATE COLUMN	Normal	Abnormal	CHECK EACH ITEM IN APPROPRIATE COLUMN	Normal	Abnormal
25. Head, face, neck, and scalp			37. Vascular system (Pulse, amplitude and character: arms, legs, others)		
26. Nose			38. Abdomen and viscera (Including hernia)		
27. Sinuses			39. Anus (Not including digital examination)		
28. Mouth and throat			40. Skin		
29. Ears, general (Internal and external canals; Hearing under item 49)			41. G-U system (Not including pelvic examination)		
30. Ear Drums (Perforation)			42. Upper and lower extremities (Strength and range of motion)		
31. Eyes, general (Vision under items 50 to 54)			43. Spine, other musculoskeletal		
32. Ophthalmoscopic			44. Identifying body marks, scars, tattoos (Size & location)		
33. Pupils (Equality and reaction)			45. Lymphatics		
34. Ocular motility (Associated parallel movement, nystagmus)			46. Neurologic (Tendon reflexes, equilibrium, sensory, cranial nerves, coordination, etc.)		
35. Lungs and chest (Not including breast examination)			47. Psychiatric (Appearance, behavior, mood, communication, and memory)		
36. Heart (Precordial activity, rhythm, sounds, and murmurs)			48. General systemic		

NOTES: Describe every abnormality in detail. Enter applicable item number before each comment. Use additional sheets if necessary and attach to this form.

49. Hearing	Record Audiometric Speech Discrimination Scores Below		Right Ear					Left Ear				
Conversational Voice Test at 6 Feet ☐ Pass ☐ Fail		Audiometer Threshold in decibels	500	1000	2000	3000	4000	500	1000	2000	3000	4000

50. Distant Vision		51.a. Near Vision		51.b. Intermediate Vision - 32 Inches		52. Color Vision
Right 20/	Corrected to 20/	Right 20/	Corrected to 20/	Right 20/	Corrected to 20/	☐ Pass
Left 20/	Corrected to 20/	Left 20/	Corrected to 20/	Left 20/	Corrected to 20/	☐ Fail
Both 20/	Corrected to 20/	Both 20/	Corrected to 20/	Both 20/	Corrected to 20/	

53. Field of Vision ☐ Normal ☐ Abnormal	54. Heterophoria 20' (In prism diopters)	Esophoria	Exophoria	Right Hyperphoria	Left Hyperphoria

55. Blood Pressure (Sitting, mm of Mercury) Systolic / Diastolic	56. Pulse (Resting)	57. Urine Test (If abnormal, give results) ☐ Normal ☐ Abnormal	Albumin	Sugar	58. ECG (Date) M M D D Y Y Y Y
/					

59. Other Tests Given

60. Comments on History and Findings: AME shall comment on all "YES" answers in the Medical History section and for abnormal findings of the examination. (Attach all consultation reports, ECGs, X-rays, etc. to this report before mailing.)

FOR FAA USE
Pathology Codes:
Coded By:
Clerical Reject

Significant Medical History ☐ YES ☐ NO **Abnormal Physical Findings** ☐ YES ☐ NO

61. Applicant's Name

62. Has Been Issued — ☐ Medical Certificate ☐ Medical & Student Pilot Certificate
☐ **No Certificate Issued** — Deferred for Further Evaluation
☐ **Has Been Denied** — Letter of Denial Issued (Copy Attached)

63. Disqualifying Defects (List by item number)

64. Medical Examiner's Declaration — I hereby certify that I have personally reviewed the medical history and personally examined the applicant named on this medical examination report. This report with any attachment embodies my findings completely and correctly.

Date of Examination M M D D Y Y Y Y	Aviation Medical Examiner's Name	Aviation Medical Examiner's Signature
	Street Address	
	City State Zip Code	AME Serial Number
		AME Telephone ( )

FAA Form 8500-8 (9-06) Supersedes Previous Edition NSN: 0052-00-670-6002

ACTIVITY 32

CATCH A BOLT OF LIGHTNING

ACTIVITY RESOURCES:

1. Foam square (12x12 inch) and about 3/8-inch thick to use as a projectile platform
2. Plastic or wooden ruler
3. Two or three #64 rubber bands
4. Hobby knife
5. Protective glasses or goggles

OBJECTIVE:

To build a simple machine that quantifies the fastest reaction times of both cadets and senior members.

DISCUSSION – This is a more advanced reaction time activity than Activity 6. The ruler and rubber band work the same as the foam "black bullet"; however, the ruler travels faster and allows a more precise measurement of the launch speed. In one squadron test, the difference between two very fast cadets was less than 1 centimeter of pull-marking on the ruler. Due to the moving components, it is imperative that all participating cadets have protective eyewear for this activity.

Step 1. Sheets of cellfoam can be purchased at hobby and craft stores. For this activity, it was found that a sheet 3/8-inch thick and 11.5 inches square worked the best. It was the strongest and keeps the ruler flying straighter.

Step 2. Prepare the ruler. This kind of ruler has several advantages. First is safety: note that the edges are rounded. If you choose a plastic ruler that has pointed edges, round them with at least 180 grit sandpaper. Next, the ruler has gradient marks and these add specific numbers to the launching. That will allow the Candidate to keep track of who is the fastest in reaction time. The numbers determine speed. Five inches have a greater thrust than four, etc.

TASK 1.0 The Candidate uses the how-to photography to construct a foam board launcher.

TASK 2.0 The Candidate asks for volunteers, who will start this activity by trying to capture the reactor with a hand clap.

TASK 3.0 The Candidate follows up the first challenge by having the cadets try to capture the reactor between their knees.

TASK 4.0 The Candidate and Mentor meet to discuss the effects that drug and alcohol use can have on reaction time. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

Step 3. Cut a slot into the center of board. It should be just a little bit larger than the ruler. The one cut for this activity was about 1/4-inch by one inch long. The ruler should fit "loosely" in the slot. If the Candidate chooses to use a plastic ruler, it is a good idea to have the ruler hit a pillow or foam pad instead of a hard floor, to avoid shattering. No person within 10 feet of this launcher should be without protective eye wear.

Step 4. Cut the rubber bands open and tie them together to create a rubber band rope. Tie a knot at each end. Make two small cuts into the sides of the board and pull the rubber band rope across the slot as shown by the blue line in the image, using the knot at each end to hold it in place.

Step 5. The cadet is seated in front of the launching board and asked to call out a number. That number is the number of inches the ruler is pulled above the board. The higher the number, the faster it flies.

If you think you're fast, try to catch a bolt of lightning!

The cadet tried several times to capture the ruler. One cadet said it was like trying to grab a bolt of lightning, and that is where the activity got its name!

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ACTIVITY 33

INTERVIEW AN AMERICAN HERO

OBJECTIVE:

To give cadets an opportunity to interview a local American hero – every town has one.

DISCUSSION – The Candidate must identify a local hometown hero, from any branch of the military. This should be someone with combat experience or someone who witnessed a great battle. This person should be in your own local community, or as close to your home as possible. The Candidate then conducts a formal interview, asking at least 10 questions. The Candidate should ask the Mentor's help in preparing the questions. Once the questions are compiled, a parent may be asked to look over the interview one last time.

Once the interview is finished, the Candidate prepares a report, including a photo, to be submitted to the Mentor for evaluation. This interview is an excellent opportunity for the Candidate to meet an overlooked hero in her own hometown.

ACTIVITY RESOURCES:

1. A recording device (optional)
2. A notebook or tablet
3. A camera

The Tuskegee Airmen paved the way for diversity as one of the most successful fighter groups of the war.

(Image courtesy of U.S. Army.)

TASK 1.0 The Candidate identifies a local American hero. Resources to help identify the hero can include senior members, local museum staff, historians or public affairs officers at nearby Air Force/Reserve/Guard bases, local newspapers, and veterans clubs such as the VFW or American Legion.

TASK 2.0 The Candidate prepares a series of interview questions from the perspective of a middle school history teacher. As a teacher, what questions would you expect an 8th grader to ask an American hero? The Candidate then meets with the Mentor to discuss the questions (at least 10) that will be asked during the interview. One or more of the questions must deal with the topics of substance abuse or the effects of drugs and alcohol in the American hero's experience.

TASK 3.0 The Candidate contacts the hero to arrange an interview time and place, and conducts the interview using the tips found at the end of this volume.

TASK 4.0 The Candidate prepares the interview report, including a photo of the local hero. Upon completion, the Candidate submits the report of the full interview to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

Brig Gen Wilma Vaught USAF (Ret.) visiting with CAP cadets.
(Image courtesy of Civil Air Patrol.)

ACTIVITY 34

REACT WITH A KISS

OBJECTIVE:

To simulate motor skill impairment by using a pair of fleece gloves to open a foil-wrapped chocolate candy.

DISCUSSION – This activity is quick and fun. It's also a simple way to show what happens to a person's reaction time when soft fleece gloves are used to open an innocent-looking candy wrapper. Everyone knows that a person who's had a "few too many" will lose some task performance; however, this activity can show a group of cadets and/or senior members how an impairment makes it almost impossible to perform the task quickly. Of course, the point is to ask the question, "Would you ride or fly with someone who has their driving or flying skills altered?"

ACTIVITY RESOURCES:

1. Bag of foil-wrapped chocolate candies
2. Two or three pairs of fleece or ski gloves
3. A call bell, like those used in hotel lobbies or board games
4. Two tables

TASK 1.0 The Candidate separates cadets into individual teams of two, and directs one individual from each team to put on a pair of gloves.

TASK 2.0 The Candidate places the call bell on the start table and the chocolate candies on the goal table. The two tables should be approximately 10 feet apart. The Candidate directs the teams to line up in front of the start table.

TASK 3.0 The Candidate rings the bell on the start table to begin. The team member on each team that is wearing gloves runs to the goal table, picks up a chocolate, and removes the wrapper from the candy.

TASK 4.0 Once the wrapper is removed, the cadet places the candy back on the table, races back to the start table, takes off the gloves, and gives them to a teammate. The teammate puts on the gloves and repeats TASK 3.0.

TASK 5.0 When the second cadet is finished, she takes both pieces of candy back to the start table and rings the bell. The first team to the call bell wins the round!

TASK 6.0 The competition continues until one team is declared the overall winner. They become known as the U2s, which is an acronym for "Undisputed Unwrappers!" The Candidate reinforces the message that physical impairment is just one aspect of drug and alcohol use. If unwrapping a chocolate is made difficult by limited physical impairment, imagine a life ruled by drug and alcohol effects.

TASK 7.0 The Candidate answers the Mentor's questions per the Meaningful Learning Experience Rubric.

One of America's favorites—that is, until you try to open one with a pair of gloves on!

The bulky fleece gloves do interfere in the speed of the unwrapping process.

The first team to ring the call bell wins!

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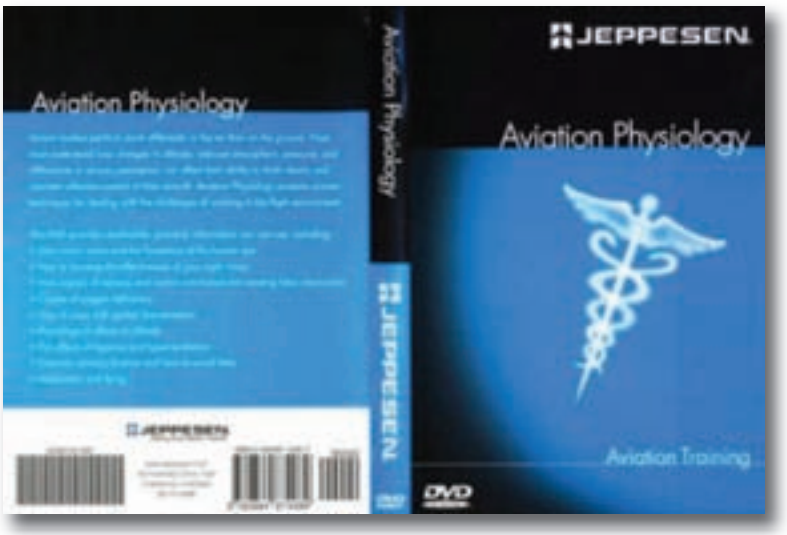
ACTIVITY 35

AEROMEDICAL EDUCATION FOR THE SQUADRON

OBJECTIVE:

To present the *Aviation Physiology* DVD to the unit and improve their understanding of hypoxia, spatial disorientation, oxygen equipment, and the science of human physiology at high altitudes.

DISCUSSION – This is a very simple, yet highly effective activity for the Candidate. Jeppesen is one of the world's most highly acclaimed aviation publishing companies. Since the 1930s, Jeppesen has provided pilots and other flight crew personnel with excellent aviation and aerospace educational materials. Their maps and charts are used around the world for navigation. Their textbooks and audio-visual equipment is used at all levels by flight schools, college aviation programs and private pre-career flight training. They produce a series of widely-used DVDs that cover individual subjects important to safe flying. One of these is the *Aviation Physiology* DVD. Permission has been granted by the Jeppesen Company to allow this video to be shown to individual units of Civil Air Patrol members. Copies of the DVD are available from the DDR office at Civil Air Patrol National Headquarters. It is up to the Candidate to obtain a copy and to make arrangements to show it to the unit members.



This outstanding DVD on *Aviation Physiology* is available from the DDR office at National Headquarters.

TASK 1.0 The Candidate requests a copy of the Jeppesen *Aviation Physiology* DVD from the DDR office at National Headquarters.

TASK 2.0 The Candidate makes arrangements with the Unit Commander to show this video to the unit. This is excellent for pilots, aircrews, and all cadets who aspire to become pilots.

TASK 3.0 After the DVD is shown, the Candidate allows the audience members to share their feedback. The Candidate should ask questions to ensure a better understanding of aviation physiology, especially regarding the section on "Alcohol, Drugs, and Performance."

TASK 4.0 Upon completion, the Candidate submits the term definitions to the Mentor for review and approval. The Candidate answers the Mentor's questions per the Meaningful Learning Experience Rubric.

ACTIVITY RESOURCES:

1. Jeppesen *Aviation Physiology* DVD
2. DVD player and TV, or a laptop/projector set-up

TERMS TO DEFINE:

1. Physiology
2. Physiological division of the atmosphere
3. Musculoskeletal system
4. Gastrointestinal system
5. Circulatory system
6. Decompression

Air Force Captain Scott Kotowoski hooks up his oxygen equipment in preparation for a flight in an F-16.

(Image courtesy of Sgt. Jack Braden, USAF.)

ACTIVITY 36

THE ULTIMATE ROLE MODEL

OBJECTIVE:

To raise awareness of each unit member's responsibility as a role model.

DISCUSSION – Cadets who reach their career goals should feel the need to give back some of the excitement and rewards they've experienced in aviation and aerospace. In a way, the cadet must become a mentor to those who are looking up to this sharp, clean, dedicated leader standing before them. The cadet must look at those who had a very positive influence on their career and be willing to pass on their good choices to a younger cadet.

When a young American joins CAP, the cadet is going to be given the opportunity to become a leader. In Civil Air Patrol, there will be many doors that open to an exciting and rewarding future. If the Candidate has the desire and is willing to work toward excellence in human performance, there is a very good possibility that she, too, will "make it to the top." The road to success may be rocky at times, but with determination and a burning desire to succeed, it can happen. To be the best, the Candidate must start planning early.

This young American may very well become a four-star general in the United States Air Force. He has already made some good choices, including becoming a cadet in Civil Air Patrol.

One former CAP cadet who is an outstanding role model is Melissa Bland. Her story is given here to inspire others, especially young American women, who want to fly. She is an example of how one 12-year-old girl used the resources of the Civil Air Patrol to help make a dream come true. She has been drug- and alcohol-free all of her life, and by making the right choices, she made it to the top.

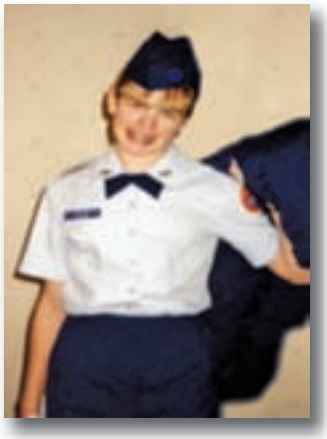
In 1995, Melissa visited one of Mustang Squadron's meetings in Colorado to see what CAP was all about. She walked up to the unit commander and said, "I would like to join CAP because I want to be a pilot." Little did the commander know that this bright-eyed teenager would go on to become one of the most outstanding pilots in the U.S. Air Force.

During the time she was a Mustang cadet, Melissa won all of the honors up to and including the Spaatz Award. During her senior year, she was selected as the Civil Air Patrol Cadet of the Year. In the fall of 2001, she entered the U.S. Air Force academy; four years later, she graduated 27th in the Class of 2005. During her final year at the Academy, she became the

Wing Commander. Upon graduation, Melissa received two other awards: Outstanding Cadet in Communications and Outstanding Cadet in Foreign Area Studies.

Melissa started undergraduate pilot training in 2006 and was the distinguished graduate of her class in 2008. She was given her choice of assignments and chose the C-17 out of Travis Air Force Base in California. She now has over 1,000 hours of flight time in her logbook and, as of this writing, will be attending Aircraft Commander School in Oklahoma.

Captain Bland has an enduring love for Civil Air Patrol. Every chance she gets, she gives back as much as she can to encourage CAP cadets to stay drug-free, alcohol-free and dedicated to the highest possible standards for physical and mental health. Her career will inspire other young adults who want to become civilian or military pilots.



In 2001, Melissa was selected as the Civil Air Patrol Cadet of the Year and four years later graduated in the top 5% of her class at the U.S. Air Force Academy.

(Images courtesy of family of Melissa Bland.)

Captain Melissa Bland is living proof that "girls can be great leaders and world-class pilots."

(Image courtesy of family of Melissa Bland.)

Captain Bland flies the Boeing C-17 out of Travis Air Force Base, California.

(Image courtesy of Alex McMahon.)

TASK 1.0 The Candidate writes a one-page paper on the topic: "The Role Model I Plan to Be." In this report, the Candidate must prepare a list of at least 10 ways in which she plans on being a great role model to those who are younger. Here is one example:

"I enjoy building and flying radio-controlled aircraft. I think it would be a good idea for me to contact a local CAP unit (after I become an Air Force pilot) and volunteer to speak to the unit about some of the great experiences I've had building and flying RC aircraft. I could tell them about inexpensive entry-level airplanes, RC flight simulators, and how to start a model airplane club in their school."

TASK 2.0 Upon completion, the Candidate submits the paper to the Mentor for review and approval. The Candidate also answers the Mentor's questions per the Meaningful Learning Experience Rubric.

Being a role model can include sharing a love of aviation and helping someone who is younger.

Role models can help you define your own path to success.

(Image coutesy of U.S. Air Force Academy.)

TIPS ON INTERVIEWING

Every person, young and old, has a story to tell, but the best stories are uncovered with the right interview techniques.

1. **First Impression:** When setting up the interview, make sure to ask your subject a set of "Pre-Interview" questions. These can be as simple as, What is your occupation? Age? Do you have a web site? Use these answers to do research on the subject, so that you come to the interview knowing his background, success, etc. This will show the subject that you are genuinely interested in his story.
2. **Location is Key:** Determine a location that will be comfortable for the subject and beneficial for your interview. For example, a WWII veteran may invite you to his home because he will show you the medals he has earned, black and white photos, and the uniform he wore. Allow yourself more than an hour for the interview.
3. **Come Prepared:** Have a list of questions that you know you want answered. These can be the "5 W Questions": Who, What, When, Where and Why.
4. **Casual Conversation:** While it is important to have prepared questions, the interview should be conducted casually, like the two of you were long-lost friends just catching up on life. This will make the subject comfortable enough to open up more. Even if you aren't always talking about the task at hand, you will be able to catch the subject's emotions, facial expressions, and other details that will make your story even better.
5. **Follow-up:** After the interview or after your completed project, make sure to contact your subject and thank him again for the time he spent with you. Also, offer him a copy of the report. The follow-up is important because your subject may refer you to another interesting person or have another story to tell.

Don't be afraid to ask questions.

(Image courtesy of Civil Air Patrol.)

The tips above were submitted by Jennifer Umland, who works in communications, public relations, and marketing for a pharmaceutical company in Colorado.

MEANINGFUL LEARNING EXPERIENCE RUBRIC

When the Mentor is presented with a report or other required component of an activity, the mentor may ask the Candidate the following:

1. Why did you choose this activity?

2. What preparations did you make in order to complete the activity?

3. What did you, as a Candidate, learn from this activity?

4. What new knowledge did you gain about the effects of drug and alcohol use during this activity?

5. Would you change anything about this activity?

6. What would you have added to this activity to make it a better learning experience?

Mentoring is a crucial aspect of leadership development.

(Image coutesy of Civil Air Patrol.)

MENTOR APPROVAL

I, _____ have been selected to act as a Mentor in the Drug Demand Reduction Excellence program for Candidate _____. I have reviewed Activity ____ and have found that the Candidate has met all of the requirements for the listed tasks. My signature constitutes a full approval and allows the Candidate to continue to the next activity.

_____ _____

Mentor Date

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ACKNOWLEDGEMENTS

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