

A TEACHING GUIDE TO SAFE & RESPONSIBLE HUNTING



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Teaching the Hunter Education Course

Preparing to Teach

The key to confident and effective teaching is preparation. If you master the material and plan in advance how to present it, the teaching experience will be rewarding for both you and your students. There is no substitute for adequate preparation. The basic material that should be covered is listed in the Class Plan on pages 3 - 4. The material is covered in greater detail in the Lesson Plans on pages 5 - 48 and in even more detail in the Student Manual. The Class Plan gives a suggested time schedule for an eight-hour course.

- ◆ Familiarize yourself with the various printed instructor aids available to help you teach.
- ◆ You have three levels of printed material—the Class Plan, the Lesson Plans, and the Student Manual—to use in preparing to teach and as aids while teaching:
 - Class Plan: Pages 3 - 4 of this guide provide a single sheet that gives you a recommended schedule for the class, a list of the important topics, and a place for you to note the teaching aids and classroom activities you plan to use.
 - Lesson Plans: On pages 5 - 48 of this guide are Lesson Plans that go along with each chapter of the Student Manual. Each Lesson Plan gives:
 - Objectives: statements of what students should have learned at completion of the lesson. These will help you set goals and keep on course.
 - Lesson Material: key points from the Student Manual, presented in outline form, that should be covered in class. In the margins for each topic you will see these helpful icons:



indicates the page number of the Student Manual on which the material is covered.



indicates that there also are illustrations in the Student Manual you may want to use.

- Review Questions: list of questions to ask during your instruction to help you determine the students' comprehension of the material. These questions also appear on pages 85-88 of the Student Manual.
- Student Manual: You should study all of the material in the Student Manual before you teach.
- ◆ Decide what level of printed instructor aids is appropriate for you.

Your teaching experience and familiarity with the material will determine which printed aids you want to use to prepare to teach and what to have in front of you while teaching.

- Experienced: If you have taught this course before and are well acquainted with the material, the lesson objectives and classroom activities, you may only need to use the Class Plan. This plan will help you keep on schedule and remind you of the key topics to be covered in each lesson.
- Familiar: If you are familiar with all of the material in the Student Manual, but have not taught the material before, you will want to use both the Class Plan and the Lesson Plans provided in this guide. The Lesson Plans will help you focus on the key information, plan how to present it and give you ideas for questions and activities to reinforce the learning.
- Novice: If you are new to some of the material and have not taught this course before, you will want to use the Class Plan and the Lesson Plans provided in this guide, as well as the Student Manual. You may want to organize a three-ring binder and put each chapter of the Student Manual behind the Lesson Plan for that chapter.
- ◆ Choose and obtain the teaching aids you wish to use.

Variation in the presentation of the material is essential to holding the attention of students and helping them retain the information. Even adults have an attention span of only 20-30 minutes, so breaking up the class routine with various teaching aids is critical. Consider using:

- Props: Bring in examples of the equipment being covered—unloaded firearms with different actions, bow and arrow, unloaded muzzleloader, fluorescent orange clothing, eye and ear protection, etc.
- Visual aids: You may wish to use all or some of the slides from the companion PowerPoint presentation that is included with this course.
- Sample documents: Obtain samples of documents such as your state's hunting laws, a hunting license application, a game tag, and a hunting plan.
- Guest speakers: Ask a hunting law enforcement officer, or hunting equipment industry professional to speak for 10-20 minutes. The guest appearance of a law enforcement official is an excellent way to reinforce the message that hunting safely and responsibly isn't just a good idea—it's the law!

Teaching the Material

Below is a suggested format for covering the material of each chapter. For long chapters, you may wish to break the material into two parts and follow the suggested format for each part. The “do’s” and “don’t’s” listed below will help make your teaching more effective.

- ◆ Cover each chapter by telling students what they will learn, teaching the lesson, and then summarizing what they should have learned.
 - A suggested teaching format to follow for each chapter of the Student Manual is:
 1. Introduction: Briefly state the lesson’s Objectives.
 2. Lecture and questions: Reinforce the key safety, responsibility, and hunting law points. Encourage discussion and questions from students. Use props, sample documents or overheads as needed. Ask the Review Questions aloud and have the students answer aloud. If there is any confusion, clarify the material again.
 3. Summary: Restate key points.
- ◆ Observe these teaching “do’s.”
 - Teach with confidence—remember you know the material better than anyone else in the room.
 - Treat the students courteously—let the students know that there are no “dumb questions.”
 - Speak clearly and loudly enough to be heard in the back of the room.
 - Vary your voice to avoid monotony—use volume, inflection and pauses to emphasize key points.
 - Maintain eye contact with your students—this keeps their interest and helps you assess whether they comprehend the material.
 - Encourage discussion; for example, ask the students to explain the benefits of safe hunting practices or the dangers of unsafe practices.
 - When releasing the students for a break, clearly indicate when you plan to start up again.
 - Be punctual when starting the course and starting back up after breaks. Take a 10-15 minute break at least every 1½ to 2 hours.
 - Maintain order in the classroom—remember that you are in charge.
 - Encourage students to follow along in their Student Manual.
- ◆ Avoid these teaching “don’t’s.”
 - Don’t read the material—instead speak to the students, putting the material in your own words.
 - Don’t allow one or two students to dominate the class discussion—try to get all to participate.
 - Don’t allow yourself to get off schedule—otherwise you will not be able to cover all of the material.
 - Avoid the telling of “war stories”—instead use concise descriptions of personal experience only to make important points.
 - Don’t use profanity or tell off-color jokes—you will lose respect as an instructor.
 - Avoid annoying or distracting mannerisms, such as jingling coins in your pocket or twirling a pointer.

The Hunter Education Course Class Plan

This page allows you to set up and schedule the timing for a Class Plan. It assumes a lunch break mid-day. If you are teaching this in two sessions, follow the plan on this page for the first session and the plan on the next page for the second session. Fill out the start time, duration, and aids and activities you plan for each segment. Then note the start time in the space provided at the top of the first page of each lesson.

Start Time/Duration	Key Topics
0:00 / ___ minutes	
___ : ___ / ___ minutes	KICK OFF
___ : ___ / ___ minutes	◆ Class logistics
___ : ___ / ___ minutes	◆ Introduction and Icebreaker
___ : ___ / ___ minutes	CHAPTER ONE: INTRODUCTION TO HUNTER EDUCATION
___ : ___ / ___ minutes	◆ Why Hunter Education?
___ : ___ / ___ minutes	◆ Hunter Education Funding Sources
___ : ___ / ___ minutes	◆ Review Questions
___ : ___ / ___ minutes	CHAPTER TWO: KNOW YOUR FIREARM EQUIPMENT
___ : ___ / ___ minutes	◆ Basic Parts of a Firearm: Rifle; Shotgun; Handgun
___ : ___ / ___ minutes	◆ Basic Components of Ammunition: Cartridges; Shotshell
___ : ___ / ___ minutes	◆ How a Firearm Works
___ : ___ / ___ minutes	◆ Common Features of Firearms: Actions, Safeties, Magazines, Sights
___ : ___ / ___ minutes	◆ Differences Between Firearms: Rifling, Rifle's or Handgun's Caliber, Shotgun's Gauge, Shotgun Choke and Shot Pattern
___ : ___ / ___ minutes	◆ Match Firearms and Ammunition
___ : ___ / ___ minutes	◆ Know Your Firearm's Range
___ : ___ / ___ minutes	◆ Cleaning & Storing Firearms
___ : ___ / ___ minutes	◆ Review Questions
___ : ___ / ___ minutes	BREAK
___ : ___ / ___ minutes	CHAPTER THREE: BASIC SHOOTING SKILLS
___ : ___ / ___ minutes	◆ Good Marksmanship and Accuracy
___ : ___ / ___ minutes	◆ Rifle: Sight Alignment; Master Eye; Sighting-In; Firing Techniques; Shooting Positions
___ : ___ / ___ minutes	◆ Shotgun: Matching Choke to Quarry, Patterning; Firing Techniques; Leading the Target
___ : ___ / ___ minutes	◆ Handgun: Loading and Handling; Position and Grip; Sight Alignment; Aiming, Shooting
___ : ___ / ___ minutes	◆ Review Questions
___ : ___ / ___ minutes	CHAPTER FOUR: BASIC HUNTING TECHNIQUES
___ : ___ / ___ minutes	◆ Planning and Preparation: Know Your Quarry, Animal Characteristics
___ : ___ / ___ minutes	◆ Hunting Strategies: Still Hunting; Stalking; Posting; Ground Blinds; Elevated Stands; Game Calling; Driving; Flushing; Dogs; Trapping
___ : ___ / ___ minutes	◆ Vital Shots: Where to Shoot; Types of Shots Approaching Downed Game
___ : ___ / ___ minutes	◆ Field Care of Game & Transporting Game
___ : ___ / ___ minutes	◆ Review Questions
___ : ___ / ___ minutes	BREAK FOR LUNCH
___ : ___ / ___ minutes	CHAPTER FIVE: PRIMITIVE HUNTING
___ : ___ / ___ minutes	◆ Muzzleloader Parts
___ : ___ / ___ minutes	◆ Muzzleloader Safety and Skills: Cleaning; Loading; Unloading; Firing
___ : ___ / ___ minutes	◆ Bow and Arrow Parts: Common Bow Types, Stringing a Bow, Parts of an Arrow; Common Types of Arrowheads
___ : ___ / ___ minutes	◆ Know Your Crossbow
___ : ___ / ___ minutes	◆ Bowhunting Safety and Skills: Bow Shooting: Position; Nocking; Drawing and Anchoring; Aiming; Holding and Releasing
___ : ___ / ___ minutes	◆ Review Questions

Start Time/Duration 0:00 / ___ minutes	Key Topics
___ : ___ / ___ minutes	CHAPTER SIX: BE A SAFE HUNTER
___ : ___ / ___ minutes	◆ Firearm Safety: Firearm Safety in the Home, Four Primary Rules of Firearm Safety, Hunting Incidents; Four Main Causes
___ : ___ / ___ minutes	◆ Safely Carrying Firearms: Proper Field Carries, Right Carry with Others; Crossing Obstacles
___ : ___ / ___ minutes	◆ Safely Loading, Unloading and Transporting Firearms
___ : ___ / ___ minutes	◆ Safe Zone-of-Fire
___ : ___ / ___ minutes	◆ Self-Control, Target Identification, Accuracy, Alcohol and Drugs
___ : ___ / ___ minutes	◆ Hunting from Elevated Stands: Types; Location; Fall-Arrest Systems; Hauling Hunting Equipment into Stand
___ : ___ / ___ minutes	◆ Hunting with Boats: Preparation; Transporting Firearms; Zone-of-Fire; Surviving Water Emergencies; Cold Water Immersion and Hypothermia
___ : ___ / ___ minutes	◆ All-Terrain Vehicles
___ : ___ / ___ minutes	◆ Review Questions
___ : ___ / ___ minutes	BREAK
___ : ___ / ___ minutes	CHAPTER SEVEN: BE A RESPONSIBLE AND ETHICAL HUNTER
___ : ___ / ___ minutes	◆ Why Hunting Laws?: Game Conservation; Safety, Opportunity and Funding; Fair Chase; Hunter's Image
___ : ___ / ___ minutes	◆ Hunter Ethics: Ethical Code; Personal Choice
___ : ___ / ___ minutes	◆ The Five Stages of Hunter Development
___ : ___ / ___ minutes	◆ Review of Your State's Hunting Laws
___ : ___ / ___ minutes	◆ Review Questions
___ : ___ / ___ minutes	CHAPTER EIGHT: PREPARATION AND SURVIVAL SKILLS
___ : ___ / ___ minutes	◆ Planning and Preparation: Hunting Plan; Physical Conditioning; Clothing
___ : ___ / ___ minutes	◆ Topographic Maps and Compasses
___ : ___ / ___ minutes	◆ Survival Skills: Shelter; Starting a Fire; Signaling for Help; Water; Food
___ : ___ / ___ minutes	◆ Extreme Weather: Hypothermia; Frostbite; Heat Exhaustion; Heat Stroke
___ : ___ / ___ minutes	◆ Basic First Aid
___ : ___ / ___ minutes	◆ Review Questions
___ : ___ / ___ minutes	CHAPTER NINE: WILDLIFE CONSERVATION
___ : ___ / ___ minutes	◆ Lessons in Wildlife Management
___ : ___ / ___ minutes	◆ Habitat Management
___ : ___ / ___ minutes	◆ Carrying Capacity
___ : ___ / ___ minutes	◆ Hunter's Role
___ : ___ / ___ minutes	◆ Wildlife Management and Conservation Principles & Practices
___ : ___ / ___ minutes	◆ Wildlife Identification: Large Mammals; Small Mammals; Upland Birds; Waterfowl; Wetland Birds, Birds of Prey
___ : ___ / ___ minutes	◆ Review Questions
___ : ___ / ___ minutes	WRAP UP
___ : ___ / ___ minutes	◆ Written Exam
___ : ___ / ___ minutes	◆ Course Critique
___ : ___ / ___ minutes	CONCLUDE CLASS

Objectives
The student should...

- ◆ Give two reasons why hunter education is important.
- ◆ Name three hunting-related projects for which the Federal Aid in Wildlife Restoration Act (Pittman-Robertson Act) funds are used.
- ◆ Describe the behavior of a responsible hunter.
- ◆ Give an example of how you can be involved in making hunting a respected sport.
- ◆ Name five sources of hunter education funding.



Why Hunter Education

- ◆ The mandated hunter education program began in New York in 1949. Later, safety coordinators formed the International Hunter Education Association (IHEA). IHEA's mission is to foster hunting by developing safe, responsible, and knowledgeable hunters. IHEA developed the core curriculum on which this course is based.
- ◆ Hunter education is about more than firearms and hunting safety. The goal includes producing responsible, knowledgeable, and involved hunters—hunters who understand the importance of complying with hunting laws and behaving ethically. This will ensure the continuation of the hunting tradition.
- ◆ Responsibility, Safety Skills, Knowledge, and Involvement: Hunter education strives to instill responsibility, improve skills and knowledge, and encourage the involvement of hunters.
 - **Responsibility:** A true hunter exhibits responsible behavior—this includes being courteous, respecting others and wildlife, and being involved. Responsible hunters obey hunting laws, hunt fairly, practice safety rules and wait for a clean kill before shooting.
 - **Safety Skills:** Hunting-related safety skills are gained through hands-on training and practice.
 - **Knowledge:** Before being trained in the skill of firearm shooting, you should know how the firearm operates and how to handle it safely.
 - **Involvement:** A true, responsible sportsman is involved in efforts to make hunting a respected sport—teaching others, working with landowners, and cooperating with game wardens. It also includes joining conservation organizations, which will help to preserve habitat and promote wildlife management.



Hunter Education Funding Sources

- ◆ The U.S. Fish & Wildlife Service provides federal aid to state wildlife agencies to support hunting-related projects. Federal Aid in Wildlife Restoration funding was established in 1937 by the Pittman-Robertson Act:
 - The Act funds selection, restoration, and improvement of wildlife habitat, and wildlife management research. It was amended in 1970 to include funding for hunter education and for public target ranges.
 - Funds for the Act come from federal excise tax on sporting arms, ammunition, archery equipment, and handguns.
 - Each state's proportion of the federal funds is based on the area of the state and number of licensed hunters.
- ◆ State wildlife agencies sponsor the hunter education programs that are found in each state or province.
- ◆ Non-governmental organizations (Ducks Unlimited, National Rifle Association, International Hunter Education Association, etc.) offer hunter education and firearm safety education materials and training.
- ◆ Many firearm and archery manufacturers often provide training materials on how to use their products safely.
- ◆ Local hunting and civic clubs as well as businesses often provide the facilities and equipment for hunter education courses.

Review Questions

1. A primary objective of hunter education programs is to _____.
 - a. give every hunter the same degree of skill and knowledge.
 - b. ensure that everyone enjoys hunting and has an opportunity to hunt.
 - c. produce knowledgeable, responsible and involved hunters.
 - d. none of the above.

Answer: c. produce knowledgeable, responsible and involved hunters.
2. Name three hunting-related projects for which the Federal Aid in Wildlife Restoration Act (Pittman-Robertson Act) provides funding.

Answer:

 - Hunter education
 - Land acquisition
 - Improvement of wildlife habitat
3. Which of these is **not** a source of hunter education funding?
 - a. State highway departments
 - b. State wildlife agencies
 - c. International Hunter Education Association
 - d. U.S. Fish & Wildlife Service

Answer: a. State highway departments
4. Name three behaviors of a responsible hunter.

Answer: Any three of:

 - Does not poach or act carelessly
 - Hunt fairly
 - Involvement
 - Obey hunting laws
 - Practice safety rules
 - Respect of others and of wildlife
 - Wait for a clean kill before shooting
 - Courtesy

Objectives

The student should...

- ◆ Define “firearm.”
- ◆ Identify the basic parts of a rifle, shotgun, and handgun.
- ◆ Identify the basic components of rifle and shotgun ammunition.
- ◆ Explain how ammunition is fired from a firearm.
- ◆ Identify six types of firearm actions.
- ◆ Demonstrate proper loading and unloading of firearms with two different types of actions.
- ◆ Identify the location(s) of safeties on firearms and explain how they are used.
- ◆ Name five types of sights found on firearms.
- ◆ Describe how a rifle is different from other firearms.
- ◆ Identify and explain a rifle’s caliber and a shotgun’s gauge.
- ◆ Name the four common shotgun chokes, and explain how they differ.
- ◆ Explain the difference between lead shot and steel shot.
- ◆ Correctly match ammunition with firearms.
- ◆ Explain the danger of mixing different gauges of shotshells.
- ◆ Explain why it is important to know your firearm’s range.
- ◆ Demonstrate cleaning procedures for a firearm.
- ◆ Demonstrate how to make a firearm safe for storage.



What Is a Firearm?

- ◆ A firearm is a mechanical device that uses pressure from burning powder to force a projectile out of a metal tube.
- ◆ **Basic Parts of a Firearm:** All modern firearms have three basic groups of parts.
 - **Action:** The heart of a firearm—moving parts that load, fire, and eject the shells or cartridges. Several types are used in modern firearms. Muzzleloaders have locks instead of actions.
 - **Stock:** Serves as the handle of a firearm. Can be one or two pieces; usually made of wood or synthetics.
 - **Barrel:** The metal tube that a projectile travels through
- ◆ **Parts of a Bolt-Action Rifle:** See page 7 for a diagram of parts of a bolt-action rifle (butt, stock, safety, bolt, bolt handle, chamber, sight, muzzle, barrel, forestock, magazine, trigger, trigger guard).
- ◆ **Parts of a Pump-Action Shotgun:** Shotguns are long-barreled firearms used by hunters. See page 8 for a diagram of parts on a pump-action shotgun (butt, stock, safety, action bar, rib, sight, muzzle, barrel, forestock, magazine, trigger, trigger guard).
- ◆ **Parts of a Handgun:** Handguns (revolvers and pistols) are short-barreled firearms sometimes used for hunting. See page 8 for a diagram of parts on a handgun (grip, hammer, barrel, sight, ejector rod, cylinder, trigger, trigger guard).



What Is Ammunition?

- ◆ Rifles and handguns use cartridges containing single projectiles (bullets). Shotguns use shotshell, containing either a single slug or large numbers of small projectiles (shot).
- ◆ **Basic Components of Ammunition:** Case, primer, gunpowder, and projectile(s). Shotshells have additional components called wad.
 - **Case:** Container, usually brass, steel, copper, paper, or plastic, that holds ammunition components together.
 - **Primer:** Explosive chemical compound that ignites gunpowder when struck by the firing pin; may be placed either in the rim of the case (rimfire) or in the center of the base of the case (centerfire).
 - **Gunpowder:** A chemical mixture that burns very rapidly and converts to expanding gas when ignited. Modern smokeless powder will burn slowly when ignited in the open (outside of the case). Black powder is less stable and can be explosive when ignited in the open.
 - **Projectile:** The object(s) expelled from the barrel
 - Bullet: A lead projectile fired through a rifle or handgun barrel
 - Slug: A lead projectile fired through a shotgun barrel
 - Shot: A group of lead, steel, tungsten, or bismuth pellets fired through a shotgun barrel
 - **Wad:** Seal, made of paper or plastic, separating powder from a slug or shot in shotshell; prevents gas from escaping and holds the shot together as it passes through the barrel.

◆ Rifle and Handgun Cartridges

- Select the correct cartridge—compare the data stamp on the barrel to the description on the box and the stamp on each cartridge. Rifle and handgun cartridge bullets are made of lead, sometimes with a copper jacket, and come in various designs, sizes and weights. They may have soft or hollow points that expand upon impact. Bullets for target shooting have solid points that make smaller holes.
- **Common types of rifle bullets are:**
 - Pointed Soft Point: High velocity, accurate bullets with a flat travel path (trajectory); excellent mushrooming
 - Rounded Soft Point: Popular for low-velocity calibers; recommended for tubular magazines since the bullet tip of one cartridge rests directly on the primer of the cartridge immediately ahead.
 - Protected Tip: Highly accurate with excellent expansion
 - Full-Metal Jacket: Maximum penetration without mushrooming; illegal for big game hunting in most states.
- **Common types of handgun bullets are:**
 - Roundnose Lead: Good penetration, little expansion
 - Full-Metal Jacket: No expansion, high penetration
 - Semi-Wad Cutter: Balances penetration and expansion
 - Hollowpoint: Designed for high expansion on impact
 - Wad Cutter: Flat-ended, used for target shooting; creates a clean hole in paper.

◆ Shotshells

- Shotgun shells (shotshells) use slugs or shot as projectile(s). Slugs are used for hunting big game. Shot is typically used to hunt game birds and small game animals—size is adaptable to game hunted.
- Shotshells must match exactly the gauge and shell length specified by shotgun manufacturers (found on the barrel). Shotguns may be chambered for 2¾-inch, 3-inch or 3½-inch shells (refers to length of shell after firing).
- Must choose correct type and size of shot for shotshell. As the size of a target decreases, reduce the diameter of shot used. The smaller the shot number, the larger the pellet diameter. Shotshell marked as “magnum” means shell has more shot or more gunpowder than regular shell. Magnum and regular shotshells are interchangeable if the correct gauge and shell length is used.
- Steel shot pellets react differently than lead when shot. Steel weighs about two-thirds as much as lead, but is much harder. Steel does not deform and is not as unstable in flight, and produces tighter patterns than lead. If using steel shot, choose shot size one to two sizes larger than the lead shot you would use.
- Non-toxic shot (steel, tungsten, or bismuth shot) is required throughout the U.S. for waterfowl hunting.



How a Firearm Works

- ◆ The same physical process is used to fire shotguns, rifles, or handguns. Pulling the trigger causes the firing pin to strike and explode primer in the base of the cartridge or shotshell. Fire from the primer ignites gunpowder, which burns quickly and converts to gas. Gas expands and drives projectile(s) through the barrel with great force.

◆ How the rifle and handgun fire:

1. A cartridge is inserted into the chamber.
2. The action is closed, and the firing pin is pushed back and held under spring tension.
3. The trigger is squeezed, releasing the firing pin, which moves forward with great force. The firing pin strikes the primer, causing it to explode.
4. A spark from the primer ignites the gunpowder. Gas converted from the powder expands in the cartridge.
5. Expanding gas forces the bullet out of the cartridge and down the barrel with great speed.
6. Rifling in the barrel causes the bullet to spin as it travels out of the barrel. The bullet's speed and the escaping gases produce the “bang.”

◆ How the shotgun fires:

1. Shotshell is inserted into the chamber.
2. The action is closed, and the firing pin is pushed back and held under spring tension.
3. The trigger is pulled, causing the firing pin to strike the primer, producing a spark.
4. Spark from the primer ignites gunpowder. Gas converted from burning powder expands in shell.
5. The gas pushes wad against shot; wad and shot are forced out of plastic body of shell.
6. The wad and shot leave the barrel. Escaping gases produce “bang.”
7. The shot and wad separate. The shot cluster spreads and forms pattern.

Common Features of Firearms

- ◆ **Firearm Actions:** Firearms are classified by action type. The action is made up of parts that load, unload, fire, and eject the shotshell or cartridge. Actions are either singleshot or repeating—singleshot must be reloaded after each fire; repeating have extra cartridges or shotshells ready in the magazine, cylinder, or extra barrel.
- **Bolt Action** operates like a door bolt, solidly locking into the breech. This makes it accurate and dependable.
 - To open the action, lift the handle and pull it to the rear.
 - If a firearm is loaded, the cartridge or shotshell will be ejected as you pull the bolt to the rear. To make sure it's unloaded, visually check both the open action and the magazine for extra ammunition.
 - Store bolt separately from the firearm.
 - **Lever Action** has a large metal lever located behind trigger. This handle usually also forms the trigger guard.
 - To open the action, push the lever down and forward, which extracts a cartridge case from the chamber and ejects it. If the magazine holds extra cartridges, another is instantly ready to be loaded.
 - To unload, push the lever down and forward repeatedly until no more cartridges are ejected. To make sure it's unloaded, look in both the chamber and magazine for additional cartridges.
 - Most models also have an exposed hammer, which can be dangerous.
 - Use extra caution to keep your hands away from the trigger while working the lever action.
 - **Pump Action** is fast and smooth. Allows the shooter to re-cock without looking away from the target. Pump action is also referred to as “slide action” or “trombone action.”
 - To open the action, slide the forestock to the rear, which extracts and ejects the cartridge. Sliding the forestock toward the muzzle closes the action and readies another cartridge for loading. Pump-action opens after it's fired or a release lever is pressed and the forestock is pulled to the rear.
 - To make sure it's unloaded, visually check both the chamber and magazine for cartridges.
 - **Semi-Automatic (or Autoloading) Action** automatically ejects the case of a cartridge or shotshell and reloads the chamber as each shot is manually fired.
 - To open the action, pull back the bolt's operating handle (on a rifle or shotgun) or slide (on a pistol). Most semi-automatics, when the bolt or slide is pulled back, lock in the open position if the magazine is empty. If the firearm doesn't, the cartridge from the magazine has gone into the chamber, making the firearm ready to fire. Some semi-automatics do not lock open and must be held open to check the chamber.
 - To unload, first remove the magazine and lock the action open. Make sure it's unloaded—visually check the chamber for an additional cartridge or shell.
 - When closing the action for loading, pull it back to unlock the bolt or slide, then let go, allowing it to travel forward on its own. Do not guide it forward with your hand because it may not seat properly.
 - On a semi-automatic, the trigger must be pulled each time a shot is fired. This makes the semi-automatic different from the fully-automatic firearm, which fires continuously as long as the trigger is held down. The fully-automatic may not be used for hunting or sport shooting.
 - **Break (or Hinge) Action** operates on the same principle as a door hinge and is simple to load and unload.
 - To open the action, point the barrel(s) at the ground. The release is pressed and stock drops down, allowing cartridges or shotshells to eject or be removed manually if loaded.
 - Hinge-actions have a separate barrel rather than magazine for each shot. Most models have one or two barrels, but some have up to four.
 - Some models have an exposed hammer, which can be dangerous.
 - **Revolving Action** takes its name from a revolving cylinder containing a number of cartridge chambers. One chamber at a time lines up with the barrel as fired. Cylinders rotate clockwise or counter-clockwise. Revolving actions are usually found on handguns; referred to as “single action” or “double action.”
 - Single action: Will fire only after the hammer has been cocked manually.
 - Double action: Pulling the trigger cocks and releases the hammer; typically also can be hammer-cocked like a single-action revolver.

- ◆ **Safety Mechanisms** are mechanical devices that block the action to prevent the firearm from shooting until the safety is released or pushed to “off.” Safeties should never be relied on to protect against accidental shooting. Never replace safe firearm handling by trusting a safety—safeties can fail or be bumped from safe position. Don't release a safety until just before you shoot. Safeties are located around the receiver. Types of safeties:
- **Cross-Bolt Safety:** Common on pump and semi-automatic firearms. Simple push-button action blocks the trigger or hammer. Located at the trigger guard or ahead of the hammer.
 - **Pivot Safety:** Common on handguns and bolt-action rifles. Has a pivoting lever or tab that blocks the trigger or firing pin. Located on the frame (blocks trigger) or on the bolt or slide (blocks firing pin).
 - **Slide or Tang Safety:** Common on some rifles and break-action shotguns. A sliding bar or button blocks the firing action. Located on the tang (metal strip behind receiver) of break-action firearms, or on the side of the receiver on some rifles.

- **Half-Cock or Hammer Safety:** Common on firearms with exposed hammers. Locks the trigger at half-cock, away from the firing pin. Engaged by placing the trigger at half-cock; some firearms automatically rebound to position after the trigger is released.
- ◆ **Magazines:** A place that stores ammunition that has not been fired in repeating firearms. By working the action, the cartridge is picked up from the magazine and placed in the chamber, ready to be fired.
 - Magazines are designed with a spring and a follower that push against cartridges to move them into the action. To see if the magazine is empty, you must either see or feel the follower; if you cannot, a cartridge may be jammed in the magazine. Tubular magazines require close attention to make sure cartridge is not jammed in the magazine.
 - Magazines may be detachable or fixed:
 - Detachable allows you to remove extra ammunition from the firearm by removing the magazine.
 - Fixed (tubular magazines, hinged-floorplates and revolving magazines) require ammunition to be removed manually from the firearm.
- ◆ **Sights:** Devices used to line up a muzzle with the shooter's eye to hit target. This is more critical on firearms that fire a single projectile (rifle or handgun) than a firearm that shoots a pattern of shot (shotgun). Shotguns usually have simple pointing beads. Rifles typically have an aperture (peep), open, or telescopic sight. Most handguns have open sight, although some specialized handguns have dot or telescopic sights.
 - **Bead Sight:** Simple, round bead set into top of the barrel near the muzzle. Some shotguns have a second, smaller bead about halfway back on the barrel. The shooter points with the shotgun and follows a moving object, like pointing a finger. Bead is used for reference as the shotgun is pointed and moved to follow flying or running targets.
 - **Open Sight:** Combination of bead or post front sight and notched rear sight. Simple and inexpensive, they allow quick sighting. To aim, center the top of bead or post within the notch of the rear sight and line up on the target. Open sights can be fixed or adjustable.
 - **Aperture (Peep) Sight:** Combination of bead or post front sight and the round hole set on the rifle's receiver close to the shooter's eye. To aim, center the target in the rear peep or aperture sight and bring front sight into center of the hole. This sight is more accurate and adjusted more easily than an open sight.
 - **Telescopic Sight (Scope):** Small telescope mounted on your firearm. A scope gathers light, brightening the image and magnifying target, and does away with aligning rear and front sights.
 - **Dot Sight:** Small device mounted on a firearm that uses electronics or optical fibers to project a glowing dot or another mark on the lens in front of the shooter's eye. Some also magnify like telescopic sights.



Differences Between Rifles, Shotguns, and Handguns

- ◆ The main differences between rifles, shotguns, and handguns are their barrels and the type of ammunition used.
 - **Rifle barrel:** Long with thick walls; spiraling grooves (called "rifling") cut into the bore.
 - **Shotgun barrel:** Long, made of fairly thin steel that is smooth on the inside to allow shot and wad to glide out without friction. Thinner than rifle barrel since it does not have to withstand the same pressure.
 - **Handgun barrel:** Much shorter than a rifle or shotgun barrel, designed to be shot while held with one or two hands, rather than while placed against shooter's shoulder. Bores of most handgun barrels also have a grooved pattern similar to rifles.



- ◆ **Rifling in the Rifle or Handgun Bore:** A bullet fired from a rifle or handgun has a spiral spin that keeps it point-first in flight, increasing accuracy and distance. This is achieved by rifling inside the barrel, from which the rifle got its name. The barrel is thick, and has spiraling grooves cut or pressed into the bore. The ridges of metal between the grooves are called lands. Together, grooves and lands make up rifling.



- ◆ **Rifle or Handgun Caliber:** Caliber describes the size of a rifle or handgun bore and the size of cartridges designed for different bores.
 - Caliber is usually measured as the diameter of a bore from land to opposite land. No standard is set for designating caliber. Sometimes it is given as diameter of bullet—distance between grooves.
 - Caliber designations sometime have a second number, unrelated to diameter. For example, the .30-30 is a .30-caliber cartridge, but second number is from the days when cartridges took 30 grains of powder. The "06" in .30-06 refers to year (1906) it became official ammunition of the U.S. military.
 - Every rifle or handgun is designed for a specific cartridge—the ammunition must match the firearm data stamp. Several .30-caliber firearms use the same bullet size, but are designed for different cartridges.



◆ **Shotgun Gauge:** Shotguns are classified by gauge, a measure related to the diameter of smooth shotgun bore and the size of shotshell designed for that bore.

- Common shotgun gauges are 10-, 12-, 16-, 20-, and 28-gauge. The smaller the gauge number, the larger the shotgun bore. Gauge is determined by the number of lead balls of a size equal to the exact diameter of the bore that it takes to weigh one pound. For example, it takes 12 lead balls with the same diameter as a 12-gauge shotgun bore to weigh one pound. The .410 caliber shotgun is the only exception to the shotgun gauge designation. It has a bore diameter of 410/1000ths of an inch, approximately equivalent to 67½ gauge.
- Each gauge of a shotgun shoots only shells of that gauge (12-gauge shells are used only in 12-gauge guns).
- Shotgun gauge is often marked on the rear of the barrel. The shell gauge is marked on the shell and the box.



◆ **Shotgun Choke and Shot Pattern:** When shotshell is fired, pellets leave the barrel and begin to spread or scatter. The farther pellets travel, the greater shot spreads. The barrel has a choke to control spread and pattern.

- Choke acts like the nozzle of a garden hose. As the nozzle tightens, water shoots in a long, narrow stream, similar to the full choke on a shotgun. As the nozzle opens, water shoots out in a wider spray, similar to cylinder choke.
- Distance from target determines the choke needed. Choke does not alter the shotgun's power—it controls the tightness of a shot pattern at a specific distance and how much shot will hit a certain area at a certain range.
 - **Cylinder** choke is an unconstricted barrel. Shot pattern spreads quickly.
 - **Improved Cylinder** has slight constriction. Allows the shot pattern to spread fairly quickly. Good choice for quail, rabbits, and other upland game.
 - **Modified** choke has moderate constriction. Shot stays together longer, making a pattern denser and more useful at longer ranges. Used for dove hunting and is preferred when using steel shot to hunt for ducks or geese. Improved modified choke is slightly tighter than modified.
 - **Full** choke has tight constriction. Shot holds together even longer, so it's good for squirrels, turkey, and other game shot at 35- to 40-yard ranges. Turkey hunters sometimes use extra full or turkey choke for even denser patterns at long range.
- (*sidebar*) Steel shot is slightly lighter and harder than lead shot of same size—reducing velocity and distance and keeping pattern tighter. Pattern your shotgun with various loads of steel shot before hunting waterfowl.



Match Firearms and Ammunition ... Correctly!

◆ It's not always easy to match the proper ammunition to your firearm correctly—getting it right is critical. Using the wrong ammunition can cause an explosion, injuring or possibly killing yourself and bystanders.

◆ **To match proper ammunition to a rifle, shotgun, or handgun correctly:**

- Read caliber or gauge designations on the side of the barrel. Match that designation exactly. Shotgun barrels give the chamber gauge and length (“12 gauge for 2¾-inch shells” or “20-gauge magnum for 3-inch shells”).
- Carefully read information on the ammunition box lid. With shotgun ammunition, always check both gauge and shell length, and whether it's a magnum load to ensure it matches the data on the barrel.
- Finally, match the information on the barrel to that on the box before you shoot. If in doubt, ask a more experienced shooter or a qualified gunsmith.

◆ **Safety practices that will help you avoid using the wrong ammunition are:**

- Purchase the correct ammunition for your firearm. Buy the exact caliber or gauge and length of ammunition your rifle, handgun or shotgun was designed for. Shotshell must be the correct length for the shotgun.
- Carry only correct ammunition for the firearm you're using. Never mix ammunition. Common mistakes involve putting 20-gauge shotshell into a 12-gauge shotgun, which causes an obstruction.



Know Your Firearm's Range

◆ Knowing a firearm's range is critical—tells at what distances a firearm's projectile could cause injury to persons, animals or objects. When hunting, knowing range lets you immediately assess when shot will give clean kill.



Cleaning Your Firearm

◆ Firearms must be cleaned after every use to keep them in top condition.

◆ Clean firearms with your full attention. Never do so while doing something else. Use a clean, clear work area.

◆ **Follow these basic steps to clean a firearm.**

- Point the muzzle in a safe direction, and make sure the gun is unloaded.
- Remove all ammunition from the cleaning bench.
- Field strip the firearm following the owner's manual instructions and clean each part separately.
- If possible, clean from the breech end using a bore guide and a cleaning rod with a brush/patch attached and wet with solvent. Pass brush or patch all through barrel.
- ◆ Use a flexible “pull through” cleaning cable if cleaning the firearm with lever or semi-automatic actions.
- ◆ Use cleaning solvents in well-ventilated area and only as directed.
- ◆ If cleaning from the muzzle end, use a muzzle protector so you don't damage the rifling.

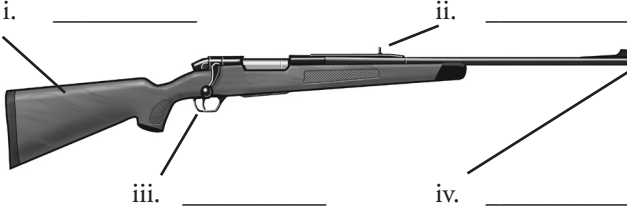
Storing Your Firearm

- ◆ Firearms must be stored unloaded and in a locked location, separate from ammunition. The storage area should be cool, clean, and dry. Avoid storing firearms in closed gun cases or scabbards since moisture can accumulate.
- ◆ Store guns horizontally, or with muzzle pointing down. When guns are stored upright, gravity pulls gun oil downward into the action, forming a sticky film. Oil also can drain onto the stock, softening the wood.
- ◆ Displaying guns in glass cabinets or wall racks is an invitation to thieves and curious children. Guns should be hidden from view and locked. For best protection against theft and fire damage, purchase a safe.
- ◆ *(sidebar)* Store ammunition in a separate locked compartment, away from flammables. Store ammunition in cool, dry place to prevent corrosion. Corroded ammunition can cause jamming and misfires.

Review Questions

1. The three basic parts of a modern firearm are _____.
 - a. cartridge, stock, and barrel.
 - b. action, stock, and barrel.
 - c. stock, trigger, and action.
 - d. barrel, chamber, and muzzle.

Answer: b. action, stock, and barrel.

2. Label the indicated parts of a bolt-action rifle.
 

- Answer:**
- | | |
|----------------|--------------|
| i. stock | iii. trigger |
| ii. rear sight | iv. muzzle |

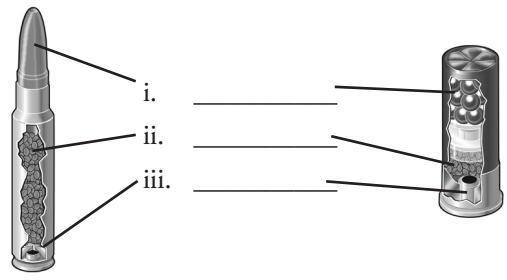
3. The chemical compound in ammunition that ignites the gunpowder when struck by a firing pin is the _____.

Answer: primer.
4. The action of a firearm is made up of parts that _____.
 - a. block the trigger or hammer to prevent accidental firing.
 - b. hold ammunition before it's loaded into the chamber.
 - c. load, unload, fire, and eject the cartridge or shotshell.
 - d. serve as the handle of the firearm.

Answer: c. load, unload, fire, and eject the cartridge or shotshell.
5. You should use only ammunition that exactly matches the caliber or gauge specifications marked on the ____ of your firearm.

Answer: barrel

6. Label the indicated parts of rifle and shotgun ammunition.



- Answer:**
- i. projectile (bullet or shot)
 - ii. gunpowder
 - iii. primer

7. List six types of firearm actions.

Answer:

 - bolt action
 - lever action
 - pump action
 - semi-automatic action
 - break (hinge) action
 - revolving action
8. A safety is located around the receiver of the firearm and _____.
 - a. ensures that the firearm can never be accidentally fired.
 - b. is a device that blocks the action to prevent accidental firing.
 - c. is always located either inside or on the trigger guard.
 - d. all of the above.

Answer: b. is a device that blocks the action, to prevent accidental firing.
9. The most accurate sight for a firearm is the _____.

Answer: telescopic.
10. The design feature that causes a bullet to spiral, which increases accuracy and distance, is called _____.

Answer: rifling.

11. ____ is a measure related to the diameter of the bore and the size of the shotshell designed for that bore.

Answer: Gauge

12. When referring to firearms, “caliber” is ____.
- a. the length of the barrel of a rifle or handgun.
 - b. always expressed in hundredths of an inch.
 - c. used to describe the size of a rifle bore and the size of cartridges designed for different bores.
 - d. all of the above.

Answer: c. used to describe the size of a rifle bore and the size of cartridges designed for different bores.

13. List the most common shotgun chokes.

Answer:

- i. full
 - ii. modified
 - iii. improved cylinder
 - iv. cylinder
14. Steel shot is ____.
- a. lighter than lead shot, reducing velocity and distance.
 - b. harder than lead, keeping pattern tighter.
 - c. non-toxic, unlike lead shot that can be toxic to waterfowl.
 - d. all of the above.

Answer: all of the above

15. Knowing your firearm’s range is critical—it allows you to ____.

- a. determine whether or not you’re able to make a clean kill.
- b. make accurate shots at any distance as long as they are within your firearm’s range.
- c. know at what distances your firearm could cause injury.
- d. both a. and c.

Answer: d. both a. and c.

16. Different gauge shotshells should not be mixed together because ____.

- a. once mixed, it is impossible to separate them accurately.
- b. a smaller gauge shotshell can slip past the chamber of a larger gauge gun and result in serious personal injury.
- c. a 12-gauge shotshell can be chambered into a 20-gauge shotgun and result in serious personal injury.
- d. none of the above.

Answer: b. a smaller gauge shotshell can slip past the chamber of a larger gauge gun and result in serious personal injury.

17. Firearms should be stored ____, in a ____ location, and separate from ____.

Answer: unloaded in a locked location, and separate from ammunition.

Objectives
The student should ...

- ◆ Define “good marksmanship” and explain why it is important.
- ◆ List the three fundamentals of good marksmanship.
- ◆ Define “sight alignment” and “sight picture.”
- ◆ Demonstrate how to determine your master eye.
- ◆ Explain the basic steps to sight-in a rifle.
- ◆ Explain four rifle firing techniques that will help improve accuracy.
- ◆ Demonstrate four proper positions for rifle shooting.
- ◆ List the four common shotgun chokes, and give an example of when you would use each.
- ◆ Explain the basic steps for patterning a shotgun.
- ◆ Explain four shotgun firing techniques that will improve accuracy.
- ◆ Demonstrate proper shotgun shooting stance.
- ◆ Explain the difference between swing-through and sustained lead when hunting with a shotgun.
- ◆ Demonstrate proper handgun shooting stance and grip.



23 Good Marksmanship and Accuracy

- ◆ **Good marksmanship means accurately and consistently hitting a target where planned.** When hunting, accuracy is critical for a clean kill.
- ◆ **Good marksmanship is built on three fundamentals:**
 - Proper sight adjustment or patterning
 - Proper shooting technique
 - Practice
- ◆ **Know Your Accuracy Limits:** Ethical hunters know personal accuracy and limit shots accordingly.
 - An eight-inch paper plate is the standard target for establishing deer hunting accuracy. You should be able to hit a paper plate consistently at that distance and from the same shooting position used when hunting.
 - Before hunting, practice until you know you can hit the target at distances and from the shooting positions you expect to use in the field. When hunting, limit shots to the most accurate range.



24 Rifle Shooting

- ◆ **Sight Alignment:** The process of lining up rear and front sights. Sight picture is the image you see when sights are aligned correctly with the target.
 - **Open sight:** Line up the target with the blade or bead of the front sight within the notch of the rear sight.
 - **Aperture sight:** Line up the target with the front sight within the rear peephole.
 - **Telescopic sight with crosshair reticle:** Line up the target with the crosshairs of the sight.
 - **Telescopic sight with dot reticle:** Line up the target with the dot of the sight. The dot must be centered.



- ◆ **Dominant or Master Eye:** Aim with your dominant (master) eye for accurate shooting. Your dominant eye is usually the same as your dominant hand, but not always. To determine your dominant eye:
 - Form a triangular opening with thumbs and forefingers.
 - Stretch your arms out in front of you.
 - Focus on a distant object while looking through the triangular opening.
 - Bring your hands slowly to your face, keeping sight of the object through the opening; the opening will come to your dominant eye naturally.
 - If not sure, close one eye at a time. Your weaker eye will see the back of your hand; strong one will be focused on the object in the triangle.



- ◆ **Sighting-In a Rifle:** Rifle bullets travel in an arc, formed by the pull of gravity. “Sighting-in” is the process of adjusting sights to hit a target at a specific range.
 - All rifles should be sighted-in before every hunt using ammunition you plan to use.
 - You must sight your rifle with ammunition you plan to use.



- ◆ **Sighting-In Procedure**
 - Fire from a solid bench rest with your forearm resting on a pad or sandbag—don’t rest the gun on the barrel.
 - Sight-in instructions are printed on some targets. The process for most centerfire rifles begins at 25 yards and should be repeated at 100 yards. Basic steps involve firing at least three shots consistently at the target. If bullets form a small group of holes on the target, but not where you were aiming, sights must be adjusted.
 - When adjusting peep or telescopic sights, adjust the rear sights or dials by a number of “minutes-of-angle” or “clicks.” The sight’s instruction manual tells how much each click changes the sight at 100 yards.

- The rear sight is moved in the same direction you want your shot to move on the target. Moving shots from side to side is “adjusting for windage.” Moving shots up or down is “adjusting for elevation.”
- Sight-in targets usually include specific instructions about trajectory and what fractions or inches you should be above the bull’s-eye at 25, 50, or 100 yards. You can also consult a ballistics chart or experienced shooter.

◆ **Four Fundamentals for an Accurate Rifle Shot** (*sidebar*)

1. Aim carefully, aligning your sights.
2. Take a breath, and release about half of it.
3. Squeeze the trigger slowly.
4. Follow through.

◆ **Rifle-Firing Techniques:** Using the correct firing techniques helps to steady the rifle for accurate shooting.

- **Shooting From a Rest:** Most accurate and safest shots are taken from a rest—log, large rock, or other stable object. Don’t rest the barrel directly on a hard surface, or it will shoot higher than normal—put some padding under the rifle.
- **Breathing:** Breathing can move the rifle just enough to throw off your shot.
 - When you’re ready to shoot, draw a deep breath and exhale about half of it.
 - Hold your breath as you squeeze the trigger. If you hold your breath too long your heart beats faster, which increases your pulse and causes the rifle to move. If this is happening, start over.
- **Trigger Squeeze:** Jerking the trigger or abruptly clenching the trigger hand can move a gun enough to miss.
 - To squeeze a trigger without jarring the gun, apply slow, steady pressure until the gun fires.
 - Practice will make a habit of holding your breath while squeezing the trigger properly.
- **Follow Through:** After the bullet fires, continue or follow through with the squeeze. That prevents you from jerking gun before bullet has left the barrel.

◆ **Shooting Positions**



- **Prone:** The steadiest of the four positions. Because it’s the easiest to hold, it’s the best position for mastering the fundamentals of shooting—aim, breath control, trigger squeeze, and follow through.
- **Standing:** The most difficult position for firing an accurate shot since neither arm is supported. Rather than trying to hold the barrel steady, try to keep movement of the barrel as small as possible.
- **Sitting:** Both arms are supported by your legs. Steadiest position next to prone position.
- **Kneeling:** Only one arm is braced, so this is less steady than the prone or sitting positions.

Shotgun Shooting



◆ **Matching Choke to Your Quarry:** The choke allows you to fine-tune the shotgun for the type of game you’re hunting. Built-in or attached to the muzzle end of the barrel, the choke can be constricted to create a tighter pattern of shot, controlling pattern density at various distances.

- The tighter constriction is, the longer the shot cluster stays together. Lower constriction spreads the pattern faster. Common chokes from tight to wide are Full, Modified, Improved Cylinder, and Cylinder (unchoked).
- If hunting small, fast birds, use an Improved Cylinder or Modified choke, which creates a broad shot pattern that spreads quickly at close ranges. If hunting larger, less mobile birds, select Full choke. This concentrates shot in a tighter pattern. Shot size varies depending on ammunition, target distance, and hunting conditions.

◆ **Patterning Your Shotgun:** The shotgun’s choke, as well as the brand, type, and size of shot affect the pattern. To select ammunition for the best performance, you must “pattern” your shotgun.

- Patterning can be done with commercial or homemade targets—a sheet of paper with a 30-inch circle containing a bull’s-eye.
- Fire from a distance of 40 yards (close to the maximum range for shooting game birds). Pellets should be spread fairly evenly inside the 30-inch circle and of sufficient density to ensure a clean kill.
- Circle also should contain the correct amount of pellets, which ranges from 40 to 80 percent of the total number of pellets in a load, based on the choke you’re using. Using Full choke, 12-gauge, 3-inch load, expect 70 to 80 percent of pellets to land in the circle. Modified choke should deliver 60 to 70 percent in the circle, and Improved Cylinder should deliver 40 to 50 percent. To determine percentage, count numbers of pellet holes in the circle, then divide that number by the number of pellets in load.

◆ **Shotgun-Firing Techniques:** Unlike rifle shooting, quick reflexes and flexibility are essential.



- **Shooting Stance:** A shotgun is almost always fired at a moving target from the standing position. You must be able to swing freely over a wide arc and maintain control. That requires a relaxed, balanced stance.
 - Stand with your feet spread about shoulder-width and your knees bent slightly so you are balanced perfectly. Bring your left foot slightly forward (if you’re a right-handed shooter) and lean in same direction. Toes of your forward foot should point toward the target.

- Keep your knees slightly bent—it's easier to swing with a moving target. The bent leg to the rear supports movements of your hips, allowing you to swing smoothly.
- **Pointing:** There's no time to truly aim a shotgun since targets appear suddenly and move quickly.
 - Shotguns are designed to be pointed, with your eye sighting a little above the barrel or rib.
 - Sight is usually bead on front of gun. Eye must be in line with the barrel, so head position is important.
 - When bringing the gun to your shoulder, fit your cheek snugly against the stock for the proper sight picture. If that isn't comfortable, adjust your "gun fit" (such as changing the stock to fit you better).
 - Shots at birds in flight should be limited to your "maximum effective range"—distance at which you can consistently hit target. Shooting beyond this distance leads to wounding loss and may destroy meat.
- **Shouldering the Shotgun:** When bringing a shotgun to your shoulder, bring the stock to your cheek first and then back to your shoulder. A common error is lowering your head and cheek to the stock. When done properly, with your head naturally erect, the gun butt should always come to the same spot on your shoulder.
- **Pulling the Trigger:** Unlike rifle shooting, quick trigger action is important when you hunt with a shotgun.
 - Tap the trigger as you would strike a computer key.
 - Breath control isn't necessary because trigger is pulled quickly and body and gun are typically in motion.
 - Continue shotgun's swing as the trigger is pulled. Stopping the swing as you shoot will cause you to hit behind a moving target.
- ◆ **Leading the Target:** The two most common methods at long distances are swing-through and sustained lead.
 - **Swing-Through:** The best technique for a beginner. Point the gun at a moving target and swing with it. Increase the speed of the gun so the muzzle passes the target, then fire—"swing through" the target and fire at a blank space in front of target.
 - **Sustained Lead:** More challenging, because it requires more experience. Estimate the length of the lead necessary to hit the target and maintain that lead as you swing with the target, fire, and continue the swing.
 - **(sidebar) Snap-Shooting:** The best technique to use for a quick shot and target is straight ahead at close range. Simply raise the shotgun and point where you think the target will be when the shot arrives.



Handgun Shooting



◆ Loading and Handling

- Single-action revolvers load through a gate on the right side of the frame. To rotate the cylinder, pull the hammer back to half-cock. For a safer carry in holster or hand, leave an empty chamber in front of hammer.
- Double-action revolvers have cylinders that fall down, exposing all the chambers for loading.
- Semi-automatics usually fire rounds stored in a magazine that is inserted in the grip or handle.



◆ Position and Grip: Vital to hitting the target.

- Hand position on the grip of the pistol is especially critical. Although the grip configuration of the revolver and semi-automatic are different, the gripping procedure is the same.
- Hold the handgun high on the grip so recoil is directed back to the hand and arm in a straight line—this allows better repeat shots and more accurate shooting. Use two-handed hold whenever possible, applying pressure from front to rear. Do not cross the thumb of the supporting hand behind slide of a semi-automatic.
- When hunting, use a stable object as a rest. Place some padding on top of a hard rest to help with aim.

◆ Sight Alignment: Even more important in pistol shooting because of shorter distance between sights. Typically, handgun sights consist of a square rear notch sight and heavy square front blade sight—easy to align. Most handguns are initially sighted-in at 50 feet.

◆ Aiming

- At the shooting range, many handgunners use sight picture that places the bull's-eye on top of front sight, rather than center. However, hunters should hold alignment directly over the vital area.
- Scopes with long eye relief are popular and offer exact sighting for hunters. Scopes may take longer to align on the target than open sights, but are usually more accurate.

◆ Shooting: Fundamentals of breath control, trigger squeeze, and follow-through are almost identical to rifle shooting. Some important differences include:

- First joint of the finger should take up trigger pressure, not tip as is often done with rifles.
- When fired, powder flashing at front of cylinder can cause burns. Keep fingers away from front of trigger.
- All handguns should be fired at arm's length. Slide and hammer of autoloader can deliver bruising blow when held too close to body.

◆ Other Safety Considerations (sidebar)

- Permanent hearing loss happens gradually with handgun blasts. Choose an ear protection device with a high Noise Reduction Rating (NRR).
- Eye protection is essential with handguns to prevent damage from a ruptured shell or firearm malfunction.
- Wear eye protection whenever disassembling or cleaning a handgun.

Review Questions

1. Good marksmanship is _____.
 - a. being able to hit your target at least 50 percent of the time.
 - b. correctly marking your target.
 - c. being a good sport if you miss your target.
 - d. hitting your target accurately and consistently.

Answer: d. hitting your target accurately and consistently.
2. Sight alignment is _____.

Answer: the process of lining up front and rear sights.
3. To help you steady the rifle when you're ready to shoot, draw a deep breath and _____.

Answer: exhale about half of it, then hold your breath as you squeeze the trigger.
4. The proper technique for pulling the trigger when shooting a rifle is to _____.
 - a. pull the trigger quickly, moving only your finger.
 - b. squeeze the trigger slowly.
 - c. jerk the trigger.
 - d. snap the trigger.

Answer: b. squeeze the trigger slowly.
5. Of the four standard rifle shooting positions, the steadiest is the _____ position.

Answer: prone
6. All handguns should be fired at _____ length.

Answer: arm's
7. If you are hunting small, fast birds like dove or quail, the best choke selection would be _____ or _____ choke.

Answer: Improved Cylinder or Modified
8. When patterning a shotgun, the number of holes made in a 30-inch circular target at a range of 40 yards should be _____ to _____ percent of the number of the pellets in the load, based on the choke you are using.

Answer: 40 to 80
9. Which shotgunning technique is best for a beginning hunter and is performed by pointing at a moving target, then moving past it and firing?
 - a. snap-shooting
 - b. swing-through
 - c. sustained lead
 - d. patterning

Answer: b. swing-through
10. A common error when hunting birds with a shotgun is _____.
 - a. tapping the trigger and not squeezing it slowly.
 - b. bringing the stock all the way up to the cheek without lowering the head.
 - c. lowering the head and cheek to the stock of the shotgun.
 - d. failing to align the sights on the target properly and then take a deep breath.

Answer: c. lowering the head and cheek to the stock of the shotgun.

Objectives
The student should ...

- ◆ Explain why it is important to know how to recognize your quarry.
- ◆ Name the four basic animal characteristics that can be used for identification.
- ◆ Describe five different hunting strategies.
- ◆ Explain why it is important to know where to place a vital shot for the game you are hunting.
- ◆ Identify the vital zones for various game when viewed from different angles.
- ◆ List four types of shots and when they should be used and when they should be avoided.
- ◆ Explain what to do when approaching downed game.
- ◆ State the first thing you should do after you are sure your game is dead.
- ◆ List the three main causes of meat spoilage.
- ◆ List the basic steps for field dressing game.



32 Planning and Preparation

- ◆ **Careful Planning and Preparation.** Some steps you should take to prepare for a successful hunt:
 - Educate yourself about the game you'll be hunting and its environment.
 - Obtain the most current state regulations.
 - Buy appropriate clothing and gear for the environment.
 - Secure lease arrangements and permits (dogs and horses may require veterinarian's certificate or current vaccination record).
 - Visit site in off-season to prepare blinds and cabin facilities.
 - Sight-in rifles, handguns, and bows; pattern shotguns.
 - Sharpen your skills at a shooting range.
 - Pack extra firearms, scopes, bow strings, etc.
- ◆ **Know Your Quarry:** It is critical to educate yourself about the game you're hunting. Understanding your quarry will increase your success and add to the enjoyment of the experience as well.
 - Knowing your quarry may be necessary to ensure that you're taking legal game. You may need to determine the sex of game birds on sight or quickly recognize protected species as they move into firing range. If you hunt where white-tailed and mule deer occupy the same area, you'll need to know how to identify both.
 - There are many ways that wild animals are classified, but hunters are concerned with four basic categories:
 - **Large mammals:** Big game, such as deer, elk, and bear
 - **Small mammals:** Small game, such as rabbits, squirrels, and raccoons
 - **Upland birds:** Turkey, grouse, quail, and dove
 - **Waterfowl:** Ducks and geese
- ◆ **Animal Characteristics:** Animals can be identified by four basic characteristics.
 - **Distinctive Markings:** The black cheek patch on male pronghorns; the "flags" of the white-tailed deer; the face pattern on a gray fox; the green head on a mallard drake; the red, white, and blue on the head of a male turkey.
 - **Sounds:** The wild call of the sandhill crane; the familiar honk of the goose; the gobble of a strutting "tom"; the grunt of the deer; and the howl of the coyote
 - **Movement:** The bounce of mule deer; the fast or slow wing beats of some waterfowl; the zigzag in-flight pattern of the common snipe when flushed
 - **Group Behavior:** Flock patterns, such as the familiar "V" shape of certain migratory birds; various types of herd behavior



33 Hunting Strategies

- ◆ **Still Hunting:** Walking stealthily through an animal's habitat, stopping frequently to scan and listen for game. Big-game hunters use this method in unfamiliar terrain, or where stands are impractical or forbidden. Spend at least ten times longer being still and observing than walking. Keep a low profile; a human silhouette will spook many game species. To avoid being mistaken for game by other hunters, always wear fluorescent orange.

- ◆ **Stalking:** The difference between still hunting and stalking is that when stalking, you follow signs leading to a particular type of game, or close the distance to game already spotted. You may follow tracks on trails or a morning dew trail through leaves and brush; or follow sounds or scents of animals. Or you may sneak closer to an animal for a better shot. Stalking requires total focus—remember to keep downwind, stay quiet, and stay alert and patient. Use caution when stalking a turkey—the sound you hear may be another hunter “calling.”
- ◆ **Posting:** Involves sitting or standing in one spot. Location may offer a vantage point or spot near an animal’s trails. Posting is effective when you know where game is traveling each day and you’re not allowed to use a blind or stand. Find a posting location that allows you to freely swing the firearm or draw the bow.
- ◆ **Ground Blinds:** Makeshift or temporary structures located on the ground that conceal hunters. They’re made of everything from plywood to branches. Situate ground blinds downwind, away from the sun, and where the foreground and background are safest.
- ◆ **Elevated Stands (tower stands or tree stands):** These offer advantages to both firearm and bow hunters. Tower stands are above-ground seats or blinds that conceal the hunter above the level of the quarry. Tree stands are stands placed in or against trees. Check the condition of elevated stands routinely. Also inspect for insects, owls, and small mammals before entering a stand.
- ◆ **Game Calling:** An effective technique for most animals. A skillful hunter uses sounds to attract animals close enough for an effective shot. There are a variety of sounds that can be imitated to draw game to you:
 - **Territorial sounds:** Deer “rattling,” elk “bugle,” or a turkey “gobble”
 - **Feeding sounds:** A duck’s feeding “chuckle”
 - **Distress sounds:** Inviting coyotes, bobcats, or foxes to feed
- ◆ **Driving:** Involves a group of hunters, some acting as “drivers” and others as “posters.” Drivers spread out across field or woods and push game out of cover. Posters take position at the end of the cover to intercept game pushed out by drivers. It is critical that everyone involved in a drive are aware of the position of other drivers and posters. Wear fluorescent orange and never shoot in the direction of another hunter.
- ◆ **Flushing:** Involves using noise, movement, or dogs to cause game to become nervous and leave cover. Pause frequently when attempting to flush game. When you vary your pace, your quarry may think it has been detected and be more likely to leave cover.
- ◆ **Dogs:** Several breeds of dogs can be used for hunting different game species. Some dogs can be used to hunt several types of game animals:
 - **Pointers:** Used primarily for upland game birds
 - **Retrievers:** Large, hearty dogs used primarily to retrieve waterfowl
 - **Spaniels:** Used mainly as flushers
 - **Hunting Hounds:** Used to hunt raccoons and rabbits in the Southeast, lions and bears in the West, and deer in some states
- ◆ **Trapping:** When used properly, traps can be effective for hunting and wildlife management. Trappers should educate themselves about the type of traps appropriate for quarry and adhere to the trapper’s code of ethics.
 - Obtain the landowner’s permission.
 - Avoid setting traps in areas where domestic animals may be caught.
 - Set traps to capture the target animal in the most humane way possible.
 - Check traps daily, preferably in the early morning.
 - Dispose of animal carcasses properly to avoid offending others.
 - Make an effort to trap only the surplus animals from each habitat, leaving an adequate breeding stock.
 - Assist farmers and other landowners who are having damage problems with wildlife.
 - Obtain all required licenses, tags, and permits.



Vital Shots

True sportsmen strive to bring home game by inflicting a minimal amount of suffering. It’s essential that you understand the anatomy of the game you’re after and learn how to place a shot for a clean kill.

- ◆ **Where to Shoot**
 - The most effective shots are delivered to an animal’s vital organs—the heart and lungs. In large game animals, these organs lie in the chest cavity behind the front shoulder. Because the heart surrounds the lungs, a lung shot is the most effective shot for big game—a near miss may result in hitting the heart.
 - The area of the vital organs contains major blood vessels and arteries. A shot in this area causes considerable bleeding. If the animal doesn’t die immediately and tries to flee, the blood trail it leaves is easy to track.
 - Keys to hitting an animal in vital spot are good marksmanship and patience. Wait for the best possible shot.



◆ Choosing the Proper Shot Angle

- **Broadside** is the preferred shot angle for larger game animals, for both firearm and bow hunters.
 - **Firearm:** The best target is the shoulder and chest area. A bullet of the correct weight and fired from a firearm adequate for game will break the shoulder bone and enter the lungs or heart.
 - **Bow:** The best shot for largest big game animals. Aim straight up from back side of the front leg, one third of the way up from the bottom of the chest. An arrow will penetrate the ribs but not the shoulder bone.
- **Quartering-Away** is when the target is facing away from you, but at an angle.
 - **Firearm:** This position offers several aiming spots on all big game. The area just behind the shoulder is the best spot for penetrating vital organs. Focus on hitting the chest area above the opposite front leg.
 - **Bow:** Good opportunity for clean kill on certain big game and some smaller animals. Not a good shot for larger game because their massive stomachs and intestines block a clean shot to the lungs or heart.
- **Quartering-Toward** is when animal is facing toward you but at an angle.
 - **Firearm:** Presents a clean shot to the vital organs. A shot can be taken if the gun is already trained on the animal. Aim at the front of the shoulder of the near front leg.
 - **Bow:** This angle offers a poor shot opportunity and should not be taken.
- **Head-On**
 - **Firearm:** this angle can be effective if the firearm is adequate and already positioned for the shot. However, rarely results in clean kill and ruins a lot of meat. Aim at center of chest to hit vital organs.
 - **Bow:** this angle offers very poor shot selection and should not be taken.
- **Rear-End** shot should not be taken by hunters using firearms or bows.
- ◆ **Trailing Wounded Game: (sidebar)** It's a hunter's ethical responsibility to stop the hunt and search for any wounded animal.
 - Wait for at least a half-hour to an hour before trailing deer, unless the downed deer is in sight.
 - Make a practice of carefully observing every movement of the game animal after you shoot it. Investigate the ground and trail after shooting before assuming you missed.
 - At the shot site, look for signs: blood on the ground or vegetation; broken twigs or branches, or scattered leaves; "dew" line if early in the morning; tracks; hair, meat or bone fragments; downhill trails, especially toward water. If you lose the trail, search in a circular or grid pattern and try to pick up the trail again.
 - Use fluorescent orange flagging to mark each blood trail in case darkness or weather forces you to quit the search and return the next day—marking also shows where to look for more signs if you lose the trail.
- ◆ **Approaching Downed Game:** Large animals should be approached carefully from above and behind head.
 - If the animal appears dead, wait a short distance away for a few minutes. Watch for the rise and fall of the chest cavity. Notice if the eyes are closed—the eyes of dead animal are usually open. You can be certain that the animal is dead if the eye doesn't blink when touched with a stick.
 - If animal is still alive, kill it with a quick shot to the base of ear. If you wish to mount the head, place your shot in the heart-lung area. For bowhunters, the only option is placing the arrow in the heart-lung area.
 - Once animal is dead, immediately tag it, indicating the date of the kill, and then begin field dressing.



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Field Care of Game

- ◆ **Field Care Basics:** The way you handle game after harvesting can have a significant impact on the meat quality.
 - The growth of bacteria spoils meat. Three factors contribute to bacteria growth.
 - **Heat** is the greatest concern. Bacteria grow rapidly in the carcass, especially if it's allowed to stay warm. Meat begins to spoil above 40° Fahrenheit.
 - **Moisture** encourages the growth of bacteria.
 - **Dirt** can introduce bacteria.
 - Basic field dressing techniques help cool game by removing entrails, which lowers body heat by allowing air into the body cavity. It is best to field dress immediately.
 - Use available shade to cool the body. Hang the deer, if possible. For larger animals, prop the body open.
 - In warm weather, place squirrels and doves in a cooler after dressing, but keep dry.
 - Dispose of entrails carefully. Don't leave them lying by the side of a road, or near a residence.
 - Cover meat with cheesecloth to keep it clean. This also protects it from flies, which lay eggs in exposed flesh. Black pepper also repels insects. If you drag game to camp, keep dirt/debris out of chest cavity.
 - Because moisture damages meat, don't use large amounts of water to wash the cavity. Allow it to dry.
 - If you plan to process the animal yourself, skin the animal as soon as possible to allow it to cool.
 - Do not tie the animal to the hood or roof of your car, where it's exposed to heat, exhaust fumes, road salt, and airborne dust. It will ruin the meat and earn the disdain of non-hunters.



◆ **Field Dressing Larger Game** (*sidebar*)

- Because it's harder to move larger animals, you may need to skin and quarter the animal to pack it out, particularly in remote areas.
- If you're unable to hang the animal for skinning, begin by making a lengthwise cut and removing one side of the hide. Then turn the animal onto the skinned hide and skin the other side.
- To keep dirt off the meat, use the inside of a removed hide as a protective mat while you quarter the animal.
- Put each quarter in a game sack and attach the sacks to your backpack frame for hiking out.

◆ **Transporting Game**

- Keep dressed game cool and free of insects. If you've quartered the animal, pack the quarters in ice chests—don't process deer beyond quartering until you reach your final destination. Be sure to keep proper "evidence of sex" if required by game laws.
- Most hunters take their game to a commercial meat cooler, where typical white-tailed deer can be properly aged up to three or four days at 40° Fahrenheit.

1. It is critical that you know about the game you are hunting because _____.
 - a. only one sex of the game you're hunting may be legal.
 - b. there may be protected species in the same area that you need to avoid shooting.
 - c. it will increase your chance of success.
 - d. all of the above.

Answer: d. all of the above.
2. List the four basic characteristics for animal identification.

Answer:

 - distinctive markings
 - sound
 - movement
 - animal behavior
3. Unlike still hunting, stalking involves _____.
 - a. following signs left by the animal.
 - b. spending at least ten times longer being still and observing rather than walking.
 - c. using a game call.
 - d. using dogs to locate the game.

Answer: a. following signs left by the animal.
4. _____ is a hunting technique that involves a group of hunters who are spread out and move to push the game towards other hunters waiting at the end of cover.

Answer: Driving
5. A true sportsman not only strives to bring home the game he or she is seeking but also strives to _____ the quarry.
 - a. fire as soon as possible on
 - b. cripple
 - c. inflict minimal amount of suffering on
 - d. none of the above

Answer: c. inflict minimal amount of suffering on
6. The most effective place to shoot an animal is the vital organs, which are the _____ and _____.

Answer: heart and lungs.
7. A _____ shot is the preferred shot for larger game animals, such as deer, elk and bear.
 - a. broadside
 - b. rear-end
 - c. head-on
 - d. quartering-toward

Answer: a. broadside
8. When approaching a downed deer or other large animal, you should _____.
 - a. approach from the front and make noise to startle the animal.
 - b. pause above and behind the animal's head and watch the chest cavity for any movement.
 - c. approach from the front if the animal's eyes are closed.
 - d. any of the above are safe methods for approaching downed animals.

Answer: b. pause above and behind the animal's head and watch the chest cavity for any movement.
9. Once you are sure your quarry is dead, you should immediately _____ it and then begin field dressing.

Answer: tag
10. _____ would not contribute to meat spoiling.
 - a. Cold
 - b. Dirt
 - c. Moisture
 - d. Heat

Answer: a. Cold

Objectives
The student should ...

- ◆ Identify the basic parts of a muzzleloader.
- ◆ Explain why you should use only black powder or a synthetic substitute in muzzleloaders.
- ◆ State three safety practices when using muzzleloaders.
- ◆ Demonstrate safe loading and unloading of a muzzleloader.
- ◆ Demonstrate safe firing of a muzzleloader.
- ◆ Identify the common bow types and their basic parts.
- ◆ Identify the basic parts of an arrow.
- ◆ List the different types of arrowheads and the primary use of each.
- ◆ State three safety practices for archers.
- ◆ Explain additional precautions that must be practiced when using broadheads.
- ◆ Explain the safety rules that should be followed when using a crossbow.
- ◆ Demonstrate how to nock an arrow and how to draw and anchor the bow.
- ◆ Demonstrate how to use a bowsight and how to aim a bow instinctively.



Know Your Muzzleloader

- ◆ Muzzleloader is term given to early firearms because they are loaded from the muzzle or open end.
- ◆ On early firearms, locks played the role of modern-day actions. Matchlock and wheel lock muzzleloaders are rare, but also may be unsafe to use. Flintlocks and percussion locks are typically used for competitions and hunting. They are less expensive, lighter, more reliable and easier to load and maintain than matchlocks and wheel locks.
- ◆ Muzzleloaders are usually rifles, but there are also smooth-bored muzzleloaders—shotguns. Shotgun muzzleloaders can have either single barrel or double barrels joined side-by-side. When loading a double-barreled muzzleloader, it's critical to avoid putting two loads down the same barrel. Double-barreled guns usually have two locks, one for each barrel—allows the shooter to fire each barrel separately before the gun is reloaded. Most double-barreled guns are designed with two triggers.
- ◆ Muzzleloading handguns come as either pistols or revolvers. Pistols are mainly singleshot. Revolvers contain multiple-shot chambers. Chain firing revolvers can be dangerous. When a chamber round is fired, it produces sparks that could accidentally ignite loads in another cylinder(s). Therefore, be sure to protect each load in the cylinder with a coating of grease to prevent sparks from entering the open end of other cylinders.
- ◆ Black powder is the only type of powder that should be used in muzzleloaders. However, synthetic substitutes such as Pyrodex also can be used. Don't use modern-day smokeless powders in black powder firearms—this can cause serious injury.



Basic Muzzleloader Safety and Skills

- ◆ **Cleaning a Muzzleloader:** Firing a muzzleloader leaves corrosive residue inside the barrel that causes pitting and reduces accuracy. Buildup of residue, called fouling, also will make loading difficult.
 - To avoid fouling, swab the barrel with a moist patch after each shot. Patches or cleaning rags used to wipe the barrel must be the correct size and should be made of cotton or approved synthetic materials. Follow retailer recommendations or those who regularly use muzzleloaders.
 - Thoroughly clean the muzzleloader after each shooting session. Black powder residue can damage the barrel if left overnight.
 - Clean the gun's lock periodically. Normally it's held in place by one or two bolts. Once the lock has been removed, scrub both sides with an old toothbrush and hot water. Make sure the entire lock is completely dry, then lightly oil and replace it.
- ◆ **Ammunition for Muzzleloaders (sidebar)**
 - Three types of projectiles—round ball, bullet, and shot—are used in muzzleloaders. Most are melted and cast from pure lead.
 - **Round balls** are used mainly for target practice but also can be used for hunting. Bullets are preferred for hunting because they're generally more accurate at certain ranges. Shot pellets are designed to spread, just as with today's shotguns.

- **Black powder** is made of potassium nitrate (saltpeter), sulfur, and charcoal. When ignited, it causes a dense cloud of white smoke. It comes in four sizes or granulations:
 - Fg: Coarse grain typically used in cannons, rifles larger than .75 caliber, and 10-gauge shotguns or larger
 - FFg: Medium grain typically used in larger rifles between .50 and .75 caliber, 20-gauge to 12-gauge shotguns, and pistols larger than .50 caliber
 - FFFg: Fine grain typically used in smaller rifles and pistols under .50 caliber and smaller shotguns
 - FFFFg: Extra-fine grain typically used as a priming powder in flintlocks
- **Pyrodex and Clear Shot** are black powder substitutes that can be used in amounts equal to black powder, but loading may vary. Not recommended for flintlocks because they may not ignite from sparks as easily.

◆ **Basic Muzzleloader Safety** (*sidebar*)

- Keep the muzzle pointed in a safe direction. Do not lean over, stand in front of, or blow down the muzzle.
- Use only black powder or a safe substitute in a muzzleloading firearm.
- Wait until ready to fire before you prime or cap a muzzleloader.
- Always wear shooting glasses and ear protection when shooting. Long-sleeved shirt is also advisable.
- Never smoke while shooting or loading or when near a powder horn or flask.
- Load the muzzleloader directly from a calibrated powder measure—do not load from a horn, flask, or other container. Loose sparks or glowing embers in the barrel can cause powder to explode.
- Load only one charge at a time.
- Unload the muzzleloader before bringing it into your home, camp, or vehicle.
- Stay with the charged muzzleloader at all times.



◆ **Loading a Muzzleloader:** Loading or charging a muzzleloading firearm presents some special concerns because it requires the muzzle to be pointed upward.

- For rifles, position the butt on the ground between your feet. You should face the underside of the barrel. The muzzle should be pointed upward and away from the body. Never work directly over the muzzle.
- Determine if the gun is already loaded by checking the barrel with a marked ramrod, which has “unloaded” or empty marking. If you’re unsure, consult an experienced muzzleloader user or gunsmith.
- Measure out the proper amount and type of powder using a calibrated powder measure. Replace cap, and swing horn to the other side of your body. Pour powder into the barrel from measure. Tap the barrel to make sure all the powder falls to the breech end.
- Center a lubricated precut patch over the muzzle. You can lubricate patches with a manufactured lubricant or saliva by placing it in your mouth. Lay the ball on the patch with spew or flat side up, if the ball comes with this feature. Then seat the ball and start it down the barrel using a short starter.
- Use a longer ramrod to push the ball the rest of the way, making sure it’s seated well on the powder charge. Push the ramrod in short strokes, gripping it just a few inches above the muzzle. If you use longer strokes, you might accidentally snap the rod and injure your hands or arm. The ramrod should be marked to show when the ball is properly seated over the specific load such as 70 grains of FFFg powder.

◆ **Unloading a Muzzleloader:** Unload the muzzleloader by discharging into a suitable backstop. When the muzzle-loader is unloaded, place a ramrod or loading rod in the barrel before leaning the firearm against a good rest—this prevents debris from falling down the barrel and blocking the touchhole.



◆ **Firing a Muzzleloader**

- **Percussion Lock Muzzleloader:** When ready to fire the muzzleloader safely, place the percussion cap on the nipple. Be sure that your surroundings and backstop are safe. Then aim and fire.
- **Flintlock Muzzleloader:** When priming the flintlock, pull the hammer to half-cock position and open the priming pan cover. Check the flint, making sure the setting is tight and properly adjusted. Insert vent pick or fine wire into the barrel’s touchhole to make sure the opening is clear. With the priming horn, fill the pan about $\frac{3}{4}$ full of FFFFg powder. Close frizzen and pull hammer to full-cock when ready to fire the shot safely.
- After firing, place hammer in the half-cock position and swab the barrel to remove sparks that might be inside.
- ◆ (*sidebar*) Sometimes a muzzleloader will not fire immediately when the trigger is pulled (“hang fire”). This requires great caution because the gun might fire some time after the cap or flint created the initial sparks.
 - Keep the gun pointed in a safe direction, preferably down-range.
 - Don’t take it anywhere that it could injure someone or damage property if it fires.
 - If the gun doesn’t fire properly, get help from an experienced shooter to unload with a ball discharger.



Know Your Bow and Arrow

- ◆ Modern bows can shoot arrows more than 200 yards at speeds more than 135 miles per hour. Any bow can be dangerous at any range and should be handled responsibly. However, the bow is a short-range hunting tool. Shots are usually limited to 40 yards or less, and at this range the arrow penetrates and can even pass through an animal. Most shots are taken at 20 yards or less.



◆ Common Bow Types

- **Longbow (Stick Bow):** The “traditional” bow, which has straight limbs that form an arc when strung. Used by those interested in traditional shooting with little additional equipment.
- **Recurve Bow:** Much like the longbow, but limbs curve back away from the belly of the bow, which can provide more power in a shorter bow than a longbow. A popular choice because it’s smooth and quiet.
- **Compound Bow:** The most popular bow for both hunting and target shooting. Its many styles work basically the same way; wheels and cables are attached to limbs to make it easier to hold at a full draw (pulled completely back) and enable it to propel an arrow faster than the longbow or recurve bow.



- ◆ **Stringing a Bow:** The safe and easy way to string recurve or long bow is to use a bowstringer. The push-pull or step-through method can be hazardous to you or to the bow.

- Bowstringer is strong cord with a loop or pocket at each end that fits over the limb tip of the recurve and some longbows. By standing on the loose middle of the cord after it’s attached to tips, limbs can be flexed as the handle is pulled. This allows the bowstring to be slipped safely into place.
- To replace compound bow strings you must use a bow press or have double tears at the end of each cable. Double tears allow you to change strings by stepping on string being replaced first and on new string second. A bow press is used to place and hold tension on limbs, allowing strings to be changed. Inexperienced bowhunters should have a person replace string on a compound bow.



◆ Parts of an Arrow

- **Shaft:** Long spine of the arrow. Modern arrow shafts are made of wood, fiberglass, aluminum or carbon. Regardless of shaft material, the arrow must have correct stiffness to match the bow. As an arrow is released, the shaft bends then straightens in flight. Incorrect stiffness causes the arrow to fly erratically and inaccurately.
- **Fletching:** Plastic vanes or feathers on arrow. Fletching creates wind drag and also can cause an arrow to spin similarly to rifle bullet, providing stability and accuracy in flight. Fletching is made up of three or more vanes or feathers. One feather is a different color, and is called “cock” feather; others are “hen” feathers.
- **Arrowheads:** The point of an arrow. Many kinds are available, each with a different purpose and advantage.
- **Nock:** A slotted plastic tip, located on the rear end of an arrow, that snaps onto string and holds an arrow in position. There is a certain point on bowstring, called a “nocking point,” where arrows are nocked.



◆ Common Types of Arrowheads

- **Bullet Point:** Steel point used for target shooting and small game hunting.
- **Blunt Point:** Used for small game hunting and some types of target shooting; made of steel, hard rubber or plastic.
- **Field Point:** Steel point used for target shooting and small game hunting.
- **JUDO Point:** Designed with spring arms attached to catch in grass and leaves, preventing arrow loss; used for “stump” shooting and small game hunting.
- **Fish Point:** Long, barbed, or spring-loaded arrowhead that spears fish and secures them until they’re landed with an attached line.
- **Broadhead Points:** Used primarily for big game hunting and the only arrowhead that may be used for big game hunting. Its number of steel blades may vary. It must be solidly built and always razor-sharp. Many states regulate the minimum diameter and number of cutting edges of broadhead used to hunt big game.
- **Mechanical (Expandable) Blade Broadhead:** Blades are retracted close to the ferrule before the shot. Upon impact, blades expand to expose cutting edges.



◆ Bowhunting Accessories (*sidebar*)

- To protect the three fingers that draw the bowstring, archers wear three-fingered gloves, finger tabs, or use mechanical releases.
- Mechanical release snaps onto the string and is pulled back with the shooting hand. The archer pulls the trigger to release the string.
- An armguard protects the inner part of the bow arm during release as the string snaps back. The armguard prevents the bowstring from hitting loose clothing and also protects the arm if an arrow breaks during release.



Know Your Crossbow

A crossbow is a bow with a rifle-like stock that shoots bolts or short arrows. Safe use of the crossbow requires following safety rules for both firearms and bows.

- ◆ Many states have laws that limit the use of crossbows.
- ◆ Never travel with a loaded, cocked crossbow.
- ◆ Like conventional bows, the crossbow is limited to short-range shooting.



Bowhunting Safety and Skills

- ◆ Many states require a bowhunter education course to hunt legally with archery equipment.
- ◆ **Bow Shooting Safety:** Arrows are as deadly as bullets, so basic safety rules that govern firearm shooting also apply to archery. Although shooting accidents are rare, they do happen. Archers must obey safety rules.
 - Release arrow only when the path to the target and beyond is clear.
 - Make sure there's something to stop the arrow if you miss—never shoot over the horizon.
 - Avoid shooting an arrow in the general direction of another person. Arrows are easily deflected. A small twig, unseen by you, can cause arrow to veer dangerously off course.
 - Don't shoot straight up. A falling arrow carries enough force to penetrate the human skull.
 - Carry arrows in nocked position only when slowly approaching game—never nock an arrow or draw a bow if someone is in front of you.
 - Use haul line to raise the bow and quiver into a tree stand to avoid serious injury.
 - A bow should never be “dry fired.” Releasing string without an arrow nocked transfers energy back to limbs instead of arrow. Bow can fly apart, injuring anyone nearby.



- ◆ **Bow Shooting Position:** Stand at a right angle to the target with feet approximately shoulder-width apart. Your stance should feel comfortable and balanced. You may slide your front foot back a little for a more open stance.



- ◆ **Archery Equipment Safety:** (*sidebar*) Before practicing or hunting, an archer must examine each arrow to make certain there are no cracks or breaks in the shaft and that the nock is in good condition. A cracked or broken nock can be replaced, but shaft with cracks or breaks should be discarded. The shaft may shatter on release and be driven into shooter's wrist or arm. Types of damage to look for are: cracks and splinters in wood arrows; creases, dents, or cracks in aluminum arrows; and crushed sidewalls on fiberglass or graphite arrows.
- ◆ **Broadhead Safety:** (*sidebar*) Many archers' injuries come from broadheads. Broadheads must be kept razor-sharp for hunting, which creates safety problems if handled carelessly. To prevent injury:
 - Use a special wrench to screw on broadheads. This device covers blades while the broadhead is being tightened on the arrow. If a wrench isn't used, the slightest slip can cause a serious cut. When sharpening broadheads, always stroke the blade away from the hands and body.
 - Always keep broadheads covered with a quiver while traveling to and from the field.
 - While dressing bow-killed game, remember that broadhead may remain in the animal. Use great caution until all parts of the broadhead are found.



- ◆ **Nocking an Arrow:** Position a nocked arrow about a quarter inch above the arrow rest on the bow handle. On most bows, a small brass band called a “nock set” is crimped onto the bowstring to mark the correct position.

◆ To nock arrow:

- Grasp the arrow between the thumb and index finger of your right hand (if you shoot right-handed).
- With the left hand, hold the bow parallel to the ground about waist high, the string toward your body.
- Lay the arrow shaft on the bow's arrow rest.
- Align slot in nock with string, making sure that cock feather points up (while bow parallel to ground).
- Pull the arrow back until the string snaps into the slot.

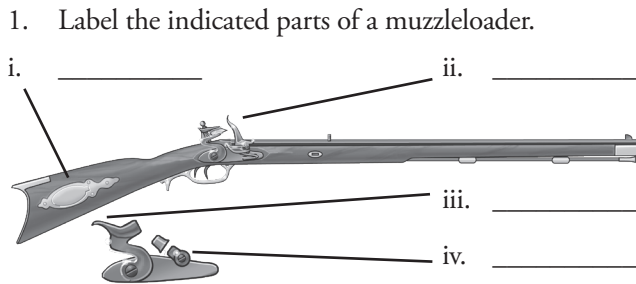
◆ Drawing and Anchoring the Bow:

◆ To draw the bow:

- Grip the bow handle firmly in the left hand, but don't squeeze.
- With the bow arm straight, raise the bow to a point that your arm is parallel to the ground, while simultaneously drawing the string back to “anchor point” with the shooting hand.
- ◆ Practice will help determine your best anchor point—one that's comfortable and provides the most accurate shooting. Your fingers should touch the same anchor point each time you draw the bow.

- ◆ **Aiming the Bow:** The two main methods for aiming bows are bowsights and instinctive aiming.
 - Bowsights work best when the distance to the target is known. For instance, when hunting from a tree stand or blind, you can measure distance to the area where game is expected to appear, then line up appropriate sight pin on target. In hunting situations where it's hard to know the exact distance to the target, bowsights may not work well. The key to using bowsights is to practice judging distances.
 - Instinctive aiming is more versatile than the bowsight method. Simply look at the intended target with both eyes open and release. Adjust aim for different distances by instinct developed with practice. Instinctive aiming takes longer to perfect than bowsight method, but eliminates much of guesswork.
- ◆ **Holding and Releasing the Bow:**
 - Allow your fingers to slip quickly away from the string. This gives the arrow a straight, stable flight.
 - Keep your bow arm pointed directly at the target after release. If bow is jerked on release, the arrow will fly off target.
 - Follow through by leaving the drawing hand at anchor point well after the string is released.

Review Questions



Answer:

- i. patch box
- ii. frizzen
- iii. cock
- iv. nipple

2. _____ is the only type of powder that should be used in muzzleloaders.

Answer: Black powder

3. An unsafe practice when using a muzzleloader is _____.
- a. loading directly from a horn, flask or other container.
 - b. wearing shooting glasses and ear protection when shooting.
 - c. waiting until you're ready to fire before you prime or cap a muzzleloader.
 - d. not smoking while shooting or loading.

Answer: a. loading directly from a horn, flask or other container.

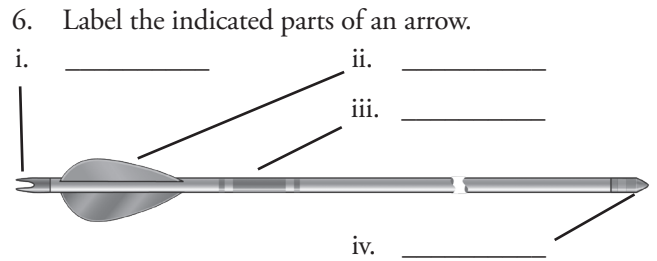
4. How many charges should you load in a muzzle-loader at a time?
- a. one charge
 - b. two charges
 - c. three charges
 - d. four charges

Answer: a. one charge

5. Name the three common bow types.

Answer:

- i. Longbow
- ii. Recurve bow
- iii. Compound bow



Answer:

- i. nock
- ii. fletching
- iii. crest
- iv. target point

7. _____ arrowheads are used primarily for big game hunting.

Answer: Broadhead

8. _____ is the process of placing the arrow shaft on the bow's arrow rest and, with the thumb and index finger, pulling the arrow back until the string snaps into the slot.

Answer: Nocking the arrow

9. A good safety rule to follow when shooting a bow is _____.

- a. always carry arrows in the nocked position when hunting.
- b. use cracked arrows only for target practice.
- c. release an arrow only when the path to the target and beyond is clear.
- d. dry fire a bow as a strengthening exercise.

Answer: c. release an arrow only when the path to the target and beyond is clear.

Objectives

The student should...

- ◆ State three practices for handling and storing firearms safely in the home.
- ◆ Demonstrate the four primary rules of firearm safety.
- ◆ Name the four main causes of hunting incidents.
- ◆ Demonstrate six field carries for a rifle or shotgun.
- ◆ Demonstrate proper field carries while walking two or three abreast and while walking two or three in single file.
- ◆ Demonstrate the safe method for crossing an obstacle if hunting alone and if hunting with a partner.
- ◆ Explain how to check safely to see that the barrel of a firearm is free of obstructions.
- ◆ List the steps to load and unload a firearm safely.
- ◆ Explain how to transport firearms safely in vehicles and in boats.
- ◆ Demonstrate proper spacing between hunters and the safe zone-of-fire when hunting in a group.
- ◆ Explain why self-control, target identification, and accuracy are critical for hunting safety.
- ◆ State five functions needed for hunting that are impaired if the hunter consumes alcohol or drugs.
- ◆ List advantages and disadvantages of hunting from an elevated stand.
- ◆ Name the accessory you should wear at all times when climbing a tree and when on a tree stand.
- ◆ Demonstrate how to haul a firearm into an elevated stand safely.
- ◆ Demonstrate a safe position and the zone-of-fire when hunting with a partner in a boat.
- ◆ Name the accessory you should wear at all times when hunting from a boat.
- ◆ Demonstrate what to do to help retain body heat if you are stranded in chilly water.
- ◆ List seven rules for safe and ethical operation when hunting with an all-terrain vehicle.



Why Firearm Safety Is Important

- ◆ **The Four Primary Rules of Firearm Safety** (*sidebar*)
 - Point the muzzle in a safe direction.
 - Treat every firearm with the respect due a loaded gun.
 - Be sure of your target and what is in front of it and beyond it.
 - Keep your finger off the trigger until you're ready to shoot.
- ◆ **Firearm Safety in the Home:** More than half of the fatal firearm incidents reported occur at home—almost all are caused by carelessness and lack of knowledge. It is a hunter's duty to prevent firearm mishaps in the home.
 - Lock guns away where children can't reach them. Store ammunition in separate location. Check that the firearm is unloaded before allowing it in any building or living area.
 - Safety rules if handling the firearm in the home:
 - Immediately point the muzzle in a safe direction when you pick up the firearm.
 - Keep your finger off the trigger.
 - Always check to see that the chamber and magazine are empty.
 - If gun is taken from storage to show your friends, be sure they understand safe gun handling rules.
- ◆ **Using Firearms at the Shooting Range:** (*sidebar*) Many rules that govern safe firearm handling in the field apply to the shooting range. The shooting range also has additional requirements.
 - Read all the range rules that apply to the type of shooting you will do.
 - If there is a range master, be sure to follow his/her instructions while shooting.
 - When not shooting, unload the firearm and leave it on a range line or bench until given further instructions.
 - Don't handle the firearm while other shooters are down range. Step away from the firing line or bench until the range is clear and the range master instructs you to approach.
 - If no range master present, all shooters must decide on safety commands beforehand.
 - Anytime a person is beyond the firing line or down range, unload the firearm and step away from the line until the other person returns.
 - Never shoot a firearm when someone is down range, or past the plane of the firing line.
 - Always wear hearing and eye protection, even if watching others shoot.
 - Respond immediately to anyone calling for a "cease fire."

◆ **Hunting Incidents:** From the law enforcement perspective, a hunting incident occurs when hunter directly or indirectly causes personal injury or death while using a firearm or bow. This is any unplanned, uncontrolled action that occurs while you use sporting arms. Can include near misses. Being responsible in order to prevent hunting incidents is your first priority.

◆ **Four Main Causes of Hunting Incidents**

- **Hunter judgment mistakes** such as mistaking another person for game or not checking the foreground or background before firing.
- **Safety rule violations** include pointing a muzzle in an unsafe direction, and ignoring proper procedures for crossing a fence, obstacle, or difficult terrain.
- **Lack of control and practice** can lead to accidental discharges and stray shots.
- **Mechanical failure**, such as an obstructed barrel or improper ammunition.



Safely Carrying Firearms in the Field

◆ **Three rules** apply to all carrying methods:

- Muzzle pointed in a safe direction and under control
- Safety “on” until immediately before you’re ready to shoot
- Finger outside the trigger guard



◆ **Proper Field Carries**

- **Trail Carry:** Leaves the hand free for balance. Don’t use it when you’re behind someone. Not recommended when walking in snow or brush—debris can get in the barrel.
- **Sling Carry:** Easy carry for long treks through open country. Keep your hand on the sling when walking so that it doesn’t slide off your shoulder if you trip. Not recommended for thick brush, because your gun could be knocked off your shoulder.
- **Elbow or Side Carry:** Comfortable, but has the least muzzle control. It also can snag in brushy terrain. Use it when no one is in front of you.
- **Two-Handed or “Ready” Carry:** Provides the best control, particularly in thick brush or weeds, or when you need to fire quickly.
- **Cradle Carry:** Comfortable and secure; reduces arm fatigue.
- **Shoulder Carry:** Good choice when walking beside or behind others. Don’t use if someone is behind you.



◆ **Selecting the Right Carry When Hunting with Others**

- If three hunters are walking side by side, the hunters at the sides may carry guns pointing either to the side away from their party or to the front. The hunter in the center should keep the gun pointing up or to the front.
- If three hunters are walking single file, the lead hunter should point that gun ahead but never over the shoulder. The middle hunter must point the to the side. The rear hunter may point gun to either side or rear.
- When facing another hunter, any carry is safe except the trail carry or the forward-facing elbow or side carry.
- Remember, the same “safe carry” rules apply when your hunting companion is a dog.



◆ **Checking for Obstructions:** (*sidebar*) You may trip or stumble in the field, accidentally dipping the barrel into the ground or snow. Immediately check for obstruction.

- Point the muzzle in a safe direction.
- Open the action, and make sure the firearm is unloaded.
- Check for debris in the barrel. With a break action, look through the barrel from breech end or use the barrel light to inspect the barrel.
- Remove the obstruction with a cleaning rod.
- Check the barrel again to make sure no debris remains.



◆ **Crossing Obstacles**

- Always unload guns before crossing fences or other obstacles or before negotiating rough terrain.
- Cross wire fences close to a fence post to prevent damage to the fence.
- After unloading it, place the gun on the other side of the fence or obstacle to be crossed, with the muzzle pointed away from you and your crossing point. Then cross the fence and retrieve your gun.
- Pull the gun toward you by the butt—never by the muzzle.
- If two people are crossing, one person gives the other person both guns, crosses first, and then receives the unloaded guns from the other hunter.



Safely Loading and Unloading Firearms

◆ Loading

- Point the muzzle in a safe direction.
- Open the action; make sure the barrel is unobstructed.
- Put the safety on if the firearm can be loaded with the safety on.
- Load the ammunition.
- Close the action.
- Put the safety on if you're unable to do so before loading.

◆ Unloading

- Point the muzzle in a safe direction.
- Put the safety on if it's not already on.
- Keep your finger outside the trigger guard.
- Open the action.
- Remove the ammunition by first detaching the magazine. Eject cartridges or shells if it's the only way to remove them.
- Make sure the gun is empty by checking both the chamber and magazine.
- Remember—removal of ammunition from a magazine or removal of the magazine from a firearm does not mean a firearm is unloaded!



Safely Transporting Firearms

◆ **Transporting firearms** involves both legal and safe practices. In addition to federal laws, there are regulations that vary from state to state.

◆ General Rules

- Always unload and case firearms before transporting. In many states, this may be law. Action should be open or the gun broken down, whichever makes the firearm safest if mishandled.
 - Firearms should not be displayed in window gun racks because the display may provoke anti-hunter sentiment; this is also an invitation to thieves.
 - Lean the firearm against the secure rest only. Vehicles do not provide secure resting places. If the gun falls over, it might accidentally discharge or be damaged.
- ◆ *(sidebar)* Typical Gun Cases include padded, soft-sided cases; lockable, hard-sided cases; and gun socks.



Safe Zone-Of-Fire

- ◆ **Zone-of-fire** is the area in which a hunter can shoot safely. Before setting off in a group, hunters should agree on each person's zone-of-fire. This is particularly true of groups hunting birds, rabbits, or other small game.
- For safety purposes, it's best to have no more than three hunters in a group. For new hunters, two is safer until they become familiar with maintaining a proper zone-of-fire.
 - Hunters should be spaced 25 to 40 yards apart and always in sight of one another. Each hunter has a zone-of-fire which spans about 45 degrees directly in front of each hunter. (Some states require an adult to be immediately beside a youth hunter. In this case, the adult should be a supervisor only—not a hunter.)
 - To visualize 45 degrees, focus on a distant, fixed object straight out in front of you. Stretch your arms straight out from your sides. Make a fist with thumbs held up. Gradually draw arms in toward the front until both thumbs are in focus without moving your eyes. This gives your outer boundaries.
 - If three hunters are walking side by side hunting pheasants, hunter in center will shoot at birds flushed in the middle which fly straight away. Other hunters will shoot at birds flying toward their end of line.
 - If a bird turns and flies back across line of hunters, best if all three hold their swings and do not fire. Same is true of rabbit scurrying back between hunters.
 - No hunter, especially when swinging on game, should allow his or her gun to point at a person. Better to pass up a shot than risk injuring someone or damaging property.
 - Every hunter should wear daylight fluorescent orange whether required by law or not.

Other Safety Considerations

◆ Self-Control and Target Identification

- Some hunters may become excited on a hunt, which can lead to careless behavior—firing at sounds, colors, movements, or unidentified shapes, or shooting too quickly. In their excitement after hitting a target, they may swing a loaded firearm toward their companions, or run with the safety off toward the downed animal.
- Self-control is an essential aspect of hunter safety. Only shoot when you know the target is legal game and that no people, domestic animals, buildings, or equipment are in the zone-of-fire. Remember that bullets can pass through game and continue on for some distance with deadly force.
- Slow, careful shooting is not only safer, it produces a higher degree of success.

◆ Accuracy

- Shooting accurately is not the only key to successful hunting; it is also a safety factor. Some incidents, often deadly ones, have occurred when stray bullets hit people out of the shooter's sight. Be sure you have the proper backstop before you shoot.
- Accuracy is also essential for achieving a clean kill. No real sportsman wants to wound game and cause needless suffering. You must learn how to hit the vital organs of game you hunt. Knowing your game, equipment, and skill level will tell you when you're in a position to make a clean kill.

◆ Alcohol and Drugs

- Consuming alcohol before or during a hunt increases incident risk because it impairs several functions:
 - Coordination
 - Hearing
 - Vision
 - Communication
 - Judgment
- Drugs can have a similar effect. Check with your physician before taking prescription drugs while hunting.

Hunting from Elevated Stands

◆ **Elevated stands** are permanent or temporary stands placing the hunter above ground level. Can be a tree stand placed in or against trees, or free-standing structure. Popular with both firearm and bow hunters.

• Advantages:

- Wider field of vision—game spotted sooner than at ground level
- Earlier detection of game allows time to plan for best shot
- Elevation makes a hunter's scent harder to detect and movement less noticeable
- Hunter more visible to other sportsmen so less likely to be hit by stray bullet
- A good backstop is available because you're usually shooting at a downward angle

• Disadvantages:

- Risk of injury from falling, particularly in wet or icy weather
- Difficult to carry large, portable stands
- No protection from cold or wind
- Little room for movement

◆ Types of Elevated Stands

- **Portable Tree Stands:** Safe and environmentally friendly. Commercially made stands certified by the Treestand Manufacturer's Association (TMA) are best. Avoid homemade stands. Three basic types:
 - Non-Climbing, Fixed-Position Stands: simple platforms provide about four square feet of space. Must be hauled into place and secured with belts or chains. Requires separate climbing aids such as segmented ladders or screw-in steps (where legal).
 - Climbing Stands: Allow a hunter to "walk" the stand up the tree. Not suited for trees with shaggy bark, such as some pines or hickories, or for trees with branches between the ground and desired elevation. Never use them on trees covered with ice or snow.
 - Ladder Stands: Provide a platform 10 to 15 feet above ground. Lean against a tree, and chain or strap yourself into place. Usable with wider range of trees than other platforms; also offer easier, safer access.
- **Tower Stands (Free-Standing):** Alternative to the tree stand. Similar to a ladder tree stand, but free-standing and can be placed anywhere that has a firm base.

◆ Elevated Stand Location (*sidebar*)

- Place the stand no higher than necessary.
- Never place the stand in a dead tree, in trees with large overhanging dead limbs, or on or near utility poles.
- Select only straight trees.
- Never place stands on fence lines or near another landowner's property.



◆ **Fall-Arrest Systems:** Use a fall-arrest system (safety harness) approved by the TMA.

- Always use a properly fitting, lineman's style, full-body harness while installing an elevated platform or tree stand. Five-point or full-body harnesses are recommended because they provide security and comfort in a fall, and distribute weight evenly.
- Single-strap belts and chest harnesses no longer considered acceptable means of fall arrest.
- Follow manufacturer's instructions as well as these guidelines:
 - Attach tree-strap portion of the fall-arrest system so that you drop less than a foot if you fall.
 - When climbing into or out of a tree stand, always use three points of contact with your arms and legs.
 - Keep a firm hold on the tree as you enter or leave the platform—don't let go until you're certain you are secure.
 - Discard fall-arrest systems that show signs of wear and tear, and adhere to the expiration date.

◆ **Hauling Hunting Equipment into a Stand**

- Never carry hunting equipment up or down the tree with you as you climb—always use a haul line.
- Before attaching haul line to hunting equipment:
 - If using a firearm, unload it and open action.
 - If using a bow, put arrows in covered quiver and secure quiver to bow.
- Use haul line of heavy cord attached to stand to bring up hunting equipment or to lower it prior to climbing down from stand.
 - If using a firearm, attach haul line to the firearm's sling so that the firearm hangs with the muzzle pointed down.
 - If using a bow, attach haul line between bow's limb and bowstring so that arrows point down.
- Slip end of haul line through your belt—leave untied so it can pull free if you fall. Put on fall-arrest system, secure yourself to the tree, and climb to your stand.
- After you are in the stand, haul up hunting equipment and untie haul line.



Hunting With Boats

◆ **Trip Preparation**

- Leave float plan with family and friends detailing where you're going and when you plan to return.
- Be sure boat is large enough to carry you and gear safely.
- Load gear low in boat and distribute weight evenly.
- Have personal flotation device (life jacket) onboard for each passenger to wear.
- Have throwable personal flotation devices onboard in case someone falls overboard.
- Stow required visual distress signals.
- Check up-to-date weather forecast before heading out.
- Cancel trip if wind and water conditions aren't safe.

◆ **Transporting Firearms in a Boat:**

- The same rules apply as when transporting firearms in a vehicle—unload and case firearms before transporting. The action should be open or the gun broken down, whichever makes it the safest.
- Before boarding the boat, place the unloaded firearm into the bow of the boat with the muzzle pointing forward.
- When hunting with others, the first person settles into the bow position facing forward after the first gun is placed. Place the second unloaded firearm in the stern of the boat with the muzzle pointing rearward. The second person settles in the stern position facing rearward. Repeat the procedure when unloading.



◆ **Zone-of-Fire in a Boat:** When duck hunting, back-to-back position is the safest, with zone-of-fire confined to 180-degree area in front of each hunter.

◆ **Surviving Water Emergencies**

- Always wear U.S. Coast Guard-approved personal flotation device (life jacket) while in the boat. Life jackets will not only keep you afloat, but they'll also help you keep warm.
- If you get caught in a storm and your boat swamps or capsizes, stay with the boat. Most small boats will float even when upside down or filled with water. Signal passing boats with bright cloth, or raise oar.
- Placing oar under your back and shoulders and another under legs can help you float. If decoys in reach, stuff inside your jacket.
- Chest waders and hip boots also will help you stay afloat.
 - If in chest waders, trap air in waders by bending knees and raising feet. Lie on your back.
 - If in hip boots, trap air in boots by bending knees. Lie on stomach.
- Equip your boat with a ladder or slings for re-entry if you should fall into the water.



◆ Cold Water Immersion and Hypothermia

- Sudden immersion into cold water can cause immediate, involuntary gasping; hyperventilation; panic; and vertigo—all of which can result in water inhalation and drowning. Also can change blood pressure, heart rate, and heart rhythm, which also can result in death.
- Prepare for boating in cold water by wearing a secured life jacket. Wear layered clothing for insulation.
- Take all measures necessary to avoid capsizing or falling into cold water. **If you do fall into cold water:**
 - Don't panic. Try to get control of your breathing. Hold onto something or stay still until breathing is controlled.
 - When breathing under control, perform most important functions first before you lose dexterity (10-15 minutes after immersion).
 - Put on PFD immediately if not already wearing one. Don't take clothes off unless absolutely necessary.
 - Try to reboard boat even if swamped or capsized. Get as much of your body out of water as possible.
 - If you cannot get out of the water quickly, protect against rapid heat loss. Stay as motionless as possible, protecting high heat loss areas of your body, and keep head and neck out of water. If possible, stay with boat. If alone, use HELP position; if others are with you, huddle together.
- When these symptoms exist, dry clothing, heat, and medical attention are required immediately:
 - Bluish-white appearance
 - Weak heartbeat
 - Shallow breathing
 - Rigid body muscles
 - May be unconscious



Hunting With All-Terrain Vehicles

All-Terrain Vehicles (ATVs) are useful for traveling into back country, but can damage the environment if used recklessly. They also require training and practice to handle them safely on rough terrain.

- ◆ Studies show that the majority of ATV accidents occur when the rider unexpectedly encounters an obstacle, such as a rock or a ditch. Maintaining safe speed is critical.
- ◆ If you use ATVs to hunt, prepare yourself and your family by attending an approved ATV course.
- ◆ Before hunting with ATVs on private land, be sure to get the landowner's permission.
- ◆ Always follow rules for safe and ethical operation.
 - Wear a helmet approved by the Department of Transportation.
 - Carry firearms unloaded, cased, and on a proper gun rack.
 - When using a plastic scabbard mounted on an ATV, clear the inside of scabbard of debris and check the firearm's muzzle for obstructions.
 - Stay on main roads and trails.
 - Pick your route carefully to minimize terrain damage.
 - Don't drive over crops or planted fields.
 - Don't shoot from ATVs. Shooting from vehicles is unsafe, unethical, and in many instances illegal.
 - Use ATVs only to get to the hunting area or to haul an animal from the woods.

Review Questions

- To minimize the risk of a firearm incident in the home, you should never _____.
 - point the muzzle in a safe direction.
 - keep your finger off the trigger when handling the firearm.
 - store the firearm and ammunition together.
 - check that the chamber and the magazine are empty.

Answer: c. store the firearm and ammunition together.
- Name the four main causes of hunting incidents.

Answer:

 - Hunter judgment mistakes
 - Safety rule violations
 - Lack of control and practice
 - Mechanical failure
- List the four primary rules of firearm safety.

Answer:

 - Point muzzle in a safe direction.
 - Treat every firearm with respect due a loaded gun.
 - Be sure of the target and what is in front of it and beyond it.
 - Keep your finger off trigger until ready to shoot.
- If three hunters are walking side by side, the hunter in the center should keep the gun pointed ____ or _____.

Answer: to the front or up.
- If three hunters are walking in single file, it is acceptable for the hunter in the center to use the _____.
 - cradle carry.
 - elbow or side carry.
 - shoulder carry.
 - trail carry.

Answer: a. cradle carry.
- If crossing a fence while hunting alone, you should _____.
 - cross the fence with the gun held under your arm.
 - place the gun on the other side of the fence with muzzle pointed away from you, and then cross.
 - set the gun down, cross, and then pull muzzle to you.
 - any of the above.

Answer: b. place the gun on the other side of the fence with muzzle pointed away from you, and then cross.
- To load or unload a firearm safely, you should always _____.
 - put the safety on.
 - dry fire the firearm before loading and after unloading.
 - point the muzzle in a safe direction.
 - both a. and c.

Answer: d. both a. and c.
- _____ is not a safe way to transport a firearm.
 - Unloaded
 - With the action open
 - In a gun case
 - Loaded and in a gun rack in the rear window

Answer: d. Loaded and in a gun rack in the rear window
- Hunters should be spaced _____ yards apart, and each should have a zone-of-fire of _____ degrees in front.

Answer: 25 to 45 yards apart and each have a zone-of-fire of 45 degrees in front.
- Consuming alcohol before or during a hunt does not _____.
 - impair your coordination.
 - increase your chance of a hunting incident.
 - affect your judgment.
 - enhance your chance of a successful hunt.

Answer: d. enhance your chance of a successful hunt.
- _____ should be worn at all times while climbing a tree and when on a tree stand.
 - Climbing boots
 - Thick outerwear
 - A safety harness
 - Camouflage outerwear

Answer: c. A safety harness
- To get your firearm into an elevated stand safely, _____.
 - climb into the stand using the cradle carry.
 - climb into the stand and have your companion carefully toss your firearm up to you.
 - climb into the stand using the sling carry.
 - haul up the unloaded firearm after you have secured yourself in the stand.

Answer: d. haul up the unloaded firearm after you have secured yourself in the stand.
- When hunting from a boat, it is best to always wear a _____.
 - personal flotation device.
 - camouflage jacket.
 - red jacket.
 - safety harness.

Answer: a. personal flotation device.
- If you fall into cold water while hunting from a boat, you should try to _____ the boat.

Answer: stay with

Objectives
The student should ...

- ◆ Give five reasons why we have hunting laws.
- ◆ State how the “father of wildlife management” defined ethical behavior.
- ◆ Describe how responsible and ethical hunters show respect for natural resources.
- ◆ Describe how responsible and ethical hunters show respect for other hunters.
- ◆ Describe how responsible and ethical hunters show respect for landowners.
- ◆ Describe how responsible and ethical hunters show respect for non-hunters.
- ◆ Identify public and private land where you can go hunting.
- ◆ List and describe the five stages of hunter development.
- ◆ Give three examples of what you can do to be involved in making hunting a respected sport.



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Why Do We Have Hunting Laws?

- ◆ During the 19th century, many game animals were hunted nearly into extinction. Herds of buffalo that once roamed the plains were reduced to about 800 head. Beavers were almost wiped out. Once-plentiful elk, deer and pronghorn had been reduced to a fraction of the original number.
- ◆ **Game Conservation:** To conserve wildlife for future generations to enjoy, wildlife management laws were passed. Laws allow game to flourish by:
 - Establishing hunting seasons that limit harvesting and avoid nesting and mating seasons.
 - Limiting hunting methods and equipment.
 - Setting “bag” limits on the number of animals that can be taken.
 - Establishing check stations and game tag requirements to enforce the laws.
- ◆ **Safety, Opportunity, and Funding:** In addition to ensuring the availability of game for future generations, hunting laws:
 - Establish safety guidelines for hunting that protect both hunters and non-hunters.
 - Offer equal opportunity for all hunters, whether they use modern firearms, muzzleloaders or bows.
 - Ensure adequate funding for wildlife programs by collecting license fees.
- ◆ **Fair Chase:** Hunting laws also define the rules of fair chase.
 - The concept began in the Middle Ages when hunters increased the challenge of sport hunting by setting rules that limited how they took game.
 - More recently, fair chase rules have been developed to stem public criticism of hunters. One of the earliest models was the “Fair Chase Principle” established in the late 1800s by the Boone and Crockett Club, which was founded by Theodore Roosevelt. Those who violated club rules were expelled.
 - Rules were later expanded, banning use of vehicles, airplanes, and radios; electronic calling; or shooting in fenced enclosure. Many states have made those rules into law.
- ◆ **How Hunting Laws are Passed: (sidebar)** In most states, wildlife management agencies set hunting regulations. Agencies have regular meetings where the public can voice their concerns and make suggestions. Hunters wishing to propose changes to regulations should participate in meetings or join a hunting organization that interacts with the agency.
- ◆ **The Hunter’s Image Matters**
 - Responsible hunters welcome laws that enforce sportsmanlike hunting practices, because behavior of irresponsible hunters has caused some people to oppose hunting.
 - Nationally, about 5% of the population hunts, and roughly the same percentage actively opposes hunting. The rest of the population is predominantly neutral. However, bad behavior by hunters could sway some of neutral crowd into the anti-hunting camp.
- ◆ **How Hunters Make a Positive Impact (sidebar)**
 - Put in countless hours to improve wildlife habitat.
 - Help biologists transplant game species, and save other species from extinction.
 - Encourage others to practice ethical behavior.

Hunter Ethics

- ◆ While hunting laws preserve wildlife, ethics preserve a hunter's opportunity to hunt. Because ethics generally govern behavior that affects the public's opinion of hunters, ethical behavior ensures that hunters are welcome and hunting areas stay open.
- ◆ Ethics generally cover behavior that has to do with issues of fairness, respect, and responsibility not covered by laws. For instance, it's not illegal to be rude to a landowner when hunting on his or her property, or to be careless and fail to close a pasture gate after opening it, but most hunters agree that discourteous and irresponsible behavior is unethical.
- ◆ Then there are ethical issues that are just between the hunter and nature. For example, an animal appears beyond a hunter's effective range for clean kill. Should the hunter take the shot anyway and hope to get lucky? Ethical hunters would say no.

◆ **Hunter's Ethical Code:** As Aldo Leopold, the "father of wildlife management," once said, "Ethical behavior is doing the right thing when no one else is watching—even when doing the wrong thing is legal." Ethical code used by hunters today were developed by sportsmen over time.

- **Respect Natural Resources:**

- Leave land better than you found it.
- Adhere to Fair Chase rules.
- Know your capabilities and limitations as a marksman, and stay within your effective range.
- Strive for a quick, clean kill.
- Ensure that meat and usable parts are not wasted.
- Treat both game and non-game animals ethically.
- Abide by game laws and regulations.
- Cooperate with conservation officers.
- Report game violations.

- **Respect Other Hunters:**

- Follow safe firearm handling practices, and insist your companions do the same.
- Refrain from interfering with another's hunt.
- Avoid consuming alcohol, which can impair you to the point of endangering others.
- Share your knowledge and skills with others.

- **Respect Landowners:**

- Ask landowners for permission to hunt.
- Follow their restrictions on when and where you may hunt.
- Treat livestock and crops as if they were your own.
- Offer to share part of your harvest with the owner.
- Leave all gates the way you found them.
- If you notice something is wrong or out of place, notify the landowner immediately.
- Never enter private land that is cultivated or posted, unless you have obtained permission first.

- **Respect Non-Hunters:**

- Transport animals discreetly—don't display them.
- Keep firearms out of sight.
- Refrain from taking graphic photographs of the kill and from vividly describing the kill while within earshot of non-hunters.
- Maintain a presentable appearance while on the street—no bloody or dirty clothing.

◆ **Personal Choice:** As in every human endeavor, there are gray areas of ethical behavior that come down to personal choice. Examples of gray areas of ethical behavior are:

- Baiting deer with corn or protein pellets.
- Shooting birds on the ground, on the water, or in trees.
- Shooting from a vehicle or boat within private boundaries or on private waters.

◆ **How to Ask Landowners for Permission (sidebar)**

- Make contact well ahead of the hunting season.
- Wear street clothes—no hunting gear or firearms.
- Don't bring companions—a "crowd" could be intimidating.
- Be polite, even if permission is denied.

◆ **Landowner Complaints about Hunters** (*sidebar*)

- Don't get permission to hunt
- Don't tell the landowners when they arrive or leave the property
- Make too much noise
- Leave litter behind
- Carry loaded firearms in vehicles
- Drive off ranch roads
- Don't leave gates as they were found (open or shut) when the hunter arrived
- Shoot too close to neighbors or livestock
- Leave fires unattended
- Violate game laws
- Drink alcohol to excess

◆ **How to Behave if Confronted by Anti-Hunter Protesters** (*sidebar*)

- Remain calm and polite and do not engage in arguments—never lose your temper.
- Never touch an anti-hunter or use any physical force—never threaten an anti-hunter with your firearm.
- Report hunter harassment to law enforcement authorities. Record the vehicle license number of the harassers.

◆ **Hunting Opportunities on Public Lands** (*sidebar*)

- All states have federal- or state-owned public lands available for hunting. Public lands may have special regulations that regulate hunting on these properties and may require special permits. Be sure to check with your state's wildlife management agency and obtain maps before you go out.
- **Public lands that may be open for hunting are:**
 - State parks and forests
 - State-owned wildlife management areas
 - National forests
 - National parks
 - National Wildlife Refuge properties
 - Bureau of Land Management properties
 - Bureau of Reclamation properties



The Five Stages of Hunter Development

- ◆ It should be the goal of every responsible hunter to become a true sportsman. As a hunter gains experience and skill, studies have shown that he or she will typically pass through five distinct stages of development.
- ◆ **Five Stages:** Not everyone passes through all stages, nor do they do so necessarily in the same order.
 - **Shooting Stage:** The priority is getting off a shot, rather than patiently waiting for a good shot. The eagerness to shoot can lead to bad decisions that endanger others. A combination of target practice and mentoring helps most hunters move quickly out of this stage.
 - **Limiting-Out Stage:** Success is determined by bagging the limit. In extreme cases, this need to limit out also can cause hunters to take unsafe shots. Spending time with more mature hunters helps people grow out of this phase.
 - **Trophy Stage:** The hunter is selective and judges success by quality rather than quantity. Typically, the focus is on big game. Anything that doesn't measure up to a desired trophy is ignored.
 - **Method Stage:** The process of hunting becomes the focus. The hunter may still want to limit out but places a higher priority on how it's accomplished.
 - **Sportsman Stage:** Success is measured by total experience—an appreciation of the out-of-doors and the animal being hunted, the process of the hunt, and the companionship of other hunters.



◆ **Involvement** (*sidebar*)

- Part of the process of becoming a true, responsible sportsman is becoming involved in efforts to make hunting a respected sport. That includes teaching proper knowledge and skills to others, working with landowners, and cooperating with wildlife officials.
- Also includes joining conservation organizations dedicated to improving habitat and management efforts. Young hunters can be involved by joining organizations such as the 4-H Club, Boy Scouts and Girl Scouts, and by participating in wildlife projects in their local communities.
- Responsible, ethical behavior and personal involvement are both essential to the survival of hunting. How you behave and how other people perceive you determines whether hunting will continue as a sport.

Review Questions

- Which of these was not a reason for establishing hunting laws?
 - to limit hunting methods and equipment
 - to limit the profits of sporting goods manufacturers
 - to set rules on how hunters take game
 - to limit harvesting and avoid hunting during nesting and mating seasons

Answer: b. to limit the profits of sporting goods manufacturers
- According to Aldo Leopold, the “father of wildlife management,” ethical behavior is _____.
 - killing game only for food.
 - harvesting as much game as the law allows.
 - doing the right thing when no one else is watching—even when doing the wrong thing is legal.
 - not killing any wildlife but preserving it for future generations.

Answer: c. doing the right thing when no one else is watching—even when doing the wrong thing is legal.
- A responsible and ethical hunter would not _____.
 - waste meat and usable parts of the game harvested.
 - strive for a quick, clean kill.
 - leave the land better than he or she found it.
 - abide by game laws and regulations.

Answer: a. waste meat and usable parts of the game harvested.
- Responsible hunters _____.
 - use land without asking permission from the landowner.
 - keep firearms out of sight when not hunting.
 - draw attention to themselves by wearing bloody or dirty hunting clothes when it’s not necessary.
 - unnecessarily harass or frighten livestock.

Answer: b. keep firearms out of sight when not hunting.
- There are five distinct stages of development that most hunters will experience. The most responsible and ethical is the ____ stage.

Answer: sportsman
- In the ____, success is determined by bagging the limit, which can cause hunters to take unsafe shots.
 - shooting stage
 - limiting-out stage
 - trophy stage
 - sportsman stage

Answer: b. limiting-out stage
- To bring respect to the sport of hunting, hunters can _____.
 - transport bagged animals on the hood or roof of their automobiles.
 - share graphic accounts and photographs of their hunting experiences with non-hunters.
 - support organizations dedicated to improving habitat and management efforts.
 - consume alcohol and loudly proclaim their hunting prowess.

Answer: c. support organizations dedicated to improving habitat and management efforts.

Objectives
The student should...

- ◆ List and describe four ways to prepare properly for hunting.
- ◆ Prepare a sample hunting plan.
- ◆ List three conditions that affect a hunter's physical ability to perform safely and responsibly.
- ◆ Describe how to dress for hunting in cold weather.
- ◆ State why hunters should wear daylight fluorescent orange clothing.
- ◆ Demonstrate how to read a topographic map and use a compass.
- ◆ List the five primary requirements for survival.
- ◆ List the eight basic survival rules.
- ◆ Describe three ways to signal for help when lost in the outdoors.
- ◆ Give the causes and symptoms of hypothermia, and explain how to prevent and treat hypothermia.
- ◆ Give the causes and symptoms of heat exhaustion, and explain how to prevent and treat heat exhaustion.
- ◆ Give three examples of why it's important for every hunter to attend first-aid and CPR training courses.
- ◆ Demonstrate how to stop bleeding.
- ◆ Explain what to do if someone breaks a bone.
- ◆ Describe how to recognize first-, second-, and third-degree burns, and how to treat them.
- ◆ Explain what to do immediately if a person suffers a chest wound.



Importance of Planning and Preparation

- ◆ Hunting is a safe sport, but it does involve a certain amount of risk. A variety of incidents can occur on a trip outdoors. Rough terrain—particularly when it's unfamiliar—increases the chance of accidents. Climate extremes also increase the risk. In remote areas, there's always the possibility of becoming lost.



◆ Plan Properly

- **Be Ready:** To avoid or minimize problems, it's essential to plan carefully for the hunt. Responsible hunters anticipate potential problems and make plans to deal with them. Considerations include terrain, location, weather, dangerous game, and the potential for forest fires.
- **Know Your Location:** Learn about your chosen hunting area before you arrive. Purchase a topographic map and familiarize yourself with the terrain. If it's within a convenient drive, visit the area in off-season.
- **Prepare for Safety:** You also need to assess your physical condition and equipment. Refresh your memory of hunting and firearm safety rules, and review rules with your hunting partners.
- **Tell Others:** Prepare a hunting plan that tells where and with whom you are hunting and when you expect to return. Give specific directions on your route to your destination and any alternate destinations. Leave the plan with a family member or friend. Do not deviate from the hunting plan without notification. When you're hunting with group, each person should discuss their route plan.

◆ Physical Conditioning

- Hunting often demands more physical exertion than you're accustomed to doing. Conditions that hamper physical ability to perform safely and responsibly while hunting include: allergies; asthma; heart condition; excess weight; and poor physical conditioning.
- Your mental condition impacts your performance as well.
- Prepare for the hunt by getting in shape well in advance.



◆ Clothing

- Select clothing based on the weather you expect, while preparing for the worst. In warm weather, wear a hat and light clothing that covers as much of your skin as possible to prevent heat exhaustion or sunburn.
- Cold weather conditions call for clothing worn in layers. Layers offer superior insulation. Also, as weather warms up, you can shed a layer at a time to stay comfortable. Layers should include:
 - **Vapor transmission layer** (material such as polypropylene)—worn next to your body; releases moisture from skin while retaining warmth.
 - **Insulating layer**—weightier or bulkier; holds warm air around you. Wool is the best choice; it can provide warmth even when wet.
 - **Protective outer layer**—available in various weights and materials according to the conditions; protects inner layers from water and wind.

- Most important clothing choices are a daylight fluorescent orange hat and daylight fluorescent orange outerwear—shirt, vest or jacket. Daylight fluorescent orange clothing makes it easier for one hunter to spot and recognize another hunter because nothing in nature matches this color. The orange color of clothing should be plainly visible from all directions. This is required by law in many states.

◆ **Other Clothing Essentials** (*sidebar*)

- Hat or cap with earflaps and gloves to retain body heat—most body heat is lost through the head and hands. Gloves also protect the hands from abrasions and rope burns.
- Gloves that protect the hands from cold as well as abrasions and rope burns
- Sturdy footwear suitable for conditions you'll encounter—broken in before hunt
- Two layers of socks—polypropylene against skin and wool outer layer



Topographic Maps and Compasses

◆ **Topographic Maps:** When in a remote or unfamiliar area, a topographic map and compass are a must. Topographic maps, created from aerial photographs, reveal contours of land, including hills, ridges, and valleys, as well as lakes, rivers, creeks, trails, and roads.

- Contour lines show elevation of ground.
- Contour intervals reveal how much vertical distance is between each contour line—closely spaced contour lines indicate very steep slopes.
- Contour lines that are sharply tapered indicate an uphill direction.
- Rounded contour lines typically indicate a downhill direction.



◆ **The Compass:** An orienteering compass is a critical piece of equipment for outdoor travel. A good orienteering compass has these features:

- Clear base plate that allows you to see the map underneath.
- Straight sides for aligning the two points or for drawing lines.
- Liquid-filled needle housing that keeps a magnetic needle relatively steady when taking readings.
- Two arrows: A direction arrow, painted on the base plate (or you may use the edge of the compass), is used to point a compass from your starting point to your destination; the orienting arrow, located in needle housing, is used to orient the compass to a map.

◆ **Declination:** Topographic maps drawn to true north (the North Pole) are indicated by grid lines on a map.

However, a compass will always point to magnetic north, which is in the Hudson Bay area. The difference between true north and magnetic north is called “declination.”

- When true north and magnetic north are aligned, you're at 0° declination. A compass needle points to true north. If you are east or west of 0° declination, the compass will not be in line with true north.
- **To compensate for declination:**
 - Center north arrow (“N”) of the compass dial along the north/south line of the map.
 - Check the diagram on the map that shows whether magnetic north is to the left or the right of true north.
 - Turn the compass dial the correct number of degrees left or right as indicated on the map. “N” now points to magnetic north.
 - Hold the compass level in front of you and rotate your body until the tip of the compass needle aligns with “N” on the compass dial. The direction arrow on the base plate points in the direction you want.



◆ **Plot Your Progress**

- As you hike into unfamiliar terrain, keep your bearings by taking frequent compass readings and plotting your progress on a map.
 - Note key points, such as stream crossings, to help you find your way back.
 - Pay particular attention when you reach a high point at the top of a ridge.
 - Use elevation to locate landmarks visible from there.
- Learning to set your course and take bearings takes study and practice. The best way to become proficient with a compass is under the guidance of an experienced individual.



◆ **Global Positioning System (GPS):** (*sidebar*) Navigation system based on a network of 24 satellites. Users with a GPS receiver can fix their exact location (latitude and longitude) in any weather all over world, at any time.

- GPS satellites circle the earth twice a day and transmit information to earth. GPS receivers use this information to calculate the user's location by comparing the time that the signal was transmitted by satellite with the time it was received. The time difference tells the GPS receiver the distance from the satellite. By calculating several satellite distances, the receiver can determine and display a user's location on a GPS unit.
- Once the user's position is determined, the GPS receiver can calculate the other information—bearing, trip distance, the distance to a destination, sunrise and sunset times, and more.
- GPS receivers are accurate to within 15 meters (49 feet) on average. Certain atmospheric factors and other sources of error can affect accuracy.

Survival Skills

◆ Rules of Survival (*sidebar*)

- Give a responsible person your hunting plan.
- Don't travel or hunt alone.
- Take enough food and water to last for several days in an emergency.
- Bring a map and compass, and always orient yourself before leaving camp.
- Wear layered clothing, and take extra clothing with you, preferably wool and polyester.
- Plan your outings so that you can return to camp before dark.
- Never leave camp without taking fire-starting equipment and a foil blanket.
- Don't panic if you become lost.

◆ Survival Mode

- Most everyone gets turned around occasionally. How you respond in early stages often determines if disorientation is temporary or traumatic. Keep a cool head and you'll usually get your bearings fairly quickly.
- Think through recent events to see if you can retrace your path. If you decide you can't return to your camp or car, commit to spending the night where you are. If you remain in one spot, it's very likely that you will be found in few days.
- You now have three priorities: shelter, fire and signal.
- Remember STOP: Stop, Think, Observe, and Plan.

◆ Shelter

- Start preparing camp well before dark. Look for natural shelter, such as rock overhang or thick stand of evergreens. Site should be dry, well drained, and protect you from wind. Ideally, it also should be near water and firewood.
- If no natural shelter available, pick area with materials nearby to build lean-to or debris hut. Lean-to constructed by leaning branches against horizontal support to form frame for roof. Orient opening away from wind. Cover frame with evergreen branches to block out wind or precipitation. Leaves and twigs are another option. If you need additional protection, add side walls.
- Build fire where heat will radiate into shelter. Sleeping area should be located between shelter wall and fire.

◆ Starting a Fire

- If there is snow on ground, build fire on platform of green logs or rocks. If terrain is dry, clear patch of bare dirt to avoid starting grass or forest fire.
- Gather everything you need before starting fire. Pile fuel ranging from small twigs to fuel logs next to fire site. Collect more fuel than you think you can use.
- Pile fine twigs, grass or bark shavings loosely as base. If you can't find dry kindling, remove bark from trees. Use knife to shave dry wood from inside of bark.
- Place slightly larger sticks on starter material, until you have pile about 10 inches high.
- If no breeze, light kindling in middle of base. If there is breeze, light one end of kindling so flame will be blown toward the rest of fuel. As kindling lights and flames spread to larger twigs, slowly add more wood. Add larger pieces as fire grows. Large fire will throw more heat and be easier to maintain.

◆ Signaling for Help

- When you decide to stay put and wait for rescue, prepare help signals as soon as possible.
- The international emergency distress signal is three of any of these: shots, blasts on a whistle, flashes with a mirror, or fires evenly spaced. If you're near open space, walk an "X" in snow, grass or sand. Make it as large as possible, so seen easily from air. Placing branches, logs or rocks along "X" will make it more visible. Do not light signal fires until you hear an aircraft. Adding green boughs, preferably pine, to fire helps create smoke.
- Once you have a shelter, fire, and your signal prepared, focus on water and food.

◆ Water

- Even in cool weather, you need two to four quarts of water a day. Under most conditions, humans can only last about three days without water.
- Pure drinking water is rare, even in remote regions. Clear mountain streams often are contaminated by *Giardia lamblia*, a parasite that causes serious intestinal sickness in humans.
- The best way to purify water is by boiling for five minutes. Chemicals such as iodide or chlorine and filter systems may not be satisfactory. Never worsen survival problems by drinking unsafe water.

◆ Food

- Humans can go for two weeks or more without food. Although the need for food is not urgent, you will be more comfortable and clear-headed if you eat. Anywhere there is game, there is food, but probably not what you're accustomed to eating.
- Before you head into a remote area, learn what's edible in that region. Hopefully, you'll be able to use your hunting equipment to harvest the bulk of your food.

Coping With Extreme Weather

◆ Basics of Cold Survival without Fire (*sidebar*)

- Wear the proper type of clothing (no cotton).
- Stay dry.
- Build a shelter.
- Avoid contact with cold surfaces.
- Wrap your body in a thermal foil blanket.
- Limit physical activity to conserve energy.

◆ **Hypothermia:** Occurs when the body loses heat faster than it can produce it, causing your core body temperature to fall. Hypothermia is often induced by cold, wet conditions, such as rain, snow, sleet, or immersion in water. Moisture from perspiration, humidity, and dew or rain on bushes and trees can also soak clothing, putting you at risk in cold weather. Wet or damp clothes will draw heat out of the body more rapidly than cold air. Wind lowers the body temperature as it evaporates moisture. Resting against cold surfaces also will draw heat from the body.

• Prevention of Hypothermia:

- Hypothermia can be prevented by dressing properly, avoiding potentially dangerous weather conditions, and by drying out as quickly as possible when wet.
- High-calorie food, such as chocolate, peanuts or raisins provides quick energy that helps body produce heat.

• Symptoms of Hypothermia:

- Uncontrolled shivering, usually the first obvious symptom, which ceases as hypothermia progresses
- Slow, slurred speech
- Memory loss
- Irrational behavior, such as removing clothing
- Lack of body movement
- Sleepiness
- Unconsciousness, which could lead to death

• Treatment of Hypothermia:

- Find shelter for the victim.
- Remove wet clothing—replace with dry clothing and other protective covering. If there is no dry clothing, use a fire to dry one layer at a time.
- Give warm liquids to rehydrate and rewarm, but never give the victim alcohol. Quick energy foods also produce inner body heat.
- For mild cases, use fire, blankets, or another person's body heat to warm up the victim.
- In more advanced stages, have one or more persons surround the victim in full-body contact with the victim. Place canteens of hot water, insulated with a sock or towels, on the groin, armpits, and the sides of the neck.
- A victim who is at or near unconsciousness must be handled gently. Do not immerse the victim in a warm bath or expose to a large fire—this can lead to traumatic shock or death. Immediately contact emergency medical personnel to evacuate the victim to a hospital for treatment.

◆ **Frostbite:** Occurs when tissue freezes. The best prevention is to avoid severe weather. If caught in extremely cold weather, pay attention to the head and the extremities such as the fingers, toes, ears, and nose. Wear a face cover if the temperature is below 0° Fahrenheit.

• Symptoms of Frostbite:

- Skin turns off-white.
- Prickly or tingling feeling as ice crystals form.
- Pain may be present initially, then disappears as the frostbite progresses.
- In severe cases, there is a loss of feeling in the affected area.

• Treatment of Frostbite:

- Warm the affected area with body heat, but avoid rubbing the area—this can damage tissue.
- Don't use hot water or other external heat sources—it could cause a burn.
- Wrap with warm, dry clothing.
- Move to a warm shelter.
- Drink hot liquids.
- Get medical attention.

◆ **Heat Exhaustion:** The opposite of hypothermia: core body temperature increases, usually as result of hot and humid conditions, plus lack of water.

• Prevention of Heat Exhaustion:

- Drink plenty of water.
- Take frequent breaks if hiking to or from hunting spot, especially when carrying a large load.
- Dress in layers and shed layers as physical activity increases.

- **Symptoms of Heat Exhaustion:**

- Pale and clammy skin
- Weakness
- Nausea
- Headache
- Muscle cramps

- **Treatment of Heat Exhaustion:**

- Move to a cooler place and drink water.
- Fan to lower the body temperature, but don't over-chill.



- ◆ **Heat Stroke:** Should be treated as a medical emergency—it can be fatal.

- **Symptoms of Heat Stroke:**

- Dry, hot and flushed skin—dark or purple in color
- Dilated pupils
- Slow, weak pulse
- Shallow breathing
- High temperature—may be in excess of 106° Fahrenheit

- **Treatment of Heat Stroke:**

- Wrap in a sheet and soak with cool—not cold—water.
- Fan but don't over-chill.
- Get to hospital immediately.



Basic First Aid

- ◆ Common injuries that could occur while hunting:

- **Bleeding:** Severe bleeding is a life-threatening medical emergency. To stop bleeding:

- Apply direct pressure on the wound.
- Cover with a sterile gauze pad—or the cleanest cloth readily available. Infection concerns are secondary to preventing massive blood loss.
- Press a pad firmly over wound using the palm of your hand. Don't lift the pad to check the wound—this will only renew bleeding.
- When pad becomes soaked, put a fresh one directly over the old pad.
- If the wound is on a limb and is not fractured, raise the limb above level of heart. Gravity reduces the blood pressure in the limb.
- Direct pressure and elevation is usually sufficient to stop bleeding. If profuse bleeding continues, try shutting off the circulation in the artery that is supplying blood to the injured limb.

- **Broken Bones:** Assume that someone has a broken bone if: the pain lasts more than a few minutes; moving the injured area is difficult; or there is swelling in the injured area. If you transport the victim a long distance, immobilize the joint above and below the break to prevent further injury and relieve the pain. Don't try to straighten the limb—splint it the way you found it. For a broken foot, remove the shoe and tie a pillow or thick padding around the foot. To splint a broken leg:

- Place a blanket or thick padding between the legs.
- Bind the injured leg to the uninjured one with strips of cloth.
- Bind the legs together snugly at several places above and below the painful area.

- **Burns:** First-degree and second-degree burns with closed blisters are best treated with cold water.

- Immerse the burned area, or cover it with cloths soaked in cold water—don't use ice water.
- Avoid using butter or greasy ointment because either can interfere with healing and can cause an allergic reaction.
- Second- and third-degree burns with open blisters should be wrapped with loose, dry dressing.

- **Carbon Monoxide Poisoning:** Improperly working camp stoves and lanterns, and wood and charcoal fires, can produce lethal carbon monoxide. Symptoms include headache, dizziness, weakness and difficulty breathing. The victim's skin can turn red and he or she can lose consciousness. Get victims into fresh air immediately—keep them lying quietly. Prompt medical care is essential.

- **Chest Wounds:** A bullet striking the chest can cause a sucking chest wound—a deep, open wound of the chest wall that allows air into the chest cavity. All chest injuries are very serious and need immediate medical attention. To respond immediately to a chest wound:
 - Use the palm of your hand to cover the wound until a bandage is located.
 - Cover the wound with sterile gauze, clean cloth, plastic, or foil.
 - Make sure the wound cover forms an airtight seal.
 - Hold the gauze in place with a bandage or tape.
 - If the victim has trouble breathing, remove the bandage and replace it quickly.
 - Transport the victim to a hospital with the injured side down.
- **Shock:** Shock can result from any serious injury. Symptoms include pale, cold, clammy skin; a rapid pulse; shallow breathing; and fear in the victim. To treat shock:
 - Keep the victim lying on their back. In some cases, shock victims improve by raising their feet 8-10 inches.
 - If the victim is having trouble breathing, raise the victim's head and shoulders about 10 inches, rather than raising feet.
 - Maintain normal body temperature, and loosen any restrictive clothing.
 - Try to keep the victim calm and comfortable, and get medical help as quickly as possible.
- **Snakebite:** Most doctors agree that the best response is to rush the victim to the hospital emergency room. Cutting and suctioning the bite can do more harm than good. Panic aggravates snakebite reactions. Calm the victim as much as possible. Keep the victim in a reclining position to slow the spread of venom. If the bite is on a limb, keep the wound at or below the level of the heart.

Review Questions

1. There are four ways to prepare for a hunting trip: be ready, know your location, prepare for safety, and _____.
Answer: tell others.
2. _____ would not be an essential part of a hunting plan that you would leave with family member or friend.
 - a. The number of game you plan to harvest
 - b. Where and with whom you intend to hunt
 - c. Specific directions on the route to your destination
 - d. When you expect to return**Answer:** a. The number of game you plan to harvest.
3. The most important clothing choice is _____.
 - a. bright red
 - b. hunter green
 - c. fluorescent orange
 - d. camouflage**Answer:** c. fluorescent orange
4. If dressing for cold weather conditions, you should _____.
 - a. wear several layers of clothing instead of one heavy article of clothing.
 - b. wear cotton since it can provide warmth even when wet.
 - c. wear wool.
 - d. both a. and c.**Answer:** d. both a. and c.
5. When laid on a map, a compass needle points to _____.
 - a. the direction you're heading.
 - b. true north.
 - c. magnetic north.
 - d. contour lines.**Answer:** c. magnetic north.
6. List the five primary requirements for survival.
Answer:
 - i. shelter
 - ii. starting a fire
 - iii. signaling for help
 - iv. water
 - v. food
7. The international emergency signal for distress is _____.
 - a. three fires evenly spaced.
 - b. three shots.
 - c. three blasts of a whistle.
 - d. any of the above.**Answer:** d. any of the above.
8. List four of the eight rules of survival that every hunter should follow.
Answer: Any four of:
 - Tell someone where you're going and when you plan to return.
 - Don't hunt alone.
 - Take enough food and water to last for at least two days in an emergency.
 - Bring map and compass and always orient yourself before leaving camp.
 - Wear layered clothing, and take extra clothing with you.
 - Plan outings so you can return to camp before dark.
 - Never leave camp without taking fire-starting equipment.
 - Don't panic if you become lost.
9. Hypothermia can be prevented by _____.
 - a. staying dry.
 - b. dressing properly.
 - c. exposing yourself to the wind to dry out if wet.
 - d. both a. and c.**Answer:** b. dressing properly.
10. Heat exhaustion can be prevented by _____ water.
Answer: drinking plenty of
11. Bleeding should be controlled by applying _____ to the wound.
 - a. butter
 - b. fresh air
 - c. direct pressure
 - d. cold water**Answer:** c. direct pressure
12. If a hunting companion breaks a leg and no medical help is readily available, you should _____.
 - a. try to straighten the limb and put a splint on it.
 - b. not try to straighten the limb; splint it the way you found it.
 - c. leave the leg exposed to the air to reduce the swelling.
 - d. not splint it, but place a thick pad around it.**Answer:** b. not try to straighten the limb; splint it the way you found it.

Objectives
The student should...

- ◆ Define “wildlife conservation,” and explain how it differs from preservation.
- ◆ List the five essential elements for wildlife habitat.
- ◆ Define “carrying capacity.”
- ◆ List the factors that limit wildlife populations.
- ◆ Explain the role of hunting in wildlife conservation.
- ◆ Give five examples of wildlife management practices, and explain how each helps conserve wildlife populations.
- ◆ Explain why the correct identification of wildlife is crucial for hunting.
- ◆ List the five groups commonly used to divide wildlife.
- ◆ Give one example of a large mammal and some of its distinguishing features.
- ◆ Tell where to find more information on identifying characteristics, habitat, and range of common wildlife species.



Wildlife Conservation

◆ Conservation and Preservation

- The concept of wildlife conservation has been around since ancient times. Restrictions on taking game is mentioned in the Bible, and the first official hunting season may have been established in the 13th century by Kublai Khan.
- Today, wildlife conservation has evolved into a science, but the goal remains essentially the same—ensure wise use and management of renewable resources. Given the right circumstances, the living organisms that we call renewable resources can replenish themselves indefinitely.
- Preservation is another means of protecting or saving resources, such as by outlawing hunting of endangered species. Both preservation and conservation are necessary to sustain resources for future generations.

◆ Lessons in Wildlife Management

- Initially, wildlife management in the U.S. was skewed toward protection. For example, in the early 1900s, wildlife managers attempted to preserve a mule deer herd in the remote Kaibab Plateau of Arizona. Hunting was banned and predators were destroyed. The result was severe overpopulation, habitat destruction and mass starvation.
- The Kaibab Plateau was opened to hunting in 1929, which brought the population into balance with the habitat. Today, a large, healthy herd of mule deer inhabits the area.
- Around the same period, a similar event took place in Pennsylvania. Deer had been brought into the state after the native population was thought to be extinct. With most of the predators eliminated and little hunting allowed, the herd grew out of control. As the food supply dwindled, thousands of white-tailed deer starved to death.
- Wildlife managers learned that there is more to conservation than just protecting wildlife. They discovered that nature overproduces game resources and that good wildlife management yields surplus that can be harvested by hunters.



◆ Habitat Management

- The most essential aspect of wildlife management is habitat management. Habitat loss presents the greatest threat to wildlife.
- Habitat management safeguards the essential elements to meet these needs:
 - **Food and water** are necessary to all wildlife. Competition for these elements among species makes cover, space, and arrangement top priorities.
 - **Cover** protects animals from predators and the weather while they feed, breed, roost, nest, and travel. Cover ranges from thick weeds and brush to a few rocks piled together.
 - **Space** is necessary for adequate food among wildlife, territorial space for mating and nesting, and freedom from stress-related diseases.
 - **Arrangement** of these elements ideally allows animals to meet these needs in a small area to minimize energy use while fulfilling their basic needs.
 - **Edge effect** refers to the consequence of placing two contrasting ecosystems adjacent to one another. Most animals locate where food and cover meet, particularly near water. An example would be a river bottom, which offers many animals all their habitat needs along one corridor.



◆ Carrying Capacity

- Resources in any habitat can support only a certain quantity of wildlife. As seasons change, food, water, or cover may be in short supply. Carrying capacity is the number of animals the habitat can support all year long. The carrying capacity of a certain tract of land can vary from year to year, changed by nature or humans.
- Factors that limit potential production of wildlife include: disease and parasites; starvation; predators; pollution; accidents; old age; and hunting.
- If the conditions are balanced, game animals will produce a surplus, which can be harvested on an annual, sustainable basis.

◆ The Hunter's Role in Wildlife Conservation

- Since wildlife is a renewable resource with a surplus, hunters help keep wildlife populations at a healthy balance for the habitat. Regulated hunting has never led to threatened or endangered wildlife populations.
- Hunting is an effective wildlife management tool. Hunters play an important role by providing information from the field that wildlife managers need.
- Funding from hunting licenses has helped many game and non-game species recover from dwindling populations.
- (*sidebar*) Hunters spend more time, money, and effort on wildlife conservation than any other group in society. In addition to participating in the harvest of surplus animals, hunters help sustain game populations by:
 - Filling out questionnaires
 - Participating in surveys
 - Stopping at hunter check stations
 - Providing samples from harvested animals
 - Funding wildlife management through license fees



Wildlife Management and Conservation Principles

- ◆ A wildlife manager's job is to maintain a number of animals in a habitat at or below the habitat's carrying capacity, so no damage is done to the animals or to the habitat.
 - The wildlife manager's task is similar to the rancher's. Just as ranchers limit the number of animals in a cattle herd to the level that the habitat can tolerate, wildlife managers keep the number of animals in balance with their habitat. In addition to looking at the total number of each species in the habitat, wildlife managers also monitor the breeding stock—the correct mix of adult and young animals needed to sustain a population.
 - To manage habitats, wildlife managers consider historical trends, current habitat conditions, breeding population levels, long-term projections and breeding success. With that knowledge, wildlife managers have a variety of practices to keep habitats in balance.



◆ Wildlife Management Practices

- **Monitoring Wildlife Populations:** Wildlife managers continuously monitor the birth rate and death rate of various species and the conditions of their habitat. This provides data needed to set hunting regulations and determine if other wildlife management practices are needed to conserve species.
- **Habitat Improvement:** As succession occurs, the change in habitat affects the type and number of wildlife that the habitat can support. Wildlife managers may cut down or burn forested areas to promote new growth and slow down the process of succession. This enables them to increase production of certain species.
- **Hunting Regulations:** Hunting regulations protect the habitat and preserve animal populations. Regulations include setting daily and seasonal time limits, bag limits, and the legal methods for taking wildlife.
- **Hunting:** Hunting is an effective wildlife management tool. Hunting practices help managers keep animal populations in balance with the habitat.
- **Predator Control:** In rare instances, predators must be reduced to enable some wildlife populations to establish stable populations, particularly threatened or endangered species.
- **Artificial Stocking:** Restocking of game animals has been successful in many parts of the nation. Trapping animals in areas where they are abundant and releasing to other suitable habitat is an example of restocking.
- **Controlling or Preventing Disease and Its Spread:** Disease can have a devastating effect on wildlife. Avian cholera, for example, poses a serious threat, especially to ducks and geese on crowded wintering grounds. Once avian cholera occurs, managers must work to prevent spread by daily gathering and burning waterfowl carcasses.
- **Management Funds/Programs:** In addition to Pittman-Robertson funds, many states have initiated programs that help finance conservation efforts.

Wildlife Identification

- ◆ Developing wildlife identification skills is a basic requirement for hunters. Mistakes can lead to the illegal harvest of game or non-game animals. To identify game properly, you must learn to recognize key characteristics of the animal you're hunting.
- ◆ Identifying animals accurately is a skill that improves with experience. Sometimes, the difference between animals in the same species is subtle, such as the size of ears or a distinctive coloring. Recognizing tracks, scat, food sources, and habitat types can also help identify animals.
- ◆ A variety of print and visual resources are available to help increase your knowledge of wildlife.
- ◆ Wild animals are generally divided into five groups: large mammals; small mammals; upland birds; waterfowl and wetland birds; and birds of prey. Each group may include species that are “threatened” or “endangered.”
 - **Large Mammals** Typically include horned animals, antlered animals, bears, and large members of wild cat or dog families.
 - **Small Mammals** Examples are rabbits and squirrels. Some are sought after primarily for their pelts, such as fox and mink.
 - **Upland Birds** Examples are turkey, grouse, quail, and pheasants. “Upland” refers to where they are often found. They have short, rounded wings good for short flights and strong legs for running.
 - **Waterfowl and Wetland Birds** Waterfowl are birds that live on or near water, and include diving ducks and puddle ducks. Wetland birds live close to water in marshy and coastal areas and include cranes and pelicans.
 - **Birds of Prey** Feed on other birds or mammals. Examples are eagles, falcons, and owls. Found throughout North America.
- ◆ Within each group, there may be species that are “threatened” or “endangered.”
 - Some are protected from hunting because their numbers are small and they produce no surplus to harvest.
 - Animals labeled “threatened” or “endangered” are protected by federal law.
- ◆ **(sidebar) Characteristics of Mammals**
 - Warm-blooded animals with hair. Young nourished with milk from mother.
 - Carnivorous (meat eating), herbivorous (plant eating), or omnivorous (meat and plant eating).
 - Seek to regulate their temperature.
 - Small mammals generally live shorter lives than large mammals.
 - Mammals vary in social behavior—some live in groups, and others are solitary except when mating or raising offspring.

Review Questions

- Wildlife conservation ensures that _____.
 - hunting seasons established by Kublai Khan will continue.
 - no animals are ever harvested.
 - natural resources can be drawn on despite unwise use.
 - renewable resources can replenish themselves indefinitely.

Answer: d. renewable resources can replenish themselves indefinitely.
- Wildlife preservation _____.
 - allows for the consumptive use of natural resources.
 - is a Biblical rule for saving natural resources.
 - saves natural resources but with no consumptive use of them.
 - allows hunting of endangered species.

Answer: c. saves natural resources but with no consumptive use of them.
- A habitat for wildlife must include _____.
 - space, arrangement, food, cover, and water.
 - brush and rocks, predators, water and space.
 - space, vegetation, food, and resting and breeding places.
 - cover, predators, large area, arrangement and food.

Answer: a. space, arrangement, food, cover, and water.
- The “carrying capacity” of a wildlife area is the _____.

Answer: number of animals the habitat can support all year long.
- List four factors that can limit wildlife populations.

Answer: Any four of:

 - Disease
 - Starvation
 - Predators
 - Pollution
 - Accidents
 - Old Age
 - Hunting
- Hunting is an effective wildlife conservation tool because _____.
 - funding from hunting licenses helps many game and non-game species recover from dwindling populations.
 - hunters play an important role by supplying wildlife managers with needed information from the field.
 - hunting contributes to threatened or endangered wildlife.
 - both a. and b.

Answer: d. both a. and b.
- By continuously monitoring the birth rate and death rate of various species and the condition of their habitat, wildlife managers _____.
 - know how to set hunting regulations and determine if other management practices are needed to conserve wildlife species.
 - know when to ignore hunting regulations they set earlier.
 - can obtain data to eliminate wildlife species.
 - both b. and c.

Answer: a. know how to set hunting regulations and determine if other management practices are needed to conserve wildlife species.
- Trapping and relocating animals is an example of the ____ wildlife management practice.
 - hunting
 - artificial stocking
 - setting bag limits and legal methods for taking wildlife
 - habitat improvement

Answer: b. artificial stocking
- Some species are protected by law from being hunted because _____.
 - they are predators for a pest species.
 - they are migrating.
 - their death rate is high.
 - their numbers are small.

Answer: d. their numbers are small.
- It is critical that hunters are able to identify wildlife correctly so that they don't mistakenly _____.
 - harvest illegal game animals or non-game animals.
 - confuse horns with antlers.
 - confuse cloven hooves with cud chewers.
 - confuse meat-eating animals with those that eat meat as well as plants.

Answer: a. harvest illegal game animals or non-game animals.



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