



*PENNSYLVANIA  
BICYCLE EDUCATION  
LESSON PLANS*

*THIRD GRADE*

**August 2011**



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# ACKNOWLEDGEMENTS



## Acknowledgements

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### Acknowledgements

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# CURRICULUM INTRODUCTION



# Introduction

Bicycling is an excellent life-long activity for recreation, transportation, fitness, and good health.

The purpose of these lessons is to encourage children to develop into young (and later adult) cyclists who possess a good understanding of safe and legal bicycling practices.

Knowledge and practice of safe cycling skills is imperative, as eventually, children who ride bicycles will ride with vehicular traffic.

The specific goals of these lessons are as follows:

- To teach students the importance of wearing a properly fitted and approved helmet whenever they ride
- To teach students the handling and safety skills appropriate to their age and stage of bicycling
- To teach students to understand that a bicycle is a vehicle that has all the rights and obligations of any other legal vehicle on the road
- To teach students about the health and fitness benefits of cycling
- To teach students that cycling can be a healthy life-long activity that may potentially increase positively in intensity and complexity with age and experience

### Curricula Outlines: Third and Sixth Grades

Following are outlines and descriptions of the third and sixth grade curricula. Comprehensive, versatile lesson plans have been designed to accommodate teachers in various situations; teachers may choose plans and activities that best fit their needs, time constraints, and equipment availability. As noted in the following charts, some plans are best suited for use with bicycling equipment for each child, some can be adapted for use with a single bike and single helmet, and some are specially designed for pencil-and-paper classroom use.

If bicycling equipment is available for student use, you may choose to focus on the “Bicycle Safety and Injury Prevention,” “Bicycle Handling Skills,” and “Understanding the Cycling Environment” lessons. Alternatively, you might choose to teach elements (short modules provided within the lesson plans) from the aforementioned lessons in conjunction with the “Cycling and Your Health” and “Cycling in Your Community” lessons.

If bicycling equipment is not available for each student, make every effort to acquire or borrow a single bicycle and helmet (resource information to follow) in order to teach several of the modules included in the “Bicycle Safety and Injury Prevention” and “Bicycle Handling Skills” lessons. The “Operating Environment” lesson can be executed without cycling equipment; students can practice signaling and walking through a course designed to teach awareness for cyclists riding on sidewalks, streets and at intersections. The “Cycling and Your Health” and “Cycling in Your Community” lessons do not require cycling equipment.

These lesson plans have been designed to accommodate teachers with various needs. The following charts are provided to help teachers plan accordingly. Lessons and modules marked

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“High priority” are meant to help teachers with time constraints prioritize in order to convey the very basics of bicycle safety in a limited amount of time.

Note that Appendix I provides photographs and descriptions to illustrate important cycling concepts and safety procedures necessary for the teaching of the lessons for Handling Skills, Operating Environment, and Bicycle Injury and Prevention. Appendix I is meant as a resource for teachers.

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Third grade plans:

Lesson Titles	Content	For the very basics of bicycle safety:
A. Bicycle Safety and Injury Prevention	Helmet fitting	High priority
	Pre-ride bicycle check	High priority
B. Bicycle Handling Skills	Starting and stopping	High priority
	Riding in a straight line	High priority
	Practicing controlled riding	
C. Understanding the Cycling Environment	Signaling turns	High priority
	Practicing turns	
	Practicing riding in a straight line and signaling	High priority
D. Cycling and Your Health	Understanding the health benefits of cycling	
E. Cycling in Your Community	Learning about local cycling resources and facilities	

## Introduction

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Sixth grade plans:

Lesson Titles	Content	For the very basics of bicycle safety:
A. Bicycle Safety and Injury Prevention	Helmet fitting	High priority
	Pre-ride bicycle check	High priority
B. Bicycle Handling Skills	Starting and stopping	High priority
	Riding in a straight line	High priority
	Scanning, signaling, and turning	High priority
	Stopping quickly	
	Riding to avoid obstacles	
C. Understanding the Cycling Environment	Signaling turns	High priority
	Crossing streets	High priority
	Entering the roadway from driveways	High priority
	Crossing intersections	High priority
D. Cycling and Your Health	Understanding the health benefits of cycling	
E. Cycling in Your Community	Learning about local cycling resources and facilities	

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## Practice Drills

Plans for the lessons entitled “Handling Skills” and “Operating Environment” provide diagrams for use in setting up and administering cycling drills on hard surface areas such as parking lots or other paved surfaces.

Drill diagrams are designed to be set up quickly and easily (most can be laid out in 2-5 minutes), and where applicable, single layouts may be used for several drills in succession.

Suggested materials for use with these drills include, but are not limited to, the following:

- Measuring tape
- Measured lengths of string
- Sidewalk chalk
- Optional:
  - Wet sponges or tennis ball halves to use as markers
  - Traffic cones

The following tips may be useful in setting up drills based on the diagrams provided:

- Gather all necessary equipment
- Use a measuring tape or your stride to measure long dimensions
- Utilize measured, pre-cut lengths of string. For instance, layout ovals are about 20 feet wide, so a 20-foot piece of string, which can be used repeatedly, can be helpful in minimizing set-up time.
- Measured lengths of string cut to length are helpful for quickly laying out parallel markers (chalk marks/sponges/tennis ball halves). Depending on the ages and skills of students, the path between paired markers can be narrowed or widened. 10-18” between paired markers is suggested.
- Do not bother drawing the rider’s path for the layout ovals. Few well placed markers or chalk marks will guide riders, and a teacher-led demonstration to show students the expected path to travel will illustrate.

Note that layouts need not be replicated exactly. Use the space available to you to provide essential elements for each drill. For example, the intersection drill illustration provided in the “Operating Environment” lesson is meant as a guide. Adapt this layout to your needs. Crosswalks and sidewalks may be illuminated, if you choose, as may the center lines shown on the roadway lanes. Use your judgment to provide students with meaningful practice of the skills introduced in each lesson.

## In-Service Training

The Pennsylvania Safe Routes to School Program provides in-service training for teachers multiple times each year in various locations around the Commonwealth. Attendance at one of these training sessions is highly recommended to more effectively implement these lessons, and is FREE of charge. Participants will be instructed in the basics of bicycle safety and will have the opportunity to practice skills to be taught in the third and sixth grade curricula. In-service

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programs are taught by League of American Bicyclists Cycling Instructors, and League materials are used. Further, upon completion of the in-service program, participants will be certified to teach children the League of American Bicyclists “Youth 123” course.

For more information, check out: <http://www.saferoutespa.org/bicycle-education-training>

## **Additional Resources**

Teachers unable to attend in-service programs may wish to contact a League of American Bicyclists League Cycling Instructor (LCI) for additional help with concepts and practices included in the curricula.

For more information, visit the League of American Bicyclists website ([www.bikeleague.org](http://www.bikeleague.org)), and:

- Under the “Programs” menu, click “Bike Education.”
- From the list at right, choose “Courses or Instructors by State.”
- Search (by state) for “Instructors (LCIs)”
- Narrow your search to find one of Pennsylvania’s more than 65 LCIs in your area of Pennsylvania.

## **Safe Cycling Pledge**

Encourage students to vow to practice safe cycling. A pledge or contract can be written or performed orally, and can be quite effective with young students. Develop a pledge that can be practiced and revisited throughout these bicycle safety lessons, and send a copy home to be reviewed and signed by parents and guardians. Encourage students to share their knowledge of cycling safety with their families and to encourage their parents and guardians to promise to help children practice safe cycling by wearing helmets (as required by Pennsylvania law for children eleven years old and younger), properly maintaining bicycling equipment, and by knowing and following the rules of the road for cyclists.

## **Certificate of Completion**

Design a certificate for students to receive after completion of these lessons. Accompanied by a small prize, such as a bicycling water bottle from a local bike shop (which a shop may donate, if you’re lucky), a certificate can go a long way in reminding and motivating students to practice safe cycling.

## **Further Cycling Information**

For more information, visit the following websites:

Pennsylvania Safe Routes to School:

<http://www.saferoutespa.org/>

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League of American Bicyclists:

[www.bikeleague.org](http://www.bikeleague.org)

Bicycle Helmet Safety Institute:

[www.bhsi.org](http://www.bhsi.org)

Pennsylvania Department of Transportation:

<http://www.dot.state.pa.us/>

Pennsylvania Vehicle Code (Title 75), Chapter 35, Subchapter A - Operation of Pedalcycles:

[http://www.dmv.state.pa.us/vehicle\\_code/index.shtml](http://www.dmv.state.pa.us/vehicle_code/index.shtml)



**LESSON A**  
**BICYCLE SAFETY AND INJURY PREVENTION**



# Bicycle Safety and Injury Prevention

## Part I: Helmet Safety

Children under the age of twelve years are required by Pennsylvania law to wear helmets while bicycling.

The use of bicycle helmets has been shown to reduce the risk of head injury by as much as 85 percent and the risk of brain injury by as much as 88 percent.

It is estimated that 75 percent of bicycle-related fatalities among children could be prevented with bicycle helmets.

It is imperative that children be taught to live by the rule: No helmet, no bike.

Teaching helmet lessons in the classroom can be very effective, but nothing beats support from parents and guardians when it comes to getting every kid in a helmet. Consider communicating with parents and guardians to inform them of the law, the above statistics, and the following issues:

- Bicycle helmets are available at local bicycle shops, many major retailers, and at on-line sources. *Consumer Reports* testing and testing performed for the *Bicycle Helmet Safety Institute* ([www.bhsi.org](http://www.bhsi.org)) found that helmet cost does not indicate helmet safety performance. In other words, a \$20 helmet offers as much protection as does a \$150 helmet.
- As of 1999, bicycle helmets sold by U.S. retailers are required to meet safety certification standards put forth by the Consumer Product Safety Commission (CPSC). Helmets are marked inside their shells with CPSC certification stickers; look for this sticker before you buy.
- The Brain Injury Law Center ([www.brain-injury-law-center.com/about-us/helmets-for-kids.html](http://www.brain-injury-law-center.com/about-us/helmets-for-kids.html)) is dedicated to providing free helmets to children under the age of 19. Requests for helmets must be made by parents or guardians, and proof of the age of the child may be required.
- Simple guidelines for parents and guardians:
  - **Helmets on Heads:** Establish the simple rule: No helmet, no bike.
  - Wear one yourself; children are more likely to wear helmets when *you* do too!
  - Allow your child pick out his or her own helmet—they're more likely to wear it.
  - Make the wheels-and-helmet connection early so it'll become habit as kids age.

# Bicycle Safety and Injury Prevention

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- Bicycle helmets are manufactured to be effective for one major impact; helmets must be replaced after each crash or impact. Once the polystyrene shell of a helmet has been compromised due to impact, it is no longer effective.

**Lesson Plan Title:** Bicycle Safety and Injury Prevention Part I: Helmet Safety

**Concept / Topic To Teach:** Importance and proper fitting of a bicycle helmet

**Academic Standards Addressed:** 10.3.3.A, D  
(Health, Safety and Physical Education)

**Standards as they relate to bicycling:** Use appropriate safety equipment and procedures  
Prevent commonly occurring injuries

**General Goal(s):** To teach students that bicycle helmets are mandatory cycling equipment

**Specific Objectives:** Students will understand that wearing a cycling helmet is mandatory

Students will recognize a properly fit helmet

Students will understand that helmets must be replaced after significant impact has occurred

**Time Required:** 20 minutes

**Required Materials:** A bicycle helmet, or if possible, one helmet for each student or every two or three students

Helmet Fitting written assessment

Optional: PENNDOT's BikeSafe website provides an on-line diagram with rollover tips for helmet fit at the following link:

<http://www.dot.state.pa.us/bike/web/POPhelmet.htm>

\*Note: This lesson is best if students can perform the hands-on activity of fitting a helmet to their heads and the heads of other students. Local bicycle coalitions, bicycle retailers or rental facilities may be able to loan helmets if you do not have them on-hand.

**Anticipatory Set (Lead-In):** Remind students of their pledge they took to promise to practice safe cycling. What do they know about helmets? Do they always wear them? Ask the students, "Did you know that it's the law in Pennsylvania for children under the age of 12 to wear bicycling helmets while riding?"

## Bicycle Safety and Injury Prevention

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A great way to show kids why helmets are important is to drop (and break) some melons to show how a helmet can offer protection. Take a bicycle helmet to the grocery store and buy a honeydew melon (they seem to work best, especially if not quite ripe) to fit snugly inside the helmet. Buy another melon to use without the helmet. In the classroom, demonstrate what happens when you drop the helmeted melon from waist height (it shouldn't break). The plain melon should break on its first drop.

This is a dramatic demonstration, but it will get kids' attention, and they'll remember what they've seen.

Use pictures in Appendix I for reference.

### Step-By-Step Procedures:

- If you have many helmets available, hand out helmets and tell students they have 30 seconds to study their helmets to investigate the parts.
- At the end of 30 seconds, ask students to put their helmets on desks in front of them, or on the floor, and not to touch the helmets.
- Ask students what they learned about the helmet they investigated. They probably will have found that the helmet is light in weight, has some air vents, and that it can be adjusted in several ways: with the rear adjuster knob or sliding pieces, with the toggle on each ear strap, and with the chin buckle.
- Show students a single helmet. Tell them that a helmet can only protect your head if it is properly fit. It can only work if it fits snugly – thus there are several ways to ensure that a helmet is properly adjusted to your head.
- Explain that helmets come in different sizes, but that most quality helmets available these days can be adjusted to fit heads of many different sizes.

\* Note: The shells of older helmets are not adjustable and require that each individual wear a shell that is chosen for his/her head and made snug with the addition of foam pads (which come with the helmet).

\* Note: Quality helmets (available in discount retail stores and in bicycle shops) meet impact standards. Look for the CPSC standard sticker inside the helmet's shell; it's been required by law in the US since 1999. Older quality helmets will be marked with stickers reading SNELL or ANSI.

- Ask for a volunteer.
- Explain that you will demonstrate helmet fitting using the Eyes, Ears, Mouth method.

## Bicycle Safety and Injury Prevention

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- **Eyes:** Place the helmet on the volunteer's head and adjust the helmet's shell so that it sits level on the volunteer's head. Ask the volunteer if he can see the brim of the helmet when he looks up (he should be able to).
- Ask the volunteer to shake his/her head. A snug helmet will not move when you shake your head side to side.
- **Ears:** Adjust the side straps so that the toggles sit just below the volunteer's earlobes and so that the straps create a tight V shape. There should not be much room between the ear strap toggles and the earlobes.
- **Mouth:** The chin strap is buckled last. When buckled, the strap should allow space for the volunteer to open her mouth. When resting, there should be space for two fingers (and no more!) between the chin and the strap.
- Make it clear to students that a helmet that's been in a crash cannot be used again. Helmets must be replaced after they've sustained impact.
- Use pictures in Appendix I for reference.

**Plan For Independent Practice:** Allow students time to help each other fit their own helmets.

**Closure (Reflect Anticipatory Set):** Reflect on the helmet law and what is meant by the Eyes, Ears, Mouth method. With students, discuss ways to teach parents about bicycle helmets. Encourage students to share the information from this lesson at home, and/or produce an informational flyer for students to share at home.

**Assessment Based On Objectives:** For inspection, require students to properly fit another person with a helmet – this can be done with pairs or with small groups. Teacher can assess and review orally while inspecting.

Allow time for written assessment: **The Importance of Helmets**

# Bicycle Safety and Injury Prevention

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## The Importance of Helmets

Name \_\_\_\_\_

Circle **all** the correct answers There might be more than one correct answer to each question!

### 1. Wearing a bicycle helmet is important because:

- a. It is the law in Pennsylvania
- b. It looks nice
- c. It's not really important
- d. It protects your head and your brain

### 2. A Helmet only work properly when it is:

- a. buckled under your chin
- b. properly adjusted to the size of your head
- c. tipped slightly back so that your forehead is visible

### 3. A good method to use when adjusting a bicycle helmet is:

- a. The Eyes, Ears and Foot Method
- b. The Eyes, Ears and Mouth Method

### Circle T for True and F for False

- 4. T / F      A helmet that's been in a crash can be used over and over again.
- 5. T / F      A helmet that's been in a crash is no longer safe and needs to be replaced.

# Bicycle Safety and Injury Prevention

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## The Importance of Helmets

Name \_\_\_\_\_

Circle **all** the correct answers There might be more than one correct answer to each question!

### 1. Wearing a bicycle helmet is important because:

- a. **It is the law in Pennsylvania**
- b. It looks nice
- c. It's not really important
- d. **It protects your head and your brain**

### 2. A Helmet only work properly when it is:

- a. **buckled under your chin**
- b. **properly adjusted to the size of your head**
- c. tipped slightly back so that your forehead is visible

### 3. A good method to use when adjusting a bicycle helmet is:

- a. The Eyes, Ears and Foot Method
- b. **The Eyes, Ears and Mouth Method**

Circle **T** for True and **F** for False

- 4. **T / F**      A helmet that's been in a crash can be used over and over again.
- 5. **T / F**      A helmet that's been in a crash is no longer safe and needs to be replaced.

## Bicycle Safety and Injury Prevention

### Part II: ABC Hand Check

A yearly check by a professional bicycle mechanic is recommended for all bicycles. The ABC Hand Check outlined in the following lesson is an excellent practice for students to understand and perform before each ride, but yearly inspection and adjustment by a professional is recommended.

**Lesson Plan Title:** Bicycle Safety and Injury Prevention Part II: ABC Hand Check

**Concept / Topic To Teach:** Safety procedure for pre-ride check of bicycles

**Academic Standards Addressed:** 10.3.3.A, D  
(Health, Safety and Physical Education) 10.3.3 B

**Standards as they relate to bicycling:** Use appropriate safety equipment and procedures  
Prevent commonly occurring injuries

**General Goal(s):** To teach students the ABC Hand Check procedure

To teach students that bicycles need to be regularly checked and tuned by professional bicycle mechanics to ensure their safety

**Specific Objectives:** Students will be able to describe the process for checking whether a bicycle is safe to ride

Students will understand the necessity of performing pre-ride checks to their bicycles

**Time Required:** 10-15 minutes

**Required Materials:** ABC Hand Check handout

**Recommended Materials:** Bicycle, bicycle pump, bicycle inner tube

\*Note: This lesson is best if students can use an actual bicycle to perform the hands-on activity of the ABC Hand Check.

**Anticipatory Set (Lead-In):** Elicit student responses to the following questions: What if you get on your bike and start riding, and your brakes don't work? What could happen? Do you know of other items on bikes that need to be in good working order?

# Bicycle Safety and Injury Prevention

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Remind students of their pledge to practice safe cycling and tell them that what you will do in this lesson has to do with their safe cycling pledge.

Use pictures in Appendix I for reference.

## Step-By-Step Procedures:

- Explain to students that checking your bike before you ride it is important to prevent accidents and injuries to yourself and others. Explain to students that it is smart to have your bicycle serviced by a bicycle mechanic at least once a year. Experienced professionals can find problems that you might miss.
- Tell students that you will perform something called an ABC Hand Check on a bicycle so that they can see how the procedure is done.

A is for Air: check the air pressure in each tire by squeezing the tires to see that they have adequate air. Explain to students that bicycle pumps can come with gauges to measure air pressure, and that tires are stamped with ranges for acceptable air pressure. Explain that inner tubes are inside bicycle tires and that they hold air and can be inflated through their valves.

Explain that checking tires for wear and damage is also important and should be done when checking air pressure.

B is for Brakes: Explain how to check coaster and hand brakes. Demonstrate by pedaling backwards or by squeezing the brake levers and examining the brake pads to see that they are clean, straight, and contact the rims properly.

C is for Chain: Show students the chain and explain that it is made up of individual links. Run the chain to see that it runs smoothly and is clean. If the bike has gears, run the chain and shift gears to see that the entire mechanism works smoothly.

Hand is for handlebars: straddle the front wheel of the bike and attempt to turn the handlebars. Explain that they should not move without the wheel also moving, and that they should be facing straight ahead. Also check at this time to be sure the ends of your handlebars are plugged. Open-ended handlebars can be the cause of serious injury or death.

Check is what you do when you begin your ride – to ensure that your entire bike is running smoothly.

- Use pictures in Appendix I for reference.

## Bicycle Safety and Injury Prevention

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**Closure (Reflect Anticipatory Set):** Revisit the discussion that began the lesson and discuss why a bicycle's parts must all be in good working condition in order to keep the rider safe.

Point out that professional mechanics can check and repair more complicated things, like loose spokes, and the areas in bicycles where ball bearings are housed: the hubs (center of wheels), the headset (where the handlebars meet the frame), and the bottom bracket (between the cranks, which hold the pedals).

Remind students of their safe cycling pledge and encourage them to share what they've learned with their parents.

### **Independent Practice / Assessment Based On Objectives:**

If equipment is available, allow students time to perform a complete ABC Hand Check.

Allow time for written assessment: **ABC Hand Check**

# Bicycle Safety and Injury Prevention

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## ABC Hand Check

Name \_\_\_\_\_



Identify what A, B, C and Hand stand for in the ABC Hand Check.

**A** stands for \_\_\_\_\_. Check for wear and tear, also.

**B** stands for \_\_\_\_\_. Remember to check the levers and the pads.

**C** stands for \_\_\_\_\_. Make sure it's tight and runs smoothly.

**Hand** stands for \_\_\_\_\_. Make sure they're tight and aligned correctly.

Remember that as you begin to ride, you should **check** your bike to make sure it's running smoothly. Ask an adult for help if you find problems with your bicycle!

**LESSON B**  
**BICYCLE HANDLING SKILLS**



# Bicycle Handling Skills

Especially with very young riders, practice drills to promote safety and good bicycle handling skills can be very effective. Practice not only promotes the fine tuning of motor skills, it prepares students to be safe and vigilant riders who will one day share the road with vehicular traffic.

In order to facilitate these drills safely, students must be properly fit to bicycles and helmets. Matching students to appropriate equipment and fine tuning their fit takes time, but once students are ready to ride, several drills can be performed in succession with relative ease.

If cycling equipment (bicycles and helmets) is unavailable, the health, safety and physical education standards for this lesson (involving balance, motor skill development, practice and skill development, etc.) may be met with other physical education or health lessons.

Students who do not know how to ride bicycles may require extra instruction and/or assistance. It is recommended that qualified adults be enlisted to address such situations and to instruct and practice with new bicycle riders in order to meet the needs and preserve the dignity of all students. The League of American Bicyclists ([www.bikeleague.org](http://www.bikeleague.org)) lists cycling resources by ZIP code; contact a local cycling instructor, a bicycle shop or bicycle coalition to enlist volunteer help in your community. An after school or free-period bike club might also provide some basic instruction for new riders.

# Bicycle Handling Skills

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**Lesson Plan Title:** Bicycle Handling Skills

**Concept / Topic to Teach:** Safe bicycle handling skills

**Academic Standards Addressed:** 10.1.3 A  
(Health, Safety and Physical Education) 10.4.3 A, E, F  
10.5.3 A,C,E

**Standards as they relate to bicycling:** Applying basic principles of balance and control  
Practicing skills for increased proficiency

**General Goal(s):** To teach students the basics of safe bicycling handling skills

**Specific Objectives:** Students will engage in physical activity

Students will practice learned skills to improve proficiency and motor skills

**Time Required:** 30 minutes

**Required Materials:** Bicycles

Helmets

Site for practice and drills

requires: -clean area 60-80 feet long and 4-6 feet wide  
-tape measure  
-chalk, tennis balls halves, or flat markers to mark lanes  
-Stop signs – may be marked with cones, or drawn on pavement

## Introduction

All new skills require practice – it's required for proficiency and expertise. Cyclists need to be predictable to motorists and to others who may share roads, sidewalks, paths or trails with cyclists. Further, cyclists often ride in confined lanes or on sidewalks or paths. In order to be predictable and safe, cyclists must be proficient in starting, stopping, and riding steadily and in a straight line.

# Bicycle Handling Skills

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**Anticipatory Set (Lead-In):** Lead a conversation to discuss the following questions: Why is it important to be able to ride a bicycle in a straight line? What if it's hard and you can't do it on the first try? Why is starting and stopping well so important when you're on a bicycle?

Practice riding in a straight line is essential for cyclists and promotes safety for riders who will eventually ride on roadways with vehicular traffic.

Starting and stopping with confidence and competence is a skill, and marks an experienced rider.

Use pictures in Appendix I for reference.

## Step-By-Step Procedures:

- Properly fit students with bicycles and helmets and have them line up in the “parking lot,” a designated holding area.
- Demonstrate starting using the “power pedal” method (see Appendix I):
  - Begin straddling the bicycle with both feet on the ground.
  - Arrange your bike so that one pedal is up high in a “2 o'clock” position. This is the power pedal, as you will push down on it with one foot to get started.
  - Note: cyclists riding geared bicycles should shift into a low (easy to pedal) gear before beginning the power position start.
  - Put your foot on the high pedal and push down to start the bike rolling.
  - As the bike begins to roll, position your other foot on the second pedal and move into the saddle. You're off!
- Explain to students that they will be expected to ride between the chalk lines or markers and to come to a complete stop at the stop sign. After re-starting, they will be expected to return along the second half of the course, and to come to a second complete stop before re-entering the parking lot.
  - Use the brakes to come to a complete stop. With hand brakes, effective stopping requires pressure on both the front and rear brake levers. Encourage young students to use both hand brakes when stopping.
  - After coming to a complete stop, put one foot on the ground. Return your pedals to the power position to be ready to start again.
- Explain to students that this is not a race.
- Send students onto the course one at a time, leaving a few seconds between riders.
- Have all students have complete the course (several times is optimal), and assess student practices and progress.
- If feasible, add another stop between the start and the first stop sign for added practice.
- Move on to the Slow Race, if time allows.

## Bicycle Handling Skills

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- The Slow Race can be used as a fun competition, or as a non-competitive practice exercise.
  - Assign one student to each lane for the Slow Race, and explain that the last person to the finish line is the winner. The purpose is to ride as slowly as possible, which requires balance and control.
  - Riders must stay in their lanes, and must not put their feet on the ground or stop. To start, remind riders to get into the “power pedal” position.
- Use pictures in Appendix I for reference.

**Plan for Independent Practice:** Incorporated into the procedure, above. In addition, students should be encouraged to practice the skills from this lesson at home and to share with their parents/guardians.

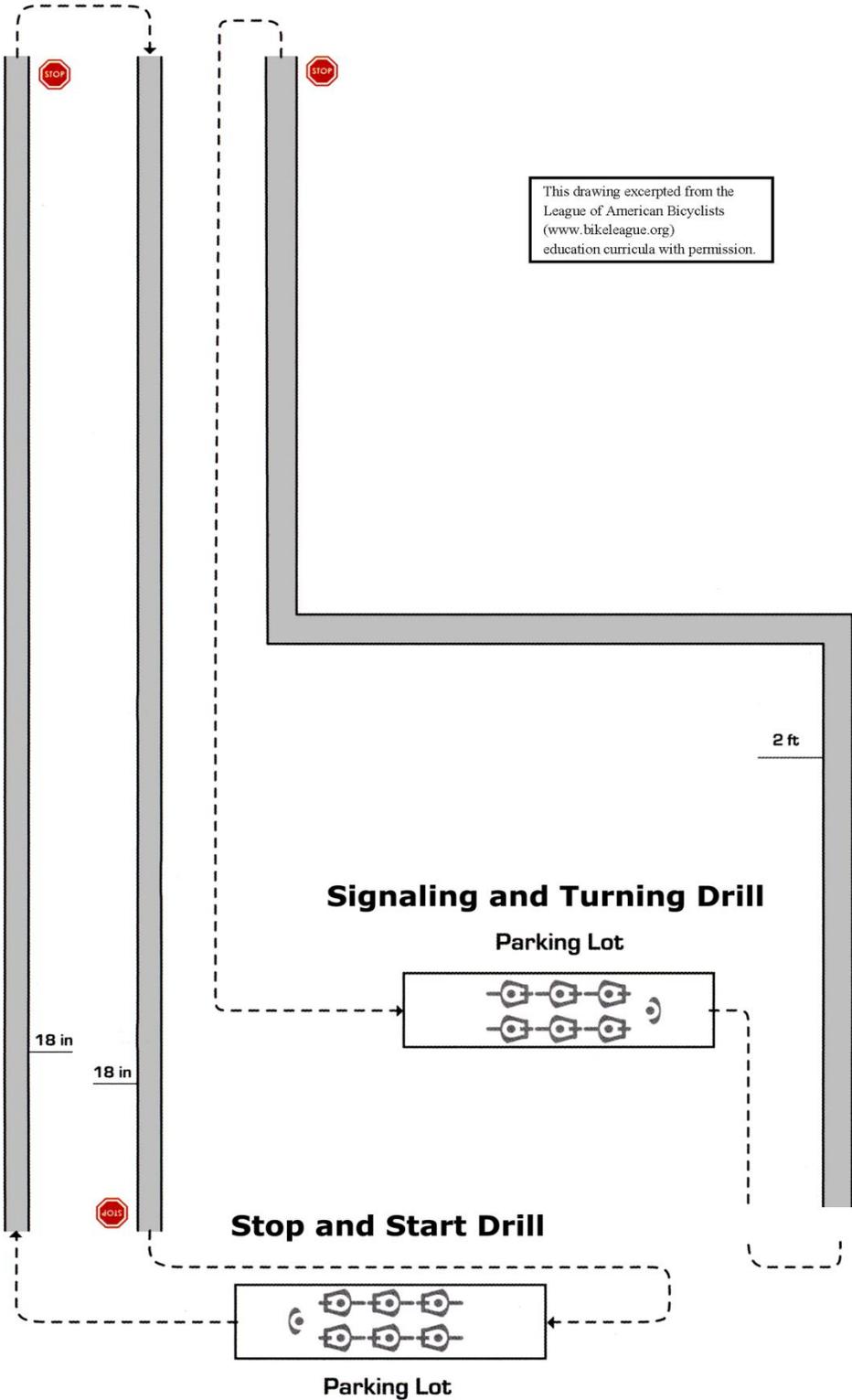
**Closure (Reflect Anticipatory Set):** Debrief the lesson with students. How did it go? What did you learn today? Why are the following skills important for safe cycling: riding in a straight line? Starting and stopping in a predictable and steady manner?

Remind students of their pledge to practice safe cycling.

Discuss what students might share at home from this lesson.

**Assessment Based On Objectives:** Incorporated into the lesson procedure.

# Bicycle Handling Skills



**LESSON C**  
**UNDERSTANDING THE CYCLING**  
**ENVIRONMENT**



# Understanding the Cycling Environment

Understanding of the operating environment for cyclists is essential information. Bicycles in Pennsylvania are considered vehicles and are expected to follow the pedalcycle laws set forth in the Pennsylvania Vehicle Code. Though children twelve years old and younger in Pennsylvania are allowed to ride bicycles on sidewalks in many areas, they will eventually grow into riders who share the road with vehicular traffic and should be prepared to fully understand and follow Pennsylvania law. Young riders should be taught to obey stop signs and to signal stops and turns.

Especially with very young riders, practice drills to promote safety and good bicycle handling skills can be very effective. Practice not only promotes the fine tuning of motor skills, it prepares students to be safe and vigilant riders who will one day share the road with vehicular traffic.

In order to facilitate these drills safely, students must be properly fit to bicycles and helmets. Matching students to appropriate equipment and fine tuning their fit takes time, but once students are ready to ride, several drills can be performed in succession with relative ease.

If cycling equipment (bicycles and helmets) is unavailable, the health, safety and physical education standards for this lesson (involving balance, motor skill development, practice and skill development, etc.) may be met with other physical education or health lessons.

Students who do not know how to ride bicycles may require extra instruction and/or assistance. It is recommended that qualified adults be enlisted to address such situations and to instruct and practice with new bicycle riders in order to meet the needs and preserve the dignity of all students. The League of American Bicyclists ([www.bikeleague.org](http://www.bikeleague.org)) lists cycling resources by ZIP code; contact a local cycling instructor, a bicycle shop or bicycle coalition to enlist volunteer help in your community. An after school or free-period bike club might also provide some basic instruction for new riders.

# Understanding the Cycling Environment

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**Lesson Plan Title:** Understanding the Cycling Environment

**Concept / Topic to Teach:** Safe bicycle handling and operating procedures

**Academic Standards Addressed:** 10.2.3 B, D  
(Health, Safety and Physical Education) 10.3.3 A, B  
10.5.3 A

**Standards as they relate to bicycling:** Recognizing that a bicycle is a legal vehicle  
Understanding appropriate procedures and rules of the operating environment  
Recognizing suitable operating environments in relation to skill level

**General Goal(s):** To teach students the basics of safe bicycle operations

**Specific Objectives:** Students will practice safe bicycling handling skills

Students will understand and practice the use of appropriate signaling and procedures for riding safely on sidewalks and on streets.

**Time Required:** 30 minutes

**Required Materials:** Bicycles

Helmets

Site for practice and drills

requires: -clean area 60-80 feet long and 4-6 feet wide  
-tape measure  
-chalk, tennis balls halves, or flat markers to mark lanes  
-Stop signs – may be marked with cones, or drawn on pavement

**Anticipatory Set (Lead-In):** Discuss the following questions: What is a vehicle? Is a bicycle a vehicle? Why is it important to know if a bicycle is a vehicle or not?

Dictionary definition for vehicle: any means in or by which someone travels or something is carried or conveyed.



# Understanding the Cycling Environment

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Bicycles are vehicles.

In Pennsylvania, bicycles are considered vehicles just like cars and trucks. Bicyclists must follow Pennsylvania vehicle laws.

Because bicycles are allowed to share the roads with vehicular traffic, it is imperative that cyclists act responsibly and predictably by signaling stops and turns.

Use pictures in Appendix I for reference.

## Step-By-Step Procedures:

- Properly fit students with bicycles and helmets and have them line up in the “parking lot,” a designated holding area.
- Demonstrate and practice proper signaling for turns and stops with students.
- Remind students that comfort with letting go of the handlebar in order to signal is a skill that requires practice, and that this is the time to practice these skills.
  - See diagram
  - Right turns are signaled with an outstretched right arm, left turns are signaled with an outstretched left arm, and stops are signaled with the left arm, bent at the elbow so that the upper arm is parallel to the ground and the lower arm and hand are perpendicular to the ground.
- Remind students of the “power pedal” method for starting, and demonstrate (see Handling Skills lesson).
- Explain to students that they will be expected to ride between the chalk lines or markers, to signal appropriately before the left and right turns, and to come to a complete stop at the stop sign. After re-starting, they will be expected to return to the parking lot, and to come to a second complete stop before re-entering the parking lot.
- Review the procedure for stopping correctly
- Explain to students that this is not a race.
- Send students onto the course one at a time, leaving a few seconds between riders.
- Have all students have complete the course (several times is optimal), and assess student practices and progress.
- Use pictures in Appendix I for reference.

**Plan for Independent Practice:** Incorporated into the procedure, above. In addition, students should be encouraged to practice the skills from this lesson at home and to share with their parents/guardians.

# Understanding the Cycling Environment

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**Closure (Reflect Anticipatory Set):** Debrief the lesson with students. How did it go? What did you learn today? Why is signaling and being predictable important?

Remind students of their pledge to practice safe cycling.

Discuss what students might share at home from this lesson.

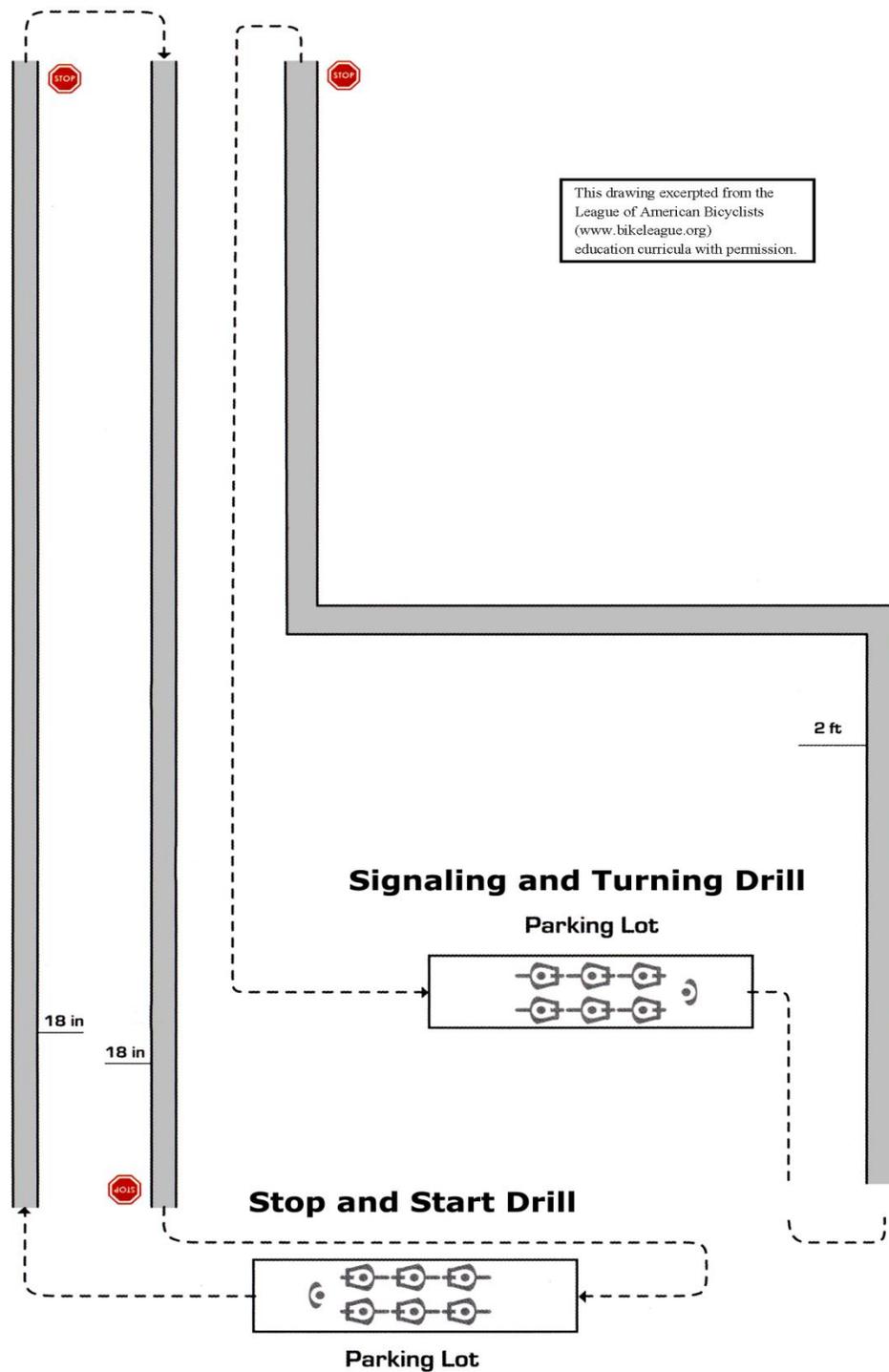
**Assessment Based On Objectives:** Incorporated into the lesson procedure.

To assess student proficiency with the goals specific to this lesson, you might:

- Have students ride an assigned course for assessment
- Have students demonstrate their knowledge of proper signaling
- Have students demonstrate proper procedures for riding safely on sidewalks or streets .



# Understanding the Cycling Environment



**LESSON D**  
**CYCLING AND YOUR HEALTH**



### Cycling and Your Health

This lesson may be taught as a gym lesson or as a classroom lesson. If bicycling equipment is not available, students may view the slideshow, discuss the health benefits of cycling, and produce life-sized graphics to illustrate the ways in which cycling promotes fitness and good health.

If cycling equipment is available, students must be properly fit to bicycles and helmets. Matching students to appropriate equipment and fine tuning their fit takes time.

Students who do not know how to ride bicycles may require extra instruction and/or assistance. It is recommended that qualified adults be enlisted to address such situations and to instruct and practice with new bicycle riders in order to meet the needs and preserve the dignity of all students. The League of American Bicyclists ([www.bikeleague.org](http://www.bikeleague.org)) lists cycling resources by ZIP code; contact a local cycling instructor, a bicycle shop or bicycle coalition to enlist volunteer help in your community. An after school or free-period bike club might also provide some basic instruction for new riders.

# Cycling and Your Health

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**Lesson Plan Title:** Cycling and Your Health

**Concept / Topic to Teach:** Cycling for the promotion of fitness and health

**Academic Standards Addressed:** 10.4.3 A-D, F  
(Health, Safety and Physical Education)

**Standards as they relate to bicycling:** How cycling promotes fitness and health

**General Goal(s):** To teach students that bicycling is a fun and enjoyable way to be active

**Specific Objectives:** Students will understand the health benefits of cycling

Students will demonstrate that cycling is good for overall health

**Time Required:** 30 minutes

**Required Materials:** Slide show and provided written material  
Informational handout: “The Health Benefits of Cycling”  
Optional homework assignment sheet

**If cycling equipment not available:** large paper (from a roll)  
Markers or crayons

**If cycling equipment is available:** Bicycles  
Helmets  
Hard-surfaced, safe area for riding bicycles

**Anticipatory Set (Lead-In):** Lead class in brainstorming a list of the health benefits of cycling

Possible student responses:

Cycling helps your heart

It’s good for your leg muscles

It’s a good way to get the exercise you need every day

**Step-By-Step Procedures:**

- Show slideshow and discuss each slide. See provided material. Encourage discussion.

# Cycling and Your Health

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- Following the slideshow, return to your brainstormed list to generate a more complete set of the health benefits of cycling.
- **If cycling equipment is not available:**
  - assign students to small groups of two or three
  - Give each group a large piece of paper and some markers so that each group can create a life-sized outline of the human body (made by drawing around a student who lies on the paper).
  - Offer students some ideas for titles for their creations, such as “The Health Benefits of Cycling.”
  - Assign each group the task of consulting the brainstormed list to label their “body” to show what parts of the body benefit from cycling.
  - You might set a minimum number of benefits that must be shown for a “body” to be considered complete.
  - Encourage students to decorate their “bodies” with details to show individuality.
  - Share small group creations and hang in the classroom and/or in the school for others to see.
- **If cycling equipment is available:**
  - Ride laps for fun around a closed school parking lot or playground.
  - Take the time to fit students to bicycles and helmets, to set boundaries, and to remind students of what they’ve learned in previous lessons about starting, stopping, signaling, and riding in a straight line and predictable manner.
  - Implementation of this activity requires some organization and careful monitoring. Remind students of the pledge their pledge to practice safe cycling. Students should be reminded that it is not the purpose of the activity to race, and should be allowed to begin riding one-by-one with some space and time between riders.

**Plan for Independent Practice:** Dependent on lesson. Students should be encouraged to share with their families what they’ve learned about the benefits of cycling.

Students who were able to complete this lesson on bicycles may be assigned the homework (attached ).

**Closure (Reflect Anticipatory Set):** Encourage students to practice on their own at home, and remind them of their pledge to practice safe cycling.

# Cycling and Your Health

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**Assessment Based On Objectives:** Dependent on lesson implementation

## Slideshow Information

The following information is provided to enhance the slideshow, if you choose to do so. Titles alone can be read to expedite the show, or as much or little additional information can be offered to stimulate discussion.

Slide 1: **Cycling for health and fun!** Cycling is a great way to stay healthy and to have fun. These kids are on the sidewalk. Cyclists are allowed to ride on roads with cars, and on bike paths and bike lanes, and if you're twelve years old or younger, on the sidewalk (as long as the sidewalks are not posted to show that bicycles are not allowed.)

Slide 2: **For fresh air.** Cycling is a clean and healthy way to get some fresh air. In many parts of the world, the only transportation people have is by bicycle. In many parts of the world, people just choose to ride bikes instead of to drive cars.

Slide 3: **For a healthy lifestyle.** This man is commuting to work on his bike. Commuting is a popular way to stay in shape. This man is riding on a regular street that has a lane designated for bicycles.

Slide 4: **For a sense of well being.** You're never too young to get started. There are ways to carry many things on bicycles, including kids! This bike has special equipment for carrying a small child and a bunch of groceries. The red, round thing under the little kid is a motor that can be used to help the bike go when it's heavy with items being carried.

Slide 5: **For fun!** These kids are getting lots of exercise in a BMX race. BMX racing is bicycle racing on dirt tracks.

Slide 6: **For learning and growing.** Learning new things is a life-long process.

Slide 7: **For maintaining good health.** Older adults love cycling to stay fit and healthy. It's great for their hearts and lungs, their legs, and their joints.

Slide 8: **For building strong bodies.** This family is exercising together. Their bike is specially adapted to hold four people. This family is building strength and having fun by riding together.

Slide 9: **For building muscles.** Cycling builds strong legs, arms, hearts and lungs, and core muscles. You get a really good workout when you race like these women are doing.

# Cycling and Your Health

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Slide 10: **For fun with friends.** These guys are having fun and helping their minds stay healthy and stress-free. The guy in the middle is Lance Armstrong, the most famous cyclist today.

Slide 11: **For building strong joints.** These riders are building strong joints. Cycling is a low-impact activity, which means it's easy on your joints and allows them to get stronger the more you ride. These riders are Keirin racing, which is a very fast, short race on a track. It is very popular in Japan.

Slide 12: **For relaxation.** Touring by bicycle is a great way to see the world. These people are packed up to be on the road for a while. Their bikes have special racks and bags that let them carry everything they need – even their dogs!

Slide 13: **For endurance.** Cardiovascular endurance is exercising your heart and lungs to be very efficient, or very good at what they do. This is a triathlete. She is riding her bike here, but she will also run and swim in this race. Her race number is written on her arm. She has a special bike with aerodynamic handlebars to help her be as fast as she can be.

Slide 14: **For weight loss.** Cycling, like any regular exercise, promotes weight loss. These people are getting fit by cycling!

Slide 15: **For balance and coordination.** Balance and coordination are skills that take practice. This woman practiced hard to become good at what she does.

Slide 16: **For all seasons.** Special equipment can keep cyclists active all year round. This bike has special snow tires on it, and the rider is wearing special clothes that keep him warm and dry.

Slide 17: **For everyone.** Handicapped riders have access to special equipment that allows them to enjoy cycling. There are bikes that can be pedaled with your hands, and adapted bikes for people with many disabilities. This rider gets around in a wheelchair when he's not on his bike. He does not have the use of his legs.

Slide 18: **For solitude.** Getting away from it all is good for your soul.

Slide 19: **Forever.** Cycling has been popular for centuries. These men are getting ready to race their high wheelers. Bicycle racing was the most popular sport in the United States in the 1890s!

## **The Health Benefits of Bicycling**

Exercise can improve your health and help prevent health problems, and cycling is a great way to stay healthy.

How cycling helps you stay healthy:

### **Muscles**

Cycling helps you build muscles, especially in your legs, rear end, back, and upper arms.

### **Heart**

Your heart's a muscle! Aerobic exercise (that works the large muscles in your arms and legs) helps your heart by making it work more efficiently during exercise and rest – so it can beat for a long time.

### **Joints**

Cycling is a low-impact activity, so it helps build joint strength and does not cause the cartilage in your joints to break down, which hurts.

### **Weight Control**

Regular physical activity, like cycling, can help people lose extra weight.

### **Mental Health**

Exercise, especially outdoors, can help you stay happy and energetic all day long.

### **Balance and coordination**

Riding a bike helps you learn to balance, and the more you practice, the more coordinated you will become.

### **Stamina**

Cycling works your heart and lungs so that they can learn to work longer and longer without getting tired.

### **Prevention against disease**

You can keep your body healthy by giving it plenty of exercise. Exercise like cycling can help you avoid diseases like diabetes and heart disease.

# Cycling and Your Health

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Name: \_\_\_\_\_

## The Health Benefits of Cycling

Draw a picture of yourself in the space below. Draw your whole body, from your head to your toes.

Think about what we talked about in class, and use the handout “The Health Benefits of Cycling” to label some of the parts of your body that can benefit from bicycling.

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**LESSON E**  
**CYCLING IN YOUR COMMUNITY**



## Cycling in Your Community

This lesson may be taught as a classroom lesson with many different options: inviting a guest speaker, taking a field trip, plan and map a route to a local park or other destination. Bicycles are not necessary, and several ideas for lesson expansion are included.

**Lesson Plan Title:** Cycling in Your Community

**Concept / Topic To Teach:** Suitable places to ride and adults who can help

**Academic Standards Addressed:** 10.4.3.A, B, F  
(Health, Safety and Physical Education) 10.5.3 F

**Standards as they relate to bicycling:** Identifying appropriate areas to ride  
Identifying local bicycling resources  
Riding with knowledgeable adults

**General Goal(s):** To teach students the basics of safe bicycling practices with use of facilities and resources in their own communities

**Specific Objectives:** Students will recognize that there are appropriate areas for children and families to ride bicycles

Students will become familiar with local cycling resources

**Time Required:** Dependent on how lesson is run

**Required Materials:** Slide show of bicycling facilities

**Anticipatory Set (Lead-In):** Survey of student knowledge on local cycling facilities and resources: Where are good places for kids to ride bikes? Who has been to a local bicycle shop? Are there bike paths in our municipality? Do adults in our area commute to work by bicycle? Does anyone ride his/her bike to school?

Remind students of their pledge to practice safe cycling. Explain to them that though they will someday be riding on roads with vehicular traffic, they are still acquiring the skills it takes to be able to do that safely. Students' abilities to ride in complex environments will increase with age and practice.

# Cycling in Your Community

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## Step-By-Step Procedures:

Show students the Bicycling Facilities slide show. Explain each slide and encourage discussion.

Options for expansion of the lesson:

- Contact a local bicycle coalition and invite a guest speaker who can address children's bicycling
- Visit a local bicycle shop or invite an owner or mechanic to speak
- Contact a League Cycling Instructor through the League of American Bicyclists to speak about children's cycling
- As a class, plan (and map) a route from your school to a local park or quiet neighborhood
- Plan a "Ride to School" day and organize teacher-led "bike busses" that students can join to safely ride to school
- Visit a local Rails-to-Trails facility and meet with a Rails-to-Trails officer
- Visit a local State Park with bicycling facilities
- Invite a local policeman trained in children's bicycle safety to speak

**Closure (Reflect Anticipatory Set):** Dependent on lesson, but include a reminder of the students' pledge to practice safe cycling.

**Assessment Based on Objectives:** Dependent upon lesson

## Cycling in Your Community

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Communities and municipalities differ greatly in their available bicycle resources. The following list is provided to aid in the location of facilities and expertise in the field of cycling. In addition to the resources listed below, you may find local bicycle shops with a quick internet search for retailers and/or repair shops near your location.

League of American Bicyclists

[www.bikeleague.org](http://www.bikeleague.org)

right click on: "Cycling in your area"

Enter your ZIP code and select a radius in miles

For instance, if you enter 16915 and 50 miles, you'll find bicycle shops, advocacy organizations, bike clubs, and cycling instructors.

If you live in a more urban area you'll also find groups rides, lectures on bicycle-related topics, etc.

Rails-to-Trails Conservancy

<http://www.railstotrails.org/index.html>

Books and Pennsylvania Rail-Trail Guides available

Trails by state:

[www.TrailLink.com](http://www.TrailLink.com)

Pennsylvania has 144 trails covering 1,655 miles

Pennsylvania State Parks

[www.dcnr.state.pa.us/stateparks/](http://www.dcnr.state.pa.us/stateparks/)

Many have bicycle paths and trails with a variety of lengths, terrain, paving, or aggregate surfaces

PENNDOT resources:

[www.dot.state.pa.us/bike/web/links.htm](http://www.dot.state.pa.us/bike/web/links.htm)

Links to publications such as The Bicycling Directory of Pennsylvania

The Pennsylvania Walks and Bikes organization

<http://www.pawalksandbikes.org/>

Adventure Cycling Association

[www.adventurecycling.org](http://www.adventurecycling.org)

The Bicycle Access Council

<http://www.bicycleaccess-pa.org>



## Cycling in Your Community

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Harrisburg Bicycle Club

[www.harrisburgbicycleclub.org](http://www.harrisburgbicycleclub.org)

Bicycle Coalition of Greater Philadelphia:

<http://www.bicyclecoalition.org/>

Bike Pittsburgh:

<http://bike-pgh.org>

Centre Region Bicycle Coalition:

[www.centrebike.org](http://www.centrebike.org)

Allentown/Bethlehem area Bicycle Coalition:

<http://car-free.org/wic/cat.html>

Wilkes Barre area bicycle lane advocacy group:

<http://car-free.org/wic/cat.html>

Lebanon Valley Bicycle Coalition:

<http://lebanonvalleybicycleclub.net/>



**APPENDIX I**  
**TEACHER USE**



# Appendix I

The following images are provided for teachers. These images illustrate important concepts and procedures necessary for the teaching of the lessons for Handling Skills, Understanding the Cycling Environment, and Bicycle Injury and Prevention.

### 1. Stand-over height

The rider of an appropriately sized bicycle can stand, straddling the bicycle with both feet flat on the ground, and can lift the handlebars 1-2 inches before hitting his or her pelvic bone. In addition, the rider can comfortably reach the handlebars when he is seated. When matching students with bicycles, it is important that these rules be followed to ensure student safety.



### 2. Seat height

Bicycle seat height is adjustable. Ideally, a rider will show a slight bend in the knee when her foot is at the very bottom of the pedal stroke. To adjust seat height for a rider, the bike should be held in a stationary position while the rider sits on the saddle and places her feet on the pedals. As the rider pedals backwards (so that the bike remains stationary), watch one foot as it reaches the bottom of the pedal stroke. Adjust seat height accordingly.



### 3. Helmet fit (front view)

A properly fit bicycle helmet sits level on the wearer's head. The front edge of the helmet is slightly higher than the wearer's eyebrows and the wearer should be able to see the brim of the helmet when he glances upwards. Helmets worn tilted up to expose the forehead, a common mistake, will not protect the wearer's head in the event of a crash.

## Appendix I

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The chin strap is securely buckled so that two fingers (and no more) can be placed between the strap and the rider's chin. The rider should be able to open her mouth and should feel comfortable when the strap is buckled.

Even when un-buckled, a properly fit helmet will not move when the wearer shakes his head from side to side.



#### 4. Helmet fit (side view)

A properly fit bicycle helmet sits level on the wearer's head from any view! Notice that the side straps are adjusted so that the toggles sit just below the wearer's ears and that the straps create a tight V-shape.



#### 5. The "Power Pedal" position shows the proper position of the rider when preparing to begin riding.

The rider stands over the frame of the bicycle ahead of the saddle, and with one foot firmly on the ground. The other foot rests at a "2 o'clock" position on a raised pedal. To begin, the rider pushes down on the power foot. As the bike begins to roll forward, the second foot is placed on its pedal and the rider mounts the saddle.

Note that bicycles with gears should be shifted into a low, or easy-to-pedal gear, so that pedaling can begin smoothly and with little effort.

## Appendix I

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### 6. Signaling

Practicing signaling first with riders standing still...



and later with riders actively riding.



### 7. Stopping effectively requires practice.

Good stopping practice requires braking with both hands, if using hand brakes, and a shift of the rider's weight so that her center of gravity lends weight to the rear wheel of the bike.

When anticipating a stop while riding a geared bicycle, the rider should shift into a low, easy-to-pedal, gear in order to prepare for starting to ride again after stopping.

## Appendix I

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### 8. ABC Hand Check

A is for air. Check tires for air pressure by squeezing each tire to see that it has adequate air. Bicycle tires are stamped with ranges for acceptable air pressure, and bicycle pumps come with gauges to measure air pressure, but a quick hand check before each ride will help riders determine if tire pressure is exceptionally low.



Tire stamps are often tricky to find (here, below the rider's thumb), as they are often stamped directly into the rubber of the tire and do not contrast in color.



While checking for air pressure, riders should also inspect their tires for damage and wear.

B is for brakes. Check brakes by squeezing hand brakes to make sure they engage easily but firmly and coaster brakes by pedaling backwards. Brakes should be tested before each ride.

## Appendix I

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C is for chain. Run the chain by moving the pedals backwards (on a geared bike). Inspect the chain to see that it runs smoothly. If using a geared bike, shift gears to ensure that the entire mechanism (drive train) runs smoothly.



Hand is for handlebars. Straddle the front wheel of the bike and attempt to turn the handlebars. Bars should not move without the wheel also moving.



The ABC Hand Check also includes a quick check of the entire bicycle, which is what riders should do as they begin each ride. In the first few yards of every ride, brakes and gears should be tested and the rider should be aware of anything that doesn't feel smooth and normal.