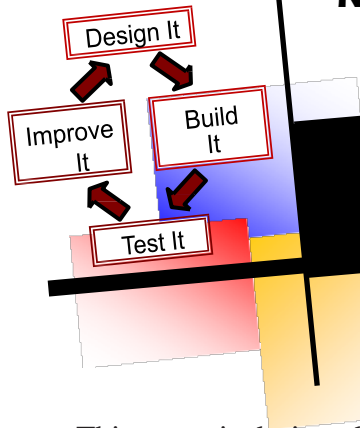


NATIONAL YOUTH ENGINEERING CHALLENGE



Bicycle Rodeo Challenge



September 24-26, 2017

Tippecanoe County Fairgrounds, Lafayette, IN

This event is designed to provide youth enrolled in youth-based bicycle programs with an educational activity. Contestants will have an opportunity to demonstrate their knowledge of the bicycle and the rules associated with its operation as well as demonstrate their skills in bicycle riding using a road bicycle with a 26 inch (or larger) wheel. The exception will be a 24 inch multi-gear bicycle only when needed to fit the contestant's physical size. Safety will be stressed throughout the event.

Contestants will wear properly fitted Consumer Product Safety Commission (CPSC) or SNELL approved bicycle helmets whenever they are riding a bicycle in the Lafayette, IN area and on the grounds of the national event site.

Contestants are encouraged to bring their own bicycles and helmets for use in this event. The bicycle must properly fit the individual and meet accepted safety standards.

Bicycles will be provided for contestants unable to provide their own. **(Please request a bicycle at least three weeks prior to the event so one can be obtained.)** The Safety Inspection Form on B-9 will be used to inspect a bike.

The event is designed to be a practical safety demonstration and attempts to simulate actual operating conditions. However, in this event situation, the contestants *must remain seated* while riding in the skill events. The visual presentation component is to demonstrate an understanding of a science, engineering and technology aspect of bicycling.

Designated judges will preside over the event and their decisions will be final.

This contest will include (time limits as shown):

1. Written examination - 40 multiple choice and true-false questions (20 minutes)
2. Parts Identification - Identify 10 parts in 5 minutes (5 minutes)
3. Sabotaged Bike Exercise (Identification of maintenance and safety problems) (5 minutes)
4. Visual Presentation on STEM (science, technology, engineering or math) topic (5-10 minutes)
5. Skill Riding Events

- Straight-line test
- Double obstacle test
- Double zigzag obstacle test
- Figure eight steering
- City Street Course

References

- State and federal "Rules of the Road"
- 4-H Bicycle Publications, 1-3 and Helper's Guide, National 4-H Bicycle Series
- Additional 4-H literature

Scoring: The points-off system will be used with penalty points given for errors. The winning contestant will be the one with the lowest total score.

It is the policy of the Cooperative Extension Service that all persons shall have equal opportunity and access to the programs, services, activities and facilities without regard to race, color, sex, religion, national origin, age, marital status, parental status, sexual orientation, disability or status as a veteran.

BICYCLE PARTS IDENTIFICATION

Instructions All Contestants:

Write the tag number on the line to the left of the most correct name for each part.

- | | | |
|-----------------------------|----------------------------|---------------------------|
| _____ Adjustable wrench | _____ Cone wrench | _____ Pedal, right |
| _____ Axle | _____ Crank arm | _____ Pump |
| _____ Axle nut | _____ Crank extractor | _____ Quick release lever |
| _____ Bearings | _____ Crank set | _____ Rear reflector |
| _____ Bearing, cone | _____ Cone wrench | _____ Rim |
| _____ Bell | _____ Derailleur, front | _____ Schrader valve |
| _____ Bottom bracket | _____ Derailleur, rear | _____ Seat |
| _____ Brake arm | _____ Down tube | _____ Seat post |
| _____ Brake cable | _____ Dust cap | _____ Seat post clamp |
| _____ Brake caliper, front | _____ Fender | _____ Seat stay |
| _____ Brake caliper, rear | _____ Fixed cup wrench | _____ Seat tube |
| _____ Brake lever | _____ Freewheel remover | _____ Shifting lever |
| _____ Brake pad | _____ Front fork | _____ Spoke |
| _____ Cable | _____ Front reflector | _____ Spoke nipple |
| _____ Cable cutter | _____ Handlebar | _____ Spoke wrench |
| _____ Cable housing | _____ Handlebar stem | _____ Tire |
| _____ Cable end | _____ Headlamp | _____ Tire levers |
| _____ Cassette | _____ Head tube | _____ Tire gauge |
| _____ Chain | _____ Headset | _____ Tire patch kit |
| _____ Chain ring | _____ Hub | _____ Top tube |
| _____ Chain stays | _____ Jockey/idler pulleys | _____ Valve core |
| _____ Chain rivet extractor | _____ Mirror | _____ Valve stem cap |
| _____ Chain whip | _____ Pedal, left | _____ Wheel |

Incorrect _____ x 5 = _____ Penalty Points

Sabotaged Bike - Identify Maintenance and Safety Issues

(Adapted from the Indiana 4-H Bicycle Program in 2012)

This event will test the bicyclist's knowledge of the bicycle's parts, care and maintenance, and safety considerations.

The event will consist of the following items:

- A bicycle is set up with ten (10) maintenance and/or safety problems.
- The bicycle used for the maintenance/ safety check may be new or used. Numerous maintenance and safety hazards may already exist on a used bicycle.
- The maintenance/safety check is conducted in a secluded area away from the bicycle event and is given to only one contestant at a time.
- Contestants are not allowed to inspect the bicycle prior to the maintenance/safety check.
- During the examination, contestants are not allowed to sit on the bicycle but can touch the bicycle.
- Contestants, using the Bicycle Maintenance and Safety Check Score Sheet, identify the maintenance and/or safety hazards and write them onto the score sheet.
- A penalty of five (5) points is assessed for each maintenance and/or safety item missed or incorrectly listed. A total of 50 penalty points is possible.
- A time limit of five (5) minutes is imposed.

After the Judge has given instructions, contestants will have 5 minutes to look at the bicycle and to write down the items noted as maintenance and/or safety related that should be corrected before the bicycle is ridden.

Judging

The contestant will be given instructions, a pen or pencil and the score sheet and be timed by a judging supervisor for 5 minutes. A list of bike parts or systems can be created and given to contestants but it must list at least twice as many items as there are problems on the bicycle. Other resources may be used that satisfy this requirement. Answers should be short – a part name or short problem description.

Use the score sheet on following page.

Resources:

- Use the Bicycle Inspection Sheet as a check list in this event
- Use the Bicycle Parts Identification Sheet as a check list in this event

Contact person:

David S. Ross, dsross@umd.edu

Contestant's Name _____ State _____ Number _____

Bicycle Maintenance and Safety Check

Score Sheet

In the spaces below, identify the ten (10) maintenance and/or safety hazards on the sabotaged bicycle. The time limit is 5 minutes.

Penalty is 5 points per items missed or incorrectly listed. Maximum of 50 penalty points.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Scoring; Number incorrect = _____ X 5 = _____ penalty points

Visual Presentation on Bicycling on a STEM Topic

Your task is to research and develop a visual presentation based in Science, Technology, Engineering and Math (STEM) on a bicycle/bicycling related topic. Many wonderful products and innovations in the bicycling world have come from science and engineering being used to develop technologies. The goal of this presentation is for you to learn about STEM by selecting a topic, researching it, and making a presentation to tell others what you have learned. It will be a learning experience for both you and the listener. While there are social aspects/considerations to many of these topics, sociology is not a part of STEM in this engineering event.

Instructions:

1. Select a topic from the list provided or find one on your own.
2. Research your area of interest. Gain information from books, the internet, talking to knowledgeable people or other sources. Make notes and document the sources that you use in your presentation. Your research is to focus on science, engineering or technology related to your topic.
3. Demonstrate and/or explain aspects of why your topic of STEM works and how it applies to bicycling, such to the structure of a bicycle, the operation of a bicycle and/or the use of a bicycle.
4. Present your findings. Give the judges a brief outline of your presentation and then make a 5-10 minute presentation using any visual aids (posters, parts, demo of mechanical item) or power point slides. Work toward a 7 minute talk during your preparation plus one minute for judges' questions.
5. Visuals should be easily readable at 20 feet.

The research you collect needs to be applicable to the STEM initiative. To help, here are some definitions:

- Science: Observation, identification, description, investigation and experimentation to learn about and explain our surroundings, such as that some materials have friction against other materials.
- Engineering: Practical application of the sciences, such as chemistry, physics or biology to construct products such as engines, buildings and medicines, such as developing rubber tread designs that adhere to some road surfaces and thereby roll a bicycle wheel forward.
- Technology: The product of science and engineering used to achieve an objective, such as the manufacturing process for mass production of some kinds of bicycle tires with treads.

How to begin:

Think about your area of interest from all three aspects (STEM) and jot down an example of 1 or 2 for each.

Example Topic: brake cables

Science: What materials are used and why (strength, wear, friction)

Engineering: How are individual products used to produce a cable and why (design)

Technology: What are the differences in manufacturing of various brake cables

What makes one brake cable cost more than another (materials, function)

What do bikers/bike mechanics look for most in a good brake cable

From these ideas, decide what topic and approach above you want to further investigate and begin your research. As you research, you may realize that you have changed how you approach your topic. This is okay, and just a part of the learning process. In such case, take your findings (bicycle clothing, carbon fiber, sports medicine, etc.) and see how they influence areas or fields outside of the bicycle world. It is understandable that you may not go on to a career in the bicycle world.

Suggested Topics for a Presentation:

1. Mechanics

- Centrifugal Force
- Gearing, ratios and satellite gears
- Types of chain and rod transmissions
- Braking and changing centers of gravity
- Balancing and steering through turns
- Bearings – types (ball, roller) and friction
- Structural elements
- Electric circuits
- Product development and design; CAD
- Handicap equipment
- Apparel
- Navigation, weather and performance software or apps

2. Safety

- On/off road
- Personal
- Pedestrian
- Automobile
- Actions and other techniques of safety and riding
- Visual perceptions of safety, including SIPDA (Scan, Identify, Predict, Decide; Act)

3. Medicine

- Kinetics and movements of bones and muscles

- General health, brain operation and perception
 - Sports
 - Rehabilitation
 - Trauma
4. Health and Fitness
 - Nutrition and diet
 - Special event preparation
 - Specific needs
 5. Planning
 - Bike route development
 - Urban Cycling

Judging

A judging sheet follows. Two or more judges should set up a table for any visual displays and a projector and screen for power point presentations. Contestants should present an outline of their presentation to the judges. Contestants should be given 5 to 10 minutes to make their presentation. A specific time limit can be used but must have been given to the contestants before they prepare the presentation. A penalty can be assigned for going over the time limit.

Contact person:

David S. Ross, dsross@umd.edu

Contestant's Name _____ State _____ Number _____

Bicycle STEM Presentation Score Sheet

Presentation Title: _____

Start Time: _____ End Time: _____ Time used: _____

Each person evaluating a presentation is to score all items in Division I and II. It is important that each item is scored and additions are double-checked for accuracy. The scoring team should compare scores and arrive at a combined score for each presenter.

Judge's Comments	Factors for Scoring	Points	
	I. Subject Matter (60 points)		
	Presentation Development (10 pts) Central theme, clear, logical, orderly, time, summarized		
	Subject Matter (20 pts) Appropriate depth for age (level of content), research & resources explored, references,		
	Speech Value/Effectiveness (10 pts) Ideas, logic, original thought, current, relevant		
	Accurate Information (10 pts) Up-to-date, complete, accurate		
	Judges' Questions (10 pts) Correct answers, keeps composure, exhibits depth of knowledge		
	II. Presentation (40 points)		
	Voice/Communication (10 pts) Audible, clear, body language, gestures		
	Manner (10 pts) Confidence, enthusiasm, handles unexpected happenings well		
	Correctness (10 pts) Grammar, pronunciation, word selection		
	Visuals/Supplies & Equipment (5 pts) Attractive, readable, integrated well		
	Physical (5 pts) Inclusive of all abilities, neat, appropriate appearance		
	Total Point Score (out of 100 pts)		

Score in Penalty points = 100 – Total Point Score of _____ = _____.

It is the policy of the Cooperative Extension Service that all persons shall have equal opportunity and access to the programs, services, activities and facilities without regard to race, color, sex, religion, national origin, age, marital status, parental status, sexual orientation, disability or status as a veteran.

Contestant's Name _____ State _____ Number _____

BICYCLE EVENT SAFETY INSPECTION

	<u>NO</u>	<u>YES</u>		<u>NO</u>	<u>YES</u>
SIZE:			REAR WHEEL: (Cont.)		
Driver straddle frame with both feet on ground?	___	___	Tire properly inflated?	___	___
Driver straightens leg when seated on saddle with one heel on low pedal?	___	___	Tire tread in good condition?	___	___
Seat post at least 2 inches in frame?	___	___	Wheel centered in fork?	___	___
Seat (saddle) level and tight?	___	___	PEDALS:		
HANDLEBARS:			Pedal bearing properly adjusted?	___	___
In line with wheel and symmetrical?	___	___	Pedals intact and tight?	___	___
Adjusted to height below driver's shoulder level?	___	___	Pedal treads intact and tight?	___	___
Tightly fitted, horizontally and vertically?	___	___	CHAIN:		
Tubing ends plugged?	___	___	Chain tension correct (3/8-1/2 inch play)?	___	___
Grips in place and tight?	___	___	Sprocket teeth fit properly?	___	___
FRAME:			Chain in good condition?	___	___
Are all tubes in line without bends or kinks?	___	___	If multispeed bike, does gear change operate properly?	___	___
FRONT WHEEL:			BRAKES:		
Wheel runs true, side to side and round?	___	___	Brakes operate properly?	___	___
Are all spokes in place and properly tuned?	___	___	<u>If Hand Brake:</u>		
Rim free from dents or kinks?	___	___	Cable taut, without frayed ends?	___	___
Wheel bearing properly adjusted?	___	___	Brake shoes tight?	___	___
Tire properly seated on rim?	___	___	3/16 inch of rubber on shoe?	___	___
Tire properly inflated?	___	___	Hand span for handlebar brake correct for individual?	___	___
Tire tread in good condition?	___	___	OTHER EQUIPMENT:		
Wheel centered in fork?	___	___	Saddle tight and in good condition?	___	___
REAR WHEEL:			All reflectors in place and in good condition?	___	___
Wheel runs true, side to side and round?	___	___	<u>If Equipped for Night Riding:</u>		
All spokes in place and properly tuned?	___	___	Front and rear lights operate?	___	___
Rim free from dents or kinks?	___	___	The lights of proper type?	___	___
Wheel bearing properly adjusted?	___	___	Audible warning device?	___	___
Tire properly seated on rim?	___	___	Rider wearing an approved helmet?	___	___

Special remarks by Inspector (deficiencies to be corrected) _____

Number of "No" Answers _____

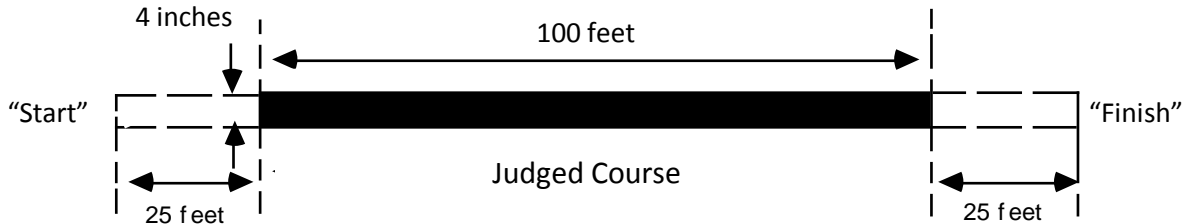
x 5 = Total Score _____

Test No. 1 — Straight Line Test

Purpose:

To determine the driver's ability to maintain control of the bicycle while riding a straight line.

Diagram:



Procedure:

From a riding start at slow or average speed, the rider travels the entire length of the line at all times.

Scoring:

	<u>No. times</u>		<u>Penalty points</u>
1. Having either tire leave the course	_____	x 2	_____
2. Tire stays off course for major part of 5 foot interval	_____	x 3	_____
3. Touching foot to the ground	_____	x 5	_____
4. Sliding wheel	_____	x 5	_____
5. Standing up	_____	x 5	_____
6. Unsafe/disruptive activity**		20-500	_____
Total number of penalty points			_____

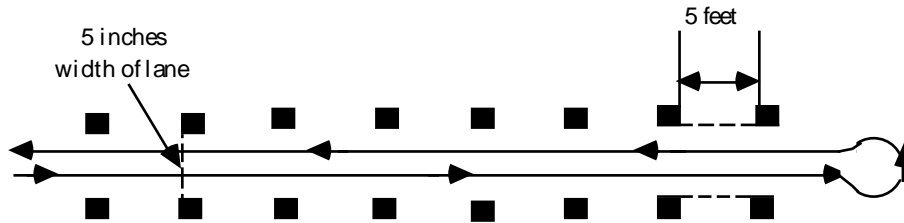
*(Examples: failure to follow instructions; riding, not walking bike; failure to use helmet)
 At judge's discretion, consultation with event coordinator/superintendent required.

Test No. 2 — Double Obstacle Test

Purpose:

To determine the driver's ability to gauge limited space on a straight line.

Diagram:



Procedure:

From a riding start, the driver maneuvers slowly between the pairs of obstacles without either tire touching any obstacle. When the driver has gone the entire distance, he or she turns and repeats the performance in the opposite direction.

Scoring:

	<u>No. times</u>		<u>Penalty points</u>
1. Touching foot to ground	_____	x 5	_____
2. Having either tire touch an obstacle	_____	x 2	_____
3. Not passing between every pair of obstacles – either or both tires	_____	x 5	_____
4. Skidding wheel	_____	x 5	_____
5. Standing up	_____	x 5	_____
6. Unsafe/disruptive activity*		20-500	_____

Total number of penalty points _____

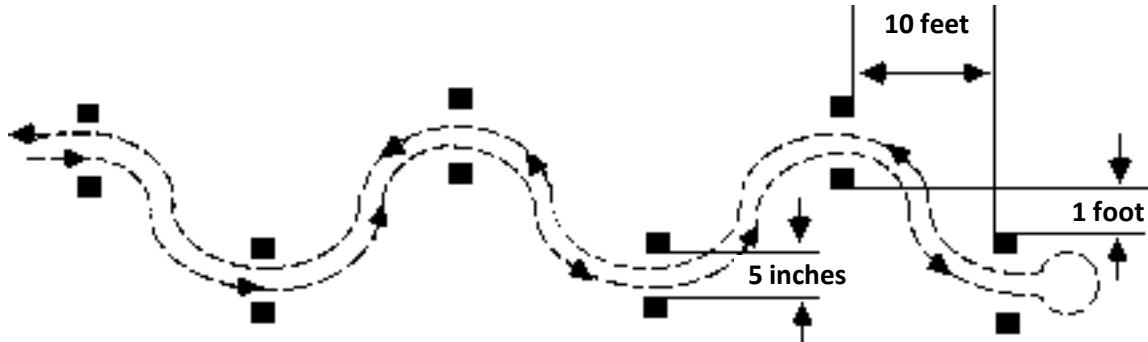
*(Examples: failure to follow instructions; riding, not walking bike; failure to use helmet)
At judge's discretion, consultation with event coordinator/superintendent required.

Test No. 3 — Double Zigzag Obstacle Test

Purpose:

To test the driver's ability to maneuver and gauge limited space on a zigzag line.

Diagram:



Procedure:

From a riding start, the driver zigzags at a slow rate of speed between the pairs of obstacles without either tire touching an obstacle. When the driver has traveled the entire distance, he or she turns and repeats the performance in the opposite direction.

Scoring:

	<u>No. times</u>		<u>Penalty points</u>
1. Touching foot to ground	_____	x 5	_____
2. Having either tire touch an obstacle	_____	x 2	_____
3. Not passing between every pair of obstacles – either or both tires	_____	x 5	_____
4. Skidding wheel	_____	x 5	_____
5. Standing up	_____	x 5	_____
6. Unsafe/disruptive activity*		20-500	_____

Total number of penalty points _____

*(Examples: failure to follow instructions; riding, not walking bike; failure to use helmet)
 At judge's discretion, consultation with event coordinator/superintendent required.

Test No. 4 — Figure Eight Steering

Purpose:

To evaluate the driver's ability in steering and balance.

Diagram:



Procedure:

The driver takes a moving start with both hands on the handlebars and makes *three* complete figure eights.

Scoring:

	<u>No. times</u>		<u>Penalty points</u>
1. Touching foot to ground	_____	x 5	_____
2. Not using both hands on the handlebars	_____	x 5	_____
3. Having either tire touch/cross any border line (per 5 foot interval)	_____	x 2	_____
4. Off course – either or both tires (per 5 foot interval)	_____	x 3	_____
5. Standing up or skidding wheel	_____	x 5	_____
6. Unsafe/disruptive activity*		20-500	_____

Total number of penalty points _____

*(Examples: failure to follow instructions; riding, not walking bike; failure to use helmet)
At judge's discretion, consultation with event coordinator/superintendent required.

Test No. 5 — City Streets Skills

The **purpose** of the **city streets skills event** is to provide bicyclists an opportunity to demonstrate the necessary life skills to safely navigate a bicycle through a simulated traffic environment. The course should not be considered an equal substitute for a real street environment, but does attempt to meet certain cognitive and motor skills necessary for real life situations. Bicyclists are scored on scanning, turning, stopping, and how they react to hazards in traffic. **Bicyclists are bicycle drivers** who must follow rules of the road for **vehicle drivers**.

City Streets is designed to include three streets and two intersections, but event planners can easily adapt local courses to fit the local environment. The layout of the actual course is not as important as ensuring the necessary skills are fairly tested. Bicyclists should learn, practice, and build their skills by bicycling in various real street conditions. City Streets can be used by the instructor to teach; however, students should be aware that distances and hazards are substantially less than in real street dimensions and situations.

Materials for laying out course: You will need a large area such as a parking lot, a section of street that can be controlled, or the inside of a large building such as a fairgrounds building or warehouse. Look for asphalt or concrete surfaces when possible. Depending on the selected site, a variety of materials may be needed to lay out the course. Multi-colored tapes, softball field markers (remember to use flour rather than lime) chalk, old garden or fire hoses and lawn chair webbing are all forms that have been used in the past. Signs can be made or purchased. Cones or other items can be used to simulate street hazards.

City Streets Course/Score Sheet: The course layout and score sheet have been combined to make it easier for the judges to score each contestant. (A separate score sheet is included if the layout is changed locally.) In the upper right hand corner is a place for name or number and state or county. In the upper left hand corner are instructions and explanations where you will find dimension recommendations for course layout. These will vary depending on your site. It is not required to put intersections and streets at the same angle as found on the score sheet. This was done in order to include all possible information on the score sheet. However, if you find you have limited physical space to work with, you may need to do something similar. Two judges are the minimum number required; more would be better for larger layouts. The bicyclist will move quickly through the course and judges must see the action and record points quickly.

Judges for City Streets: Although City Streets is considered a safety skills event, it is also about evaluating an individual's ability to handle a bicycle in traffic environments. Judges should not only have knowledge of safe handling but also a practical competency of street and highway riding. Judges are often chosen from law enforcement agencies that normally would be expected to be knowledgeable of traffic rules. If they do not have first-hand experience at riding in traffic environments, it is suggested you pair the officer with someone from a bicycling organization or club who has street skills.

Set of Performance Skills and Scoring Procedure

The skills to be tested while riding a bicycle are grouped into five categories:

1. Scanning, or looking back for oncoming traffic while riding straight ahead
2. Turning for lane changes and at intersections
3. Stopping by planting foot, which is separate from slowing or braking
4. Unexpected car or other hazard, maneuvering safely around it
5. Railroad crossing for which a cyclist has a choice of walking or riding across tracks

In addition, bicyclists must show signaling and general handling control at all times.

Scoring is via penalty points, and thus better bicyclists earn few points (as with golf). The course can be divided into two zones for judging. Both judges will have a score sheet and should check error location directly on the course/score sheet. The occurrence of the penalty is noted on the separate scoring lines, multiplied and added accordingly. Each set of performance skills is weighted by multiples of five points. Both score sheet totals are combined. The sum of all weighted errors will be the score for the City Streets event.

Locations for judges are recommendations only, as individual judges may prefer to walk behind the cyclist although the bike moves quickly or observe the contestant from other angles. Judge #1 is responsible from the start to the "scan front tire" of the unexpected car hazard. Judge #2 starts immediately at the "sign right" after the car through the end of the course.

History of City Streets

In the early 1990s, Indiana 4-H adopted for the state fair a bicycle event called City Block from Minnesota 4-H. A few years after Purdue University began hosting the National Youth Engineering Challenge the Bicycle Event Chairs worked with the host Indiana to introduce the City Block as a pilot program. Two of the original six skill events used for many years were removed to add this more realistic road skill event. After several years of testing and alterations, City Streets emerged in September 2002. In September 2003, the City Streets Event was included with four other skill events as the riding portion of the national bicycle safety event.

Committee members: Dr. David S. Ross, Chairman, University of Maryland Cooperative Extension; Richard Vonnegut, Indiana 4-H Bicycle volunteer; Eric Blank, Indiana 4-H Bicycle Volunteer, and Cheryl D. Wyatt, University of Kentucky Cooperative Extension Service. May 2003.

4-H BICYCLE SKILLS "CITY STREETS"

INSTRUCTIONS	JUDGE #1 LOCATION	ENTER	JUDGE #1 LOCATION	SCANNING-	# OF ITEMS	PENALTY POINTS	CONTESTANT
<p>JUDGE #1 CAN MOVE TOWARD STREET #2 AFTER SCAN TEST</p> <p>** SCAN TEST - LOOK BACK AT JUDGE #1 TO IDENTIFY OBJECT</p> <p>L-R-L MEANS LEFT-RIGHT-LEFT</p> <p>SIGNS- ACTION VERB FOR SIGNAL</p> <p>RECOMMENDED STREET DIMENSIONS: ALL WIDTHS: 16 FT</p> <p>LENGTH DEPENDS ON AVAILABLE SPACE. SEE RECOMMENDATIONS ON STREETS</p> <p>SHOULD ALLOW FOR ADEQUATE MANEUVERING.</p>	<p>HTGNL' 06, YA WENO, ENAL O W' 1 TEERTS</p>	<p>SCAN**</p> <p>SIGN LEFT TURN</p> <p>MOVE LEFT</p> <p>SIGN SLOW</p> <p>STOP FOOT DOWN LOOK L-R-L</p>	<p>JUDGE #2 LOCATION</p>	<p>SCANNING-</p> <ul style="list-style-type: none"> * LOOK OVER WRONG SHOULDER * FAILURE TO SCAN * IDENTIFIED OBJECT INCORRECTLY** * LOST CONTROL OF BICYCLE WHILE SCANNING <p>TURNING-LANE CHANGE AND INTERSECTIONS</p> <ul style="list-style-type: none"> * GAVE WRONG SIGNAL * DIDN'T CHECK FOR TRAFFIC * IMPROPER TURNING TECHNIQUE (LEFT FROM RIGHT LANE) * LOST CONTROL OF BICYCLE WHILE TURNING <p>STOPPING-</p> <ul style="list-style-type: none"> * DIDN'T GIVE SIGNAL TO STOP * IMPROPER SIGNAL GIVEN * DIDN'T STOP BEFORE CROSSWALK * NOT A FULL STOPFOOT ON GROUND * DIDN'T LOOK LEFT-RIGHT-LEFT** * DIDN'T STOP <p>A SUBTOTAL</p>	<p>x 5 =</p> <p>x 10 =</p> <p>x 5 =</p> <p>x 10 =</p> <p>x 5 =</p> <p>x 10 =</p> <p>x 5 =</p> <p>x 10 =</p> <p>x 25 =</p> <p>A SUBTOTAL</p>	<p>STOP FOOT DOWN LOOK L-R-L</p> <p>TURN RIGHT</p> <p>SIGN RIGHT</p> <p>BRAKE</p> <p>MOVE RIGHT</p> <p>SIGN SLOW</p> <p>CHECK FRONT CAR DOOR</p> <p>PASS FRONT CAR TIRE</p> <p>MOVE LEFT</p> <p>SIGN LEFT</p> <p>SCAN LEFT</p> <p>TURN RIGHT</p> <p>SIGN RIGHT</p> <p>RAIL ROAD CROSSING</p> <p>OPTION A - STOP AND WALK ACROSS TRACK, REMOUNT, THEN EXIT.</p> <p>OPTION B - MOVE LEFT, CROSS AT 90° ANGLE, RECOVER, THEN EXIT.</p> <p>NOTE: A NARROW ROAD WOULD REQUIRE BICYCLIST TO CROSS INTO ONGOING LANE IN ORDER TO ACHIEVE SAFE ANGLE. SCAN AND SIGN ACCORDINGLY.</p>	<p>NAME OR NUMBER</p> <p>STATE OR COUNTY</p>
				<p>UNEXPECTED CAR HAZARD-</p> <ul style="list-style-type: none"> * DIDN'T SCAN LEFT * NO LEFT/RIGHT SIGNAL * DIDN'T CLEAR DOOR BY 3 FEET * DIDN'T CHECK TIRE ANGLE/MOTION <p>RAIL ROAD-</p> <ul style="list-style-type: none"> * DIDN'T SCAN BACK LEFT * DIDN'T SIGNAL TO STOP & WALK ACROSS, OR SIGNAL LEFT TO CROSS PERPENDICULARLY 	<p>x 5 =</p> <p>x 5 =</p> <p>x 10 =</p> <p>x 5 =</p> <p>x 10 =</p> <p>B SUBTOTAL</p> <p>TOTAL =</p>	<p>RECOVER</p> <p>RECOVER</p> <p>EXIT</p>	

4-H CITY STREETS WAS CREATED FOR THE NATIONAL 4-H ENGINEERING SCIENCE, AND LEADERSHIP EVENT. REPRODUCTION IS PERMITTED PROVIDED 4-H IS ACKNOWLEDGED. QUESTIONS OR RECOMMENDATIONS? CONTACT THE BICYCLE COMMITTEE AT www.4hengineering.org May 2003

Contestant's Name _____ State _____ Number _____

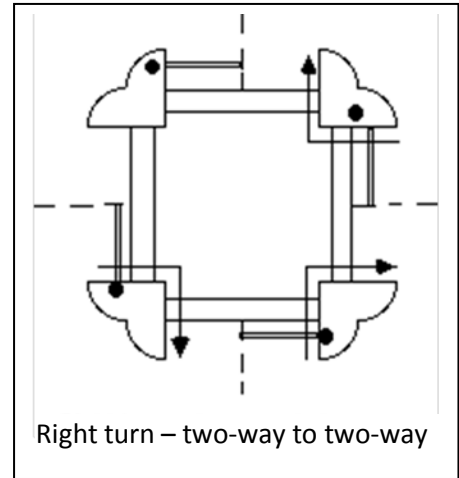
BICYCLE "CITY STREETS" SKILLS

	<i># of Items</i>		<i>Penalty Points</i>
SCANNING			
Look over wrong shoulder	_____	x 5 =	_____
Failure to scan	_____	x 10 =	_____
Identified object incorrectly	_____	x 5 =	_____
Lost control of bicycle while scanning	_____	x 10 =	_____
TURNING – LANE CHANGE AND INTERSECTIONS			
Gave wrong signal	_____	x 5 =	_____
Did not check for traffic	_____	x 10 =	_____
Improper turning technique (left from right lane)	_____	x 5 =	_____
Lost control of bicycle while turning	_____	x 10 =	_____
STOPPING			
Did not give signal to stop	_____	x 5 =	_____
Improper signal given	_____	x 5 =	_____
Did not stop before crosswalk	_____	x 5 =	_____
Not a full stop/foot on ground	_____	x 10 =	_____
Did not look Left-Right-Left	_____	x 10 =	_____
Did not stop	_____	x 25 =	_____
UNEXPECTED CAR HAZARD			
Did not scan left	_____	x 5 =	_____
No left/right signal	_____	x 5 =	_____
Did not clear door by 3 feet	_____	x 10 =	_____
Did not check tire angle/motion	_____	x 5 =	_____
RAILROAD			
Did not scan back left	_____	x 10 =	_____
Did not signal to stop and walk across, or signal left to cross perpendicularly	_____	x 10 =	_____
TOTAL			= _____

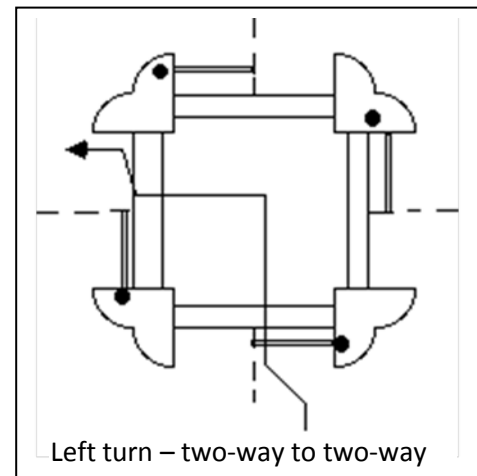
Test No. 5 City Streets Skills Event — Instructions for Scoring and Teaching

The following activities may be included in the Event. Instructions are given below for both teaching the activity and for scoring the activity. The course will involve one-way and two-way roads and proper turns from intersections. Note the illustrated examples given below and the instructions for each. Bicyclists are bicycle drivers who must obey vehicle traffic laws.

1. **Right Turn (two-way to two-way)** — Bicyclists should signal by giving a right turn signal (left arm pointing upward at elbow, upper arm horizontal or right arm fully extended parallel to ground). Before turning, the biker needs to scan for traffic. Scan Left, Right, and Left.
2. **Scanning Exercise** — The bicyclist is expected to scan to the rear before moving left in the lane and in preparation for making a turn. In the riding event, the bicyclist should identify the letter on a card held by a judge to indicate scanning was done. The bicyclist should look over the left shoulder.



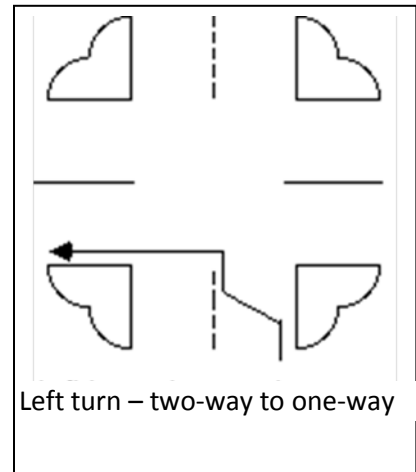
3. **Stop - Left Turn (two-way to two-way)** — Bicyclists are to stop before the crosswalk, yielding right of way to any pedestrians. While approaching the intersection and before moving to the center of road, the bicyclist should signal a left turn (left arm fully extended parallel to ground), and scan to the rear for motor vehicles. After getting to the road's center, the bicyclist should signal his or her intention to stop (left arm bent down at the elbow). Before turning, the bicyclist should scan for traffic. This scanning is to look Left, Right and Left again. After making the turn, the bicyclist should move to the center of the road. The bicyclist should signal a right turn (left arm bent upward at elbow in a right angle or right arm fully extended parallel to ground) before moving from the center to right side of the road).



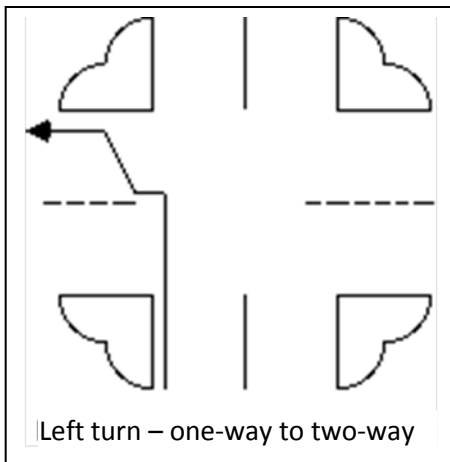
4. **Parked Car (or other hazard)** — Bicyclist should ride in a straight line and stay at least three feet from parked vehicles when passing them. Bicyclist should not weave between parked vehicles. The bicyclist should look at the front tire of an occupied parked car while passing to detect any motion and to note the direction the car would move into traffic. The front tire shows any motion and direction.

5. **Left Turn (two-way to one-way)** — A bicyclist should signal a left turn by fully extending left arm parallel to ground. The left turn signal must be given before moving to the center of two-way street. An additional left turn signal may be given after moving to the center of street but prior to making the left turn.

Note: The second left turn signal is optional and the biker will *not* be penalized for failing to give the signal. Before turning (moving left), bicyclist should **scan** for traffic.



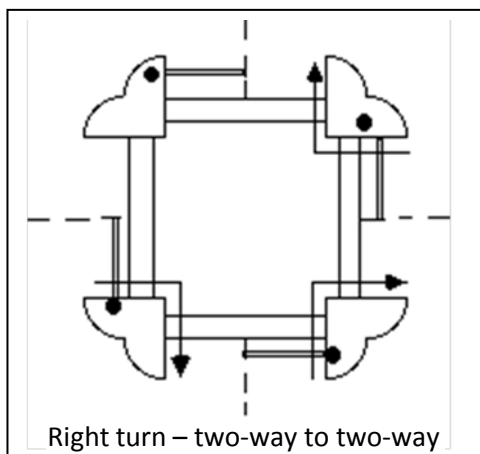
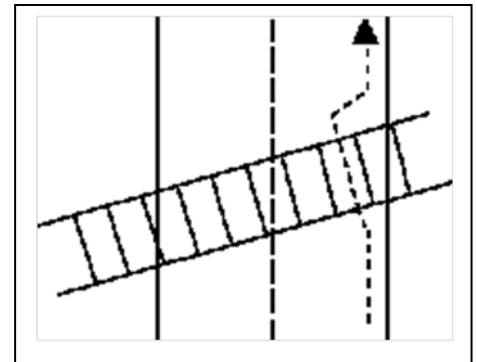
6.



Stop - Left Turn (one-way to two-way) — For teaching purposes, draw a crosswalk or use an existing one. The bicyclist must stop before the crosswalk, yielding right of way to any pedestrians. While approaching an intersection, the bicyclist should signal a left turn (left arm extended parallel to ground) to indicate the intention to turn left at the intersection. The bicyclist must come to a complete stop. Before turning, the bicyclist should scan for traffic (Left, Right, Left). After making the turn, the bicyclist should signal a right turn (left arm bent upward in a right angle or right arm fully extended parallel to ground) before moving from the center to the right side of the road.

7. **Railroad Tracks** — Approaching a railroad crossing, the bicyclist should give the slowing down (left arm bent down at elbow) signal. Two ways of crossing a railroad track are: a) dismount bike and walk across tracks, or b) slow down and ride bike across tracks at a 90-degree angle to the rails (see below).

The biker must look both directions for a train prior to crossing the railroad track. The biker also should look behind, prior to crossing the tracks, to ensure the biker does not weave in front of a motor vehicle while crossing.



8. **Right Turn (two-way to two-way)** — Bicyclist should signal a right turn (left arm bent upward in a right angle or right arm fully extended parallel to ground). Before turning, the bicyclist should scan for traffic (Left, Right, and Left).