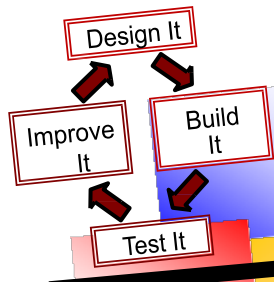


NATIONAL YOUTH ENGINEERING CHALLENGE



Lawn Tractor Challenge

September 24-26, 2017

Tippecanoe County Fairgrounds, Lafayette, IN

This event is designed to give youth participating in the Lawn Tractor-focused educational programs an opportunity to demonstrate their knowledge and skills in the areas of lawn care, business management, and lawn and garden tractor operation, maintenance and safety, while competing with other youth. Safety is stressed throughout this contest.

This contest will include (time limits as shown):

1. Written examination (*20 minutes*)
 2. Parts/Materials Identification (*15 minutes*)
 3. Lawn Tractor Safety
 4. Lawn Tractor Driving
- } (*8 minutes simultaneously*)

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

Participant Limitation

The participant will be physically large enough to operate the tractor without help from others or bypassing the tractor safety interlock systems.

Tractor Operation

The driving portion gives youth participating in this contest an opportunity to demonstrate their skill in operation of small tractors. Safety in work habits and equipment operation is stressed throughout the event. The participant will operate a lawn and garden tractor through the prescribed course.

Scoring

Penalty points will be assessed for errors in written examination, parts identification, safety, and poor operation. The individual with the lowest total score will be declared the winner.

Practice Period

Each participant will be given limited time (not more than 4 minutes) to study and get acquainted with the machine and its controls. The tractor may be operated in the immediate area of the contest during the familiarization but not through the course.

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.

References

- Care and Operation of Small Gasoline Engines
- Operating Groundskeeping Equipment

www.aavim.com
1-800-228-4689

- Compact Equipment: Engines
- Electronic and Electrical Systems
- Compact Equipment: Safety Management for Landscapers, Grounds - Care Businesses and Golf Courses

John Deere Publishing
http://www.deere.com/en_US/services_and_support/manuals/john-deere-publishing.page

- State Extension Lawn and Garden Care Publications

Contestant's Name _____ State _____ Number _____

NATIONAL YOUTH LAWN TRACTOR CHALLENGE

| EVENTS | PENALTY POINTS |
|-----------------------------|----------------|
| Written Examination | _____ |
| Parts Identification | _____ |
| Safety | _____ |
| Operation | _____ |
| Total Penalty Points | _____ |
| (Low score wins) | |

Event No. I. Written Examination

Will consist of 25 multiple choice questions pertaining to the Lawn Tractor program and the operation, care maintenance, and safety of lawn tractors, including business management and lawn and turf management.

Rules:

1. Four penalty points will be given for each question answered incorrectly or unanswered.
2. Time limit 20 minutes.

Scoring: Questions missed _____ x 4 = _____ Total Penalty Points

Event No. II. Parts/Materials Identification

Will consist of a group of 25 numbered items which must be identified. Participant will place the item number beside the most correct item name on a list. Items or parts used in the Lawn Tractor program will be included (tractor and equipment parts, business items, lawn and turf material).

Rules:

1. Each item to be identified will be numbered.
2. Time limit 15 minutes

Scoring: Items missed _____ x 4 = _____ Total Penalty Points

Event No. II — Lawn Tractor Identification

Parts to be identified have numbers attached to them. Select the most correct part name from this list. Write the corresponding number beside the name. With some larger items, pictures are used.

INSECTS

- _____ Cut Worm
- _____ Sodweb Worm
- _____ White Grub

EQUIPMENT PARTS

- _____ Adjuster, mower height
- _____ Aerifork
- _____ Assembly, transport wheel
- _____ Battery, 12-volt
- _____ Bearing ball, sealed
- _____ Bearing ball, open
- _____ Bearing, needle
- _____ Bearing, sleeve
- _____ Bearing, tapered roller
- _____ Belt, flat
- _____ Belt, "V"
- _____ Blade adapter, rotary
- _____ Blade, reel mower
- _____ Blade, rotary mower
- _____ Blade, edger/trimmer
- _____ Cable, battery
- _____ Chain, flat
- _____ Chain, roller
- _____ Clip, retainer, external
- _____ Clip, retainer, internal
- _____ Clutch, pedal
- _____ Clutch, plate
- _____ Filter, air, dry element
- _____ Filter, air, oil foam
- _____ Fuse
- _____ Gear
- _____ Heat exchanger
- _____ Holder, fuse
- _____ Hose, hydraulic
- _____ Hydraulic lift cylinder
- _____ Lawn sprinkler head
- _____ Magneto, breaker-type
- _____ Magneto, solid state
- _____ Motor, hydraulic
- _____ Muffler
- _____ Pin, cotter (cotter key)
- _____ Pin, drawbar

- _____ Pin, hair
- _____ Pin, lynch
- _____ Pin, rolled
- _____ Pin, split
- _____ Plug, oil drain
- _____ Pulley, flat belt
- _____ Pulley, idler (tightener)
- _____ Pulley, "V" belt
- _____ Seal, oil/grease
- _____ Spreader, broadcast
- _____ Spreader, drop or thrust
- _____ Sprocket
- _____ Starting safety interlock component
- _____ Tie rod end
- _____ Tiller drag bar
- _____ Tiller tine
- _____ Tire, tractor, front
- _____ Tire, tractor, rear
- _____ Trans-axle
- _____ Tube, tire
- _____ Valve cap, tire
- _____ Valve core
- _____ Valve stem
- _____ Wheel lug bolt
- _____ Wheel lug nut
- _____ Wheel, mower

PLANTS AND SEEDS

- _____ Clover
- _____ Grass seed
- _____ Legume seed
- _____ Kentucky bluegrass

MECHANIC AND GARDEN TOOLS

- _____ Chuck, tire inflator
- _____ Clipper, grass
- _____ Clipper, hedge
- _____ Gage, spark plug gap
- _____ Gage, thickness or feeler
- _____ Gage, tire inflation
- _____ Hose, garden

- _____ Nozzle, garden hose
- _____ Spark tester
- _____ Valve spring compressor
- _____ Wrench, Allen (hex)
- _____ Wrench, socket, 1/2" drive
- _____ Wrench, socket, 3/8" drive
- _____ Wrench, spark plug
- _____ Wrench, ratchet handle 1/2"
- _____ Wrench, ratchet handle 3/8"
- _____ Wrench, T handle, 1/4" drive
- _____ Wrench, T handle, 3/8" drive
- _____ Wrench, torque 1/2"
- _____ Wrench, torque 3/8"

WEEDS AND GRASSES

- _____ Annual bluegrass
- _____ Carpetweed
- _____ Common chickweed
- _____ Common purslane
- _____ Crabgrass
- _____ Dandelion
- _____ Goosegrass
- _____ Ground Ivy or Creep Charlie
- _____ Knot weed
- _____ Plantain
- _____ Prostrate Spurge
- _____ Quackgrass
- _____ Shepherdspurse
- _____ White clover
- _____ Yellow nutsedge

OTHER

- _____ Card, business
- _____ Fertilizer, slow release
- _____ Fertilizer, granular
- _____ Glasses, reading
- _____ Glasses, safety
- _____ Ledger, accounting
- _____ Limestone, ground
- _____ Shoe, dress
- _____ Shoe, steel toed safety
- _____ Shoe, street

Items missed _____ x 4 = _____ Total Penalty Points

Contestant's Name _____ State _____ Number _____

Event No. III — Lawn Tractor Safety

Procedure: Each participant will be scored throughout the lawn tractor operation portion of the event. At some predetermined time, the safety judge will put an obstacle in front of the equipment being operated by the participant. The participant is expected to stop immediately and remove the obstacle from the course (hand it to the safety judge).

| Scoring: | Number Times | Penalty Points |
|-----------------|-----------------|-------------------|
|-----------------|-----------------|-------------------|

Prestart Check (Report each to safety judge) (5 minutes maximum)

- | | | |
|--|------|-------|
| 1. Failure to check fuel level | (25) | _____ |
| 2. Failure to check oil level | (25) | _____ |
| 3. Failure to check coolant level | (25) | _____ |
| 4. Failure to observe tire inflation | (25) | _____ |
| 5. Failure to observe loose or missing parts | (25) | _____ |

Obstacle Removal

- | | | |
|---|-----------|-------|
| 1. Distance traveled before stopping (inches) | _____ x 5 | _____ |
| 2. Failure to set brakes/park | (50) | _____ |
| 3. Failure to disengage blade | (50) | _____ |

Starting Safely

- | | | |
|--|------------|-------|
| 1. Failure to check neutral position/parking brake | _____ x 25 | _____ |
| 2. Failure to disengage clutch while starting engine | _____ x 50 | _____ |

Driving Safely

- | | | |
|---|-------------|-------|
| 1. Start forward motion smoothly | _____ x 25 | _____ |
| 2. Failure to ride on seat | _____ x 100 | _____ |
| 3. Skidding or spinning tractor wheels (Scuffing of inside wheel on turning does not count as a skid.) Skid of the front tractor wheel will not count until the skid equals or is greater than the width of the tire. | _____ x 50 | _____ |

Mounting and Dismounting Safely

- | | | |
|--|-------------|-------|
| 1. Failure to set brakes before dismounting (Transmission set in park or locked position counts as brakes locked.) | _____ x 50 | _____ |
| 2. Failure to bring tractor to complete stop before dismounting. | _____ x 100 | _____ |

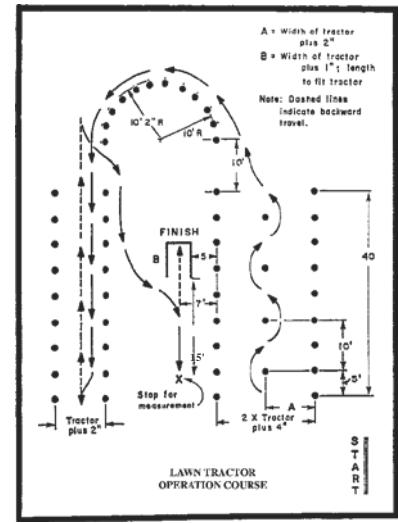
Other Safety

- | | | |
|---------------------------|-------------|-------|
| 1. Using tobacco products | _____ x 100 | _____ |
| 2. Extra riders | _____ x 100 | _____ |
| 3. Other unsafe practices | _____ x 100 | _____ |

TOTAL SAFETY PENALTY POINTS _____

Contestant's Number _____
 Name _____
 State _____

Event No. IV — Lawn Tractor Operation
 (Course outline on reverse side)



Scoring:

1. Each stop or slightest interruption in the continuous movement of the machine, where not required by the course
2. Each change of direction other than necessary
3. Each occurrence where any part of the machine extends over the boundaries of the course
4. Each occurrence of hitting a marker (Moving the marker the greater part of one inch or more will be considered knocking the marker over.)
5. Each occurrence of knocking a marker over
6. Riding the clutch: Continuously
 Occasionally
7. Each grating of gears/failure to release parking brake
8. Each engine stall or raced
9. Each failure to follow directions
10. Each marker passed when operating outside of the two inches allowed mowing around the curb

| Number Times | x | Penalty Points | _____ |
|-----------------|---|-------------------|-------|
| _____ | x | 10 | _____ |
| _____ | x | 10 | _____ |
| _____ | x | 10 | _____ |
| _____ | x | 20 | _____ |
| _____ | x | 40 | _____ |
| _____ | x | 100 | _____ |
| _____ | x | 10 | _____ |
| _____ | x | 10 | _____ |
| _____ | x | 10 | _____ |
| _____ | x | 5 | _____ |
| _____ | x | 10 | _____ |

Measurements

11. Inches (to the nearest inch) from the stop-stake over 1 inch (measured from the most forward part of the tractor) _____ x 2 _____
 12. Inches (to the nearest 1/2 inch) the tractor is off center in the shed _____ x 2 _____
- Time in excess of 8 minutes, 100 points. One point per second after eight minutes added to the 100 points. (Time in excess of 8 minutes = _____)

Total Operation Penalty Points _____

