



Georgia FFA Association

LAWN MOWER OPERATIONS - SENIOR CDE

I. OVERVIEW

The Lawnmower Operations & Maintenance contest is an individual event, with three parts.

1. The contestant will answer questions on a written exam dealing with lawnmower operations, maintenance, and safety.
2. The contestant will have to determine the problem and the best solution to the problem in ten problem solving questions.
3. The contestant will have a practical driving test where he/she will exhibit his/her skills in driving a commercial Zero Turning Radius (ZTR) lawnmower through a designed course.

II. PURPOSE

The Lawnmower Operations & Maintenance contest is designed to develop skills in operating commercial lawnmowers and various pieces of machinery safely, as well as maintaining the commercial lawnmower in a safe and productive matter.

III. ELIGIBILITY

This event is open to students in grades 9-12 who are agricultural education students and are paid members of a chartered FFA chapter. Each student's name must appear on the chapter's FFA roster at least 10 days prior to competition above the chapter level. ***Chapters are limited to one contestant per chapter.***

IV. SPECIAL NEEDS REQUEST

To report any special needs or request special services for a student to compete in a Career Development Event or FFA Award area (Area or State level), it is the responsibility of the FFA advisor to provide a detailed and specific request and explanation in writing. Requests should include written documentation from the school system verifying the IEP and need being requested. Written requests must be submitted to the CDE Superintendent prior to registering for the CDE/event (at least 3 weeks prior to the date of competition).

V. RULES

The following rules will govern the driving:

1. Time begins when the lawnmower crosses the start/finish line.
2. No one will be allowed in the career development event area except the contestant and officials.
3. Safety violations will be noted by the judges. Three safety violations will disqualify the contestant at the discretion of the judges.
4. Time ends when contestant switches the mower off after returning to the shed.
5. Course layout will be printed in the bulletin.
6. A lawnmower of a like model will be available for practice and acclimation.
7. The top two individuals from each area will advance to state competition.



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VI. EVENT FORMAT

The contest will consist of three parts:

Part I – Written Exam – 20 Points. Contestants will *have 30 minutes to* answer twenty multiple-choice questions on lawnmower servicing, safe operation, care, maintenance, and repair.

Part II – Problem Solving – 20 Points. Contestants will *have 30 minutes to* answer ten multiple-choice problem solving activities relating to lawnmower servicing, safe operation, care, maintenance, and repair.

Part III – Lawnmower Driving – 60 Points. The following lawnmower operations will be tested:

- a. Explaining pre-warm up procedure.
- b. Driving the lawnmower out of the shed area.
- c. Driving the lawnmower through a course lined with stakes not more than two feet apart with 6” clearance on each side.
- d. Returning the lawnmower to the “shed” in the reverse position, the wheels of the mower must be centered in the “shed.” Width of the shed will be the same as the alley width.
- e. Checking/setting mowing height (height to be determined by the judge).

VII. SCORING

Part I – Written Exam – 20 Points (Each correct answer counting 1 point).

Part II – Problem Solving – 20 Points (Each correct answer counting 2 points).

Part III – Lawnmower Driving – 60 Points (Refer to the driving score card that is attached).

*Pre-Warm Up:

1. Failure to check:

- | | |
|-------------------------------|-----------|
| a. Engine oil level_____ | 40 points |
| b. Air filter_____ | 30 points |
| c. Hydraulic fluid_____ | 30 points |
| d. Engine cooling system_____ | 30 points |
| e. Air in tires_____ | 20 points |
| f. Belt tension and wear_____ | 10 points |
| g. Fuel level_____ | 10 points |
| h. Wheel lugs_____ | 10 points |
| i. Battery_____ | 10 points |
| j. Cutting blades_____ | 30 points |
| k. Safety equipment_____ | 20 points |
- (Belt shields, ROPS, Brake lock, Seat belt, Safety starting switch)

2. Driving Lawnmower

- a. Efficient completion of skill – One point deducted for each second over 150 seconds (2-1/2 minutes).
- b. Attempting to start lawnmower with motion control levers engaged – number of times X 10.
- c. Mower deck height set and discharge chute lowered when mowing – number of times X60.
- d. Deck height & discharge chute raised before entering shed – number of times X 60.
- e. Pull-ups & backups to improve position in shed or lane – number of times X 10
- f. Markers scraped – number of times X 20.
- g. Markers moved or upset – number of times X 40.



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- h. Operating mower in the proper direction – number of times X 30.
 - i. Number of inches lawnmower wheels off center in the “shed” – number of times X 20.
 - j. Stalling engine – number of times X 20
3. Safety measures when driving lawnmower
- a. Excess speed when turning and driving – number of times X 40.
 - b. Mounting lawnmower improperly - number of times X 20.
 - c. Dismounting lawnmower improperly - number of times X 20.
 - d. Failure to shut down mower in the proper sequence – x 60
 - e. Failure to kill or shut engine off when dismounting – 100.
 - f. Failure to applying parking brake when dismounting or lowering/raising discharge chute - 100.
 - g. Releasing brake before starting - 20.
 - h. Mower Deck (Blades) Engaged – 100.
 - i. Failure to use hearing protection – 20.
 - j. Failure to use eye protection – 20.
 - k. Used seat belt –100. (Seat belt should only be used when lawnmower equipped with roll-over protective structure – “ROPS”)

VIII. TIE BREAKERS

In the event of a tie in the overall contest, the contestant with the highest driving score will be declared the winner. Second tie breaker will be the contestant with the highest problem solving score, while third tie breaker will be the contestant with the highest written exam score.

IX. COURSE LAYOUT

1. The operation portion of this contest shall take place on a relatively level area that shall not exceed an area that measures 50' X 75'. The boundaries of this area will be marked. Any contestant that crosses the boundaries of this area during the operation portion of this competition will be disqualified.
2. The mower will be stationed in a “shed” outside of the course/alley area the boundaries of which will be clearly identified by cans, cones or other similar objects. The shed width will be not less than the mower deck - discharge chute + 12” (discharge chute must be in the up position). A start/finish line will be clearly identified on the shed boundaries and the student’s time will begin when the front wheels of the mower cross the line. Students will pull the mower straight out of the shed to begin the course and will back the mower into the shed after completion of the driving course. The discharge chute must be raised before entering the shed. The front wheels must cross the start finish line. The rear wheels of the mower should be centered in the shed. The student’s time will end when the contestant switches the mower off upon completion of the course.
3. The “alley” will consist of two 90 degree angles that form a “step” shape. (Imagine a line that runs east for 20’, turns south for 15’, and then continues east for 15’). All measurements for the “alley” will be based on this marked line. The width and all openings for the “alley” will be



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determined based upon the diagonal width of the mower (diagonal width measured from the center of the inside front wheel to the outside center of the opposite rear wheel) or the width of the mower deck + discharge chute + 12” whichever is widest, for competition.

4. An object (hammer, shoe, toy, etc.) will be placed in the alley. The contestant will need to stop the mower, turn off the engine, dismount the mower and remove the object from the alley. Then the contestant is to resume driving the through the alley.
5. An 8’ x 8’ area will be designated as an area that the contestant has to pull into and back-up for repositioning of the mower and pull into again and then back-up and resume driving through the alley.
6. Two five gallon buckets, two barrels, or two automobile tires will be placed in the course so that the contestant will have to circle each, as if they were mowing around trees, before returning the mower to the shed. These objects will be set apart determined by the diagonal width measured from the center of the inside front wheel to the outside center of the opposite rear wheel + 12 inches or the deck width + discharge chute + 12” whichever is greatest. Markers from the buckets, barrels, or tires will be set at the same width apart.
7. A marker is considered scraped when it has been touched or moved by any part of the mower. An “upset” will be considered as moving a marker from its station.
8. The course will be navigated with the mowing deck set at a cutting height to be determined by the judge and with the discharge chute lowered. The mower PTO will **NOT** be engaged.

X. REFERENCES

Lawnmower Operators Manuals (the following list is only examples not intended to be comprehensive!)

<http://www.troybilt.com/wcsstore/pics/TroyBilt/769-03502.pdf>

<http://www.troybilt.com/wcsstore/pics/TroyBilt/769-03537.pdf>

<http://www.troybilt.com/wcsstore/pics/TroyBilt/769-03532.pdf>

<https://www.managemyhome.com/mmh/user-profile/CreateUserProfileDisplay.action?>

Sears Craftsman Manuals

http://www.usa.husqvarna.com/support_manual_search.aspx

<http://www.snapper.com/manuals/#>

http://manuals.deere.com/cceomview/OMM157372_H7/Output/Index.html

<http://www.exmark.com/Manuals.htm>

http://www.usa.husqvarna.com/support_manual_search.aspx/landscapers.aspx

<http://www.snapper.com/manuals/#> Select Z Rider

http://manuals.deere.com/cceomview/OMM157372_H7/Output/Index.html

<http://www.dixiechopper.com/support.php>

Lawn Equipment Operators Manuals

Lawnmower Dealer Brochures

Small Engines by R. Bruce Radcliff (Authorized by Briggs & Stratton), Second Edition, 2004, American Technical Publishers. ISBN 978-0-8269-0012-8



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Turfgrass Science and Management by Robert Emmons, Second Edition, 1995, Delmar Publishers.
http://www.delmarlearning.com/Browse_CatalogDetail_Print.aspx?xxID=27423&isbn=1418013307

AAVIM: Related Machine Publications
Engine Manufacturer's Service and Repair Manuals

Suggested Classroom Videos:

Lawn Equipment Videos

http://www.deere.com/en_US/homeowners/safety/video.html?tm=ho&link=cnav

<http://www.dixiechopper.com/support.php>



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NAME OF CHAPTER	CONTESTANT	NO. TIMES OFF	TOTAL POINTS
PRE-WARM UP			
Failure to Check:			
A. Engine oil level			X 40
B. Air filter			X 30
C. Hydraulic fluid			X 30
D. Engine cooling system			X 30
E. Air in tires			X 20
F. Belt tension and wear			X 10
G. Fuel level			X 10
H. Wheel lugs			X 10
I. Battery			X 10
J. Cutting blades			X 30
K. Safety equipment (Belt shields, ROPS, Brake lock, Seat Belt, Safety Starting Switch) (4 pts each)			X 4
<u>DRIVING LAWNMOWER</u>			
1. Efficient completion of skill - No. seconds over 150			X 1
2. Attempting to start lawnmower with motion control levers engaged			X 10
3. Deck height set at mowing height & discharge chute lowered			X 60
4. Deck height & discharge chute raised before entering shed			X 60
5. Pull-ups & backups to improve position in shed or lane (No. times)			X 10
6. Markers scraped (Number)			X 20
7. Markers moved or upset (Number)			X 40
8. Operating mower in the proper direction			X 30
9. Number of inches wheels off center in shed			X 20
10. Stalling engine			X 20
<u>SAFETY</u>			
1. Excess speed when turning & driving (No. times)			X 40
2. Mounting lawnmower/Dismounting lawnmower improperly			X 20
3. Failure to safely dismount and remove obstacle			X -40
4. Failure to shut down mower in the proper sequence			X 60
5. Failure to kill engine when dismounting			X 100
6. Failure to apply parking brake when dismounting or lowering/raising discharge chute			X 100
7. Failure to unlock parking brake before putting mower in motion			X 20
8. Mower Deck (Blades) Engaged			X 100
9. Failure to use hearing protection			X 20
10. Failure to use eye protection			X 20
11. Used seat belt (No. of failures) (Seat belt should only be used when tractor is equipped with rollover protective structure - ROPS)			X 100
TOTAL PENALTY PTS.			
60- <u>NO. OF PENALTY POINTS X 60</u> = DRIVING SCORE			
1000			

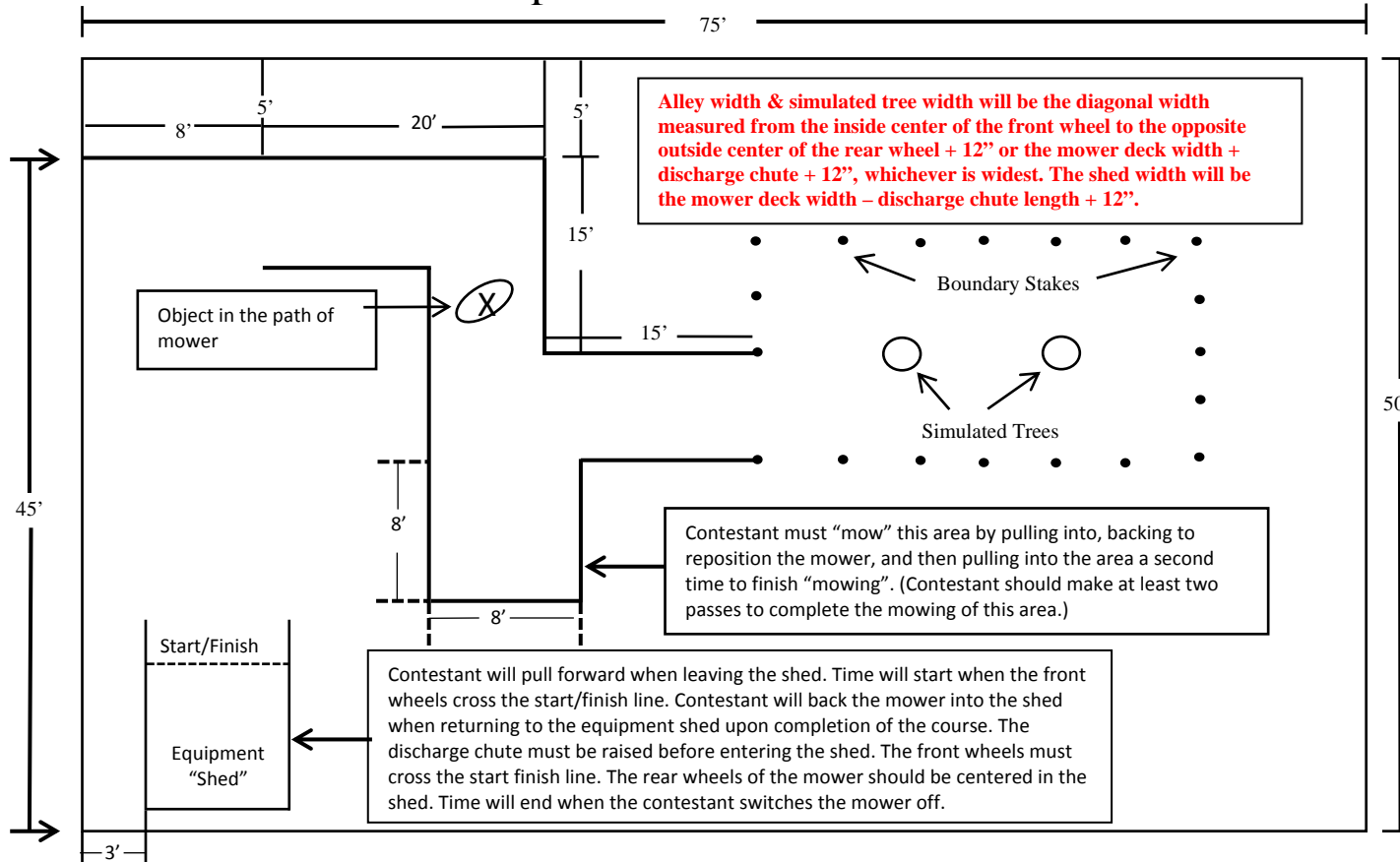
The grand total points in penalties for practice not done properly is determined by adding all points in A, B, and C above. Convert this to actual score by using the following formula:

$$60 - \frac{\text{Number Penalty Points} \times 60}{100} = \text{Driving Score}$$



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Lawnmower Operation & Maintenance – Senior





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