



# Georgia FFA Association

## Tractor Operations & Maintenance CDE

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### I. OVERVIEW

The Tractor and Machinery Operations & Maintenance CDE is an individual event, with three parts.

1. The contestant will answer questions on a written exam dealing with tractor and machinery operations, maintenance, and safety. Test questions will be generated from “John Deere Fundamentals of Machine Operations – Tractors” and a maximum of two of the other references listed in section IX below. The additional references used for 2019-2020 Area and State CDE’s will be:

- Selecting Hydraulic Fluid Pages 49 - 50, **Fuels & Lubricants**, 5th Edition AAVIM
- Unit 39 Hydraulic, Pneumatic, and Robotic Power, Pages 621 - 636, **Agricultural Mechanics Fundamentals and Applications**, 6th Edition, Ray V. Herren

2. The contestant will answer 10 problem solving questions from provided resources.

3. The contestant will have a practical driving test where he/she will exhibit his/her skills in driving a tractor and implement through a designed course.

### II. PURPOSE

The Agricultural Tractor and Machinery Operations & Maintenance CDE is designed to develop skills in operating tractors and various pieces of machinery safely, as well as maintaining the tractor and machinery 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 (1) CDE contestant per chapter.** The top two individuals from each area will be eligible to participate in the State Agricultural Tractor and Machinery Operations & Maintenance CDE.

Each participant must complete and provide the CDE superintendent with an Agricultural & Machinery Operations CDE waiver signed by the student, agricultural education teacher, and a parent/guardian in order to be eligible to participate in the CDE on the day of the event.

### IV. RULES

The following rules will govern the driving:

1. Time begins when the tractor crosses the start/finish line.
2. The contestant may position implement in the rear of the shed prior to starting the tractor. The hitch pin will be positioned in clear view of the contestant by the official at the site.
3. No one will be allowed in the career development event area except the contestant and officials.
4. Safety violations will be noted by the judges. Three safety violations will disqualify the contestant at the discretion of the judges. Safety is recognized as of utmost importance.
5. Time ends when tractor crosses the start/finish line.
6. Course layout will be printed in the bulletin with driver making a right-hand turn into the curve.

### V. EVENT FORMAT

The CDE will consist of three parts:

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

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

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Part III – Tractor Driving – 60 Points. The following tractor operations will be tested:

- A. Explaining pre-warm up procedure.
- B. Driving the tractor to the implement shed.
- C. Attaching implement (a two-wheeled implement) to the tractor.
- D. Pulling the implement out of the shed which is represented by lines of stakes, not more than three feet apart with 6" clearance on each side.
- E. Pulling the implement through a 15-degree curve lined with stakes not more than three feet apart with 6" clearance on each side.
- F. Returning the implement to the shed and backing the implement into position. Stop position will be indicated by a line located 36" from the rear of the shed. Implement tires must be located on or beyond the "stop" line.
- G. Unhooking the implement and returning tractor to the start/finish line.
- H. Contestants will have a maximum of 5 minutes to navigate the course without penalty. Time will be stopped after 7 minutes, and the contestant will be scored as a Zero (0) for incomplete.

### VI. 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 – Tractor 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. Hydraulic fluid level.....30 points
  - c. Coolant level.....30 points
  - d. Air in tires.....20 points
  - e. Belt tension.....10 points
  - f. Fuel level.....10 points
  - g. Wheel lugs.....10 points
  - h. Check battery.....10 points
  - i. PTO Shields.....4 points
  - j. ROPS.....4 points
  - k. Brake Lock.....4 points
  - l. Seat Belt.....4 points
  - m. Safety Starting Switch.....4 points
2. Driving Tractor
  - a. Efficient completion of skill – One point deducted for each second over 300 seconds.
  - b. Attempting to crank tractor with engine kill switch engaged – number of times X 10.
  - c. Pull-ups and back-ups to improve position – number of times X 10.
  - d. Excessive use of brakes – number of times X 20.
  - e. Markers scraped – number of times X 30.
  - f. Markers moved or upset – number of times X 60.
  - g. Grated gears due to improper use of clutch – number of times X 10.
  - h. Improper use of clutch (riding the clutch for 3 seconds or longer) – number of times X 10.
  - i. Number of inches implement wheels off center in shed – number of times X 20.
  - j. Failure to position the implement beyond the designated stop line – 100
3. Safety measures when driving tractor
  - a. Excess speed when turning and driving – number of times X 40.
  - b. Mounting tractor improperly - number of times X 20.
  - c. Dismounting tractor improperly - number of times X 20.



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- d. Racing engine - number of times X 20.
- e. Failure to kill or shut engine off when dismounting – number of times X 100.
- f. Locking brakes when dismounting - number of failures X 100.
- g. Unlocking brakes before starting (engaging tractor clutch) - number of failures X 20.
- h. Used seat belt – number of failures X 100. (Seat belt should only be used when tractor is equipped with roll-over protective structure – “ROPS”)

### VII. TIE BREAKERS

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

### VIII. AWARDS

Awards shall be determined each year by the Board of Trustees of the Georgia FFA Foundation. This event is made possible through the Georgia FFA Foundation as a special project of an industry sponsor or from the Foundation general fund.

### IX. REFERENCES (the following references are examples and not meant to be a comprehensive list)

Test questions will be generated from “John Deere Fundamentals of Machine Operations – Tractors” and a maximum of two of the other references listed in section IX below.

Tractor Operators Manuals

Agricultural Equipment Operators Manuals

Farm Equipment Dealer Brochures

Tractor Machinery and Equipment Websites

Georgia Ag Ed Website - Reference Materials

John Deere – Fundamentals of Machine Operation Textbooks

“Machinery Maintenance”

“Preventive Maintenance”

“Tractors”

John Deere – Fundamentals of Service Series Textbooks

“Electronic and Electrical Systems”

“Engines”

“Fuels, Lubricants, Coolants, and Filters”

“Hydraulics”

“Hydraulic Systems”

John Deere- Fundamentals of Compact Equipment Series Textbooks

“Compact Equipment: Electrical Systems”

“Compact Equipment: Engines”

“Compact Equipment: Hydraulics”

“Compact Equipment: Power Trains”

American Association for Vocational Instructional Materials (AAVIM)- “Diesel Engines”

Interstate Publishers, Inc. – “AgriScience Mechanics” –Lloyd J. Phipps & Glen M. Miller

Interstate Publishers, Inc. – “Mechanical Technology in Agriculture” –Donald M. Johnson, Joe Harper, David E. Lawver, & Phillip Buriak



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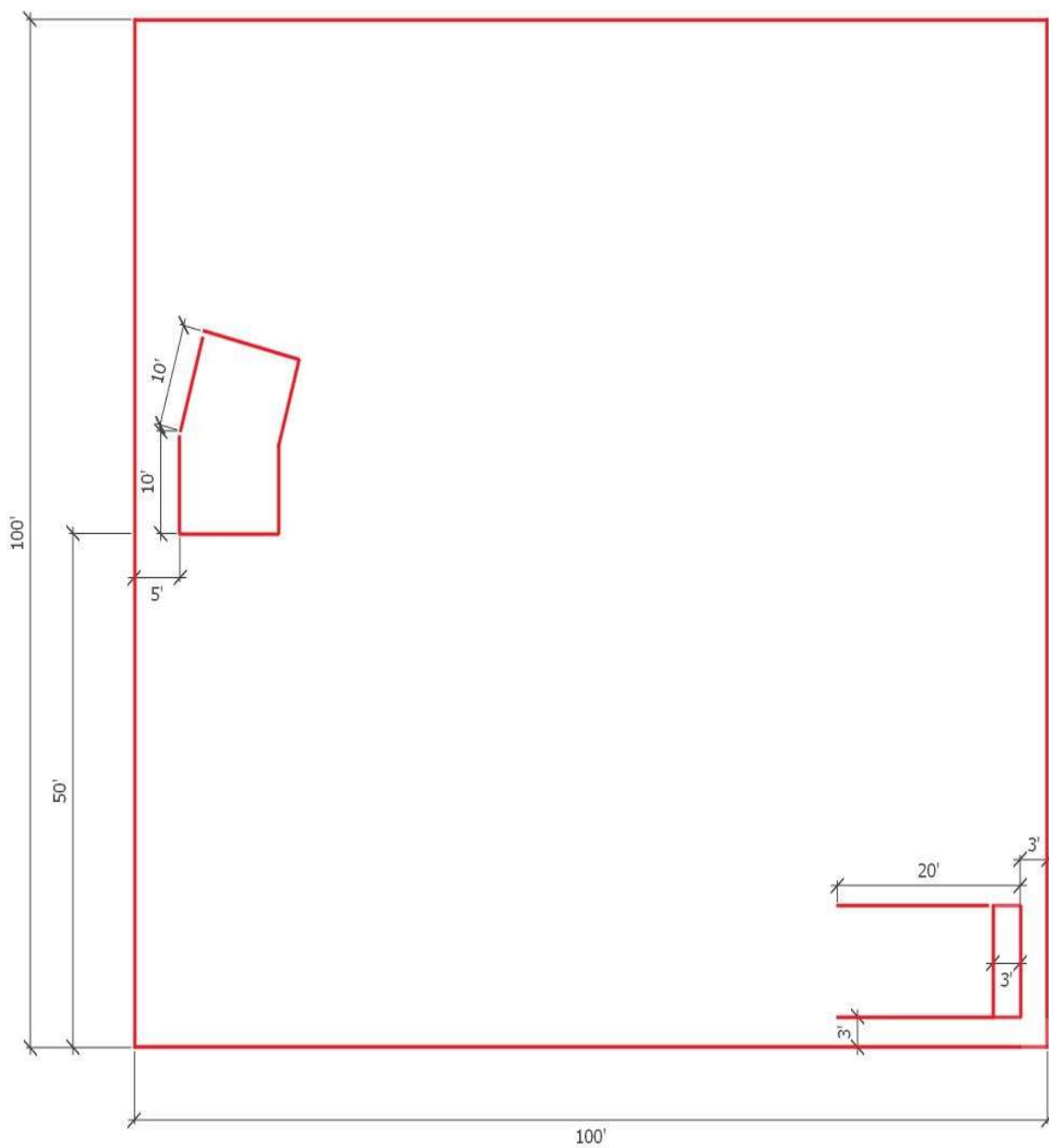
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PRE-WARM UP	NO. TIMES OFF		TOTAL POINTS
Failure to Check:			
A. Engine oil level		X 40	
B. Hydraulic fluid level		X 30	
C. Coolant level		X30	
D. Air in tires		X 20	
E. Belt tension		X 10	
F. Fuel level		X 10	
G. Wheel lugs		X 10	
H. Check Battery		X 10	
I. PTO Shields		X 4	
J. ROPS		X 4	
K. Brake Lock		X 4	
L. Seat Belt		X 4	
M. Safety Starting Switch		X 4	
<b><u>DRIVING TRACTOR</u></b>			
1. Efficient completion of skill - No. seconds over 300		X 1	
2. Attempting to crank tractor with kill switch engaged		X 10	
3. Pull-ups & backups to improve position in shed or lane (No. times)		X 10	
4. Excessive use of brakes (No. times)		X 20	
5. Markers scraped (Number)		X 30	
6. Markers moved or upset (Number)		X 60	
7. Grated gears (No. times)		X 10	
8. Improper use of clutch (No. times)		X 10	
9. Number of inches wheels off center in shed		X 20	
10. Failure to position implement on or beyond the designated stop line.		X100	
<b><u>SAFETY</u></b>	<b>NO. TIMES OFF</b>		<b>TOTAL POINTS</b>
1. Excess speed when turning & driving (No. times)		X 40	
2. Mounting tractor improperly (No. times)		X 20	
3. Dismounting tractor improperly (No. times)		X 20	
4. Racing engine (No. times)		X 20	
5. Failure to kill engine when dismounting (No. times)		X 100	
6. Locking brakes when dismounting (No. of failures)		X 100	
7. Unlocking brakes before starting (No. of failures)		X 20	
8. Used seat belt (No. of failures) (Seat belt should only be used when tractor is equipped with rollover protective structure - ROPS)		X 100	
<b>TOTAL PENALTY PTS.</b>			
<b>60- NO. OF PENALTY POINTS X 60 = DRIVING SCORE</b>			
<b>1000</b>			



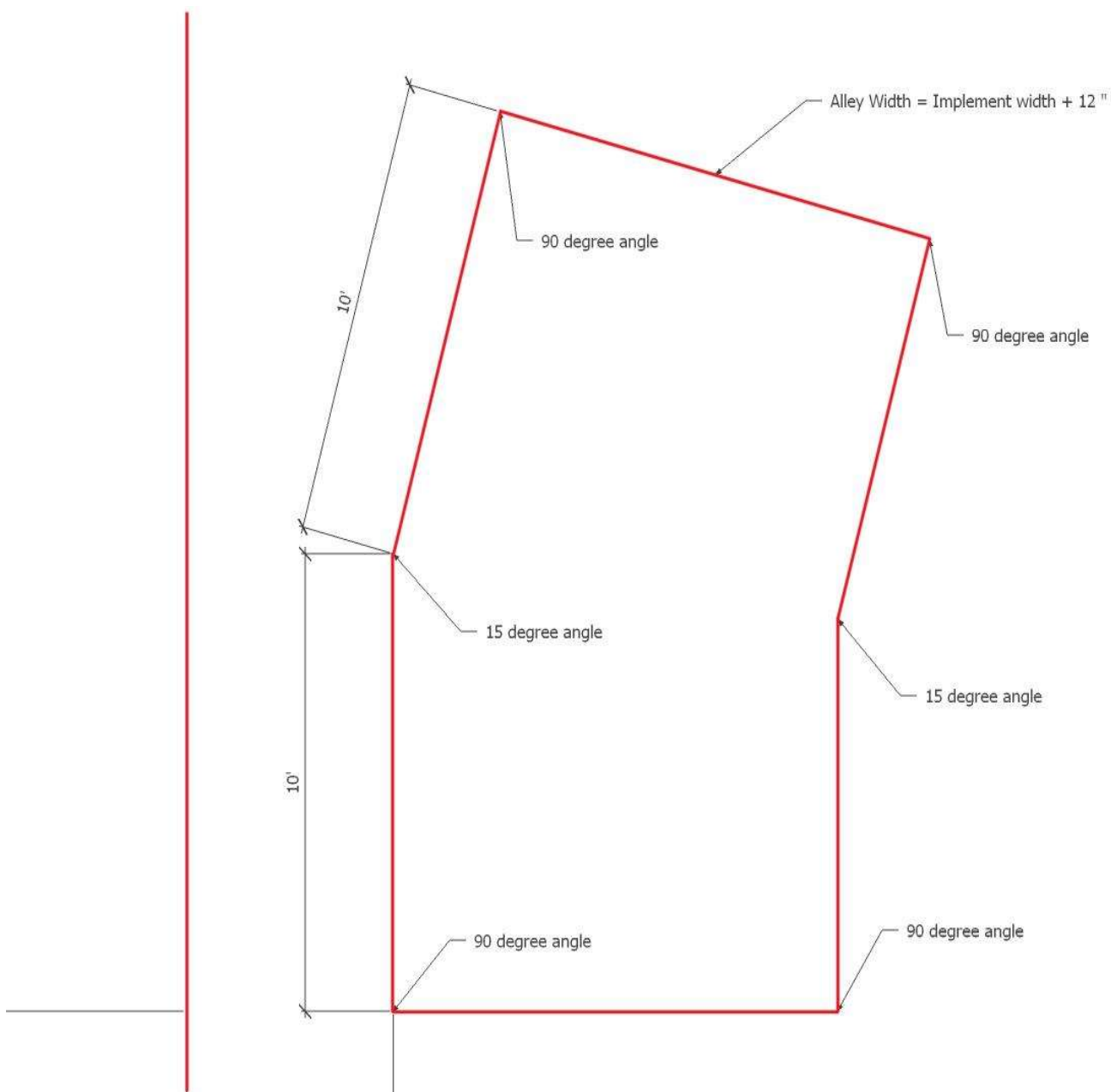
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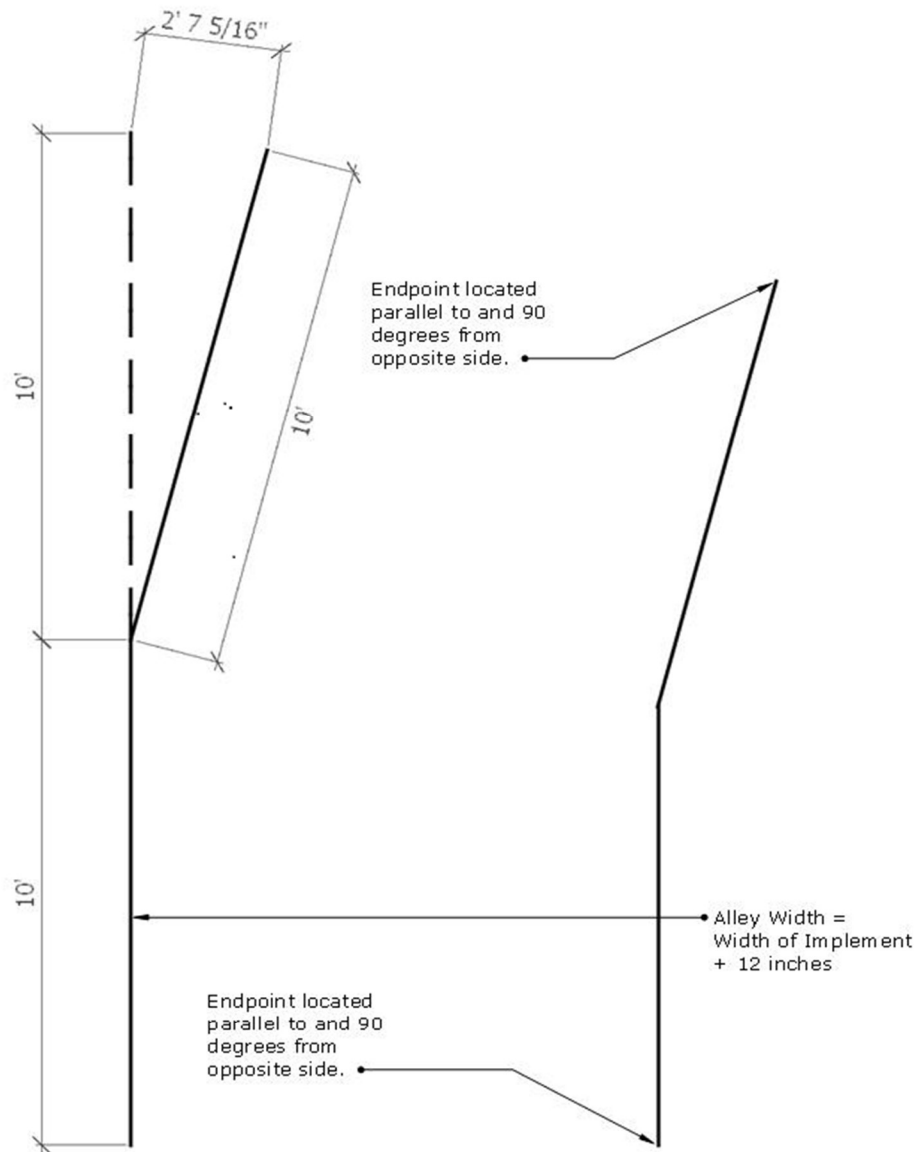
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**GEORGIA FFA ASSOCIATION – CAREER DEVELOPMENT EVENT**  
**AUTHORIZATION, WAIVER & RELEASE OF LIABILITY**  
**TO BE SIGNED BY STUDENT AND GUARDIAN**  
**THIS DOCUMENT AFFECTS LEGAL RIGHTS – READ IT CAREFULLY**

\_\_\_\_\_  
Student (Please Print Name)

\_\_\_\_\_  
Career Development Event (CDE) (Please Print)

For purposes hereof, "Student" and "CDE" shall have the meaning set forth above.

**Please Check Section Applicable on Date of Signature**

\_\_\_\_\_  
**STUDENT UNDER AGE 18:** I represent and warrant that I am the parent or legal guardian of the Student, who is under the age of eighteen (18) (the "Minor") as of the date hereof, and I, for myself and on the Minor's behalf, knowingly agree to the terms set forth herein.

\_\_\_\_\_  
**STUDENT OVER AGE 18:** I, the Student, represent and warrant I am over the age of eighteen (18) as of the date hereof, and I knowingly agree to the terms set forth herein.

1. **Permitted Activities.** I acknowledge that Georgia FFA Association (the "**FFA**") only permits Student's participation in this CDE in a manner consistent with the rules established by the FFA for the CDE. (collectively, the "**Permitted Activities**"). I acknowledge and hereby agree that Student has read the rules, or is otherwise familiar with the rules, established by the FFA for the CDE, has had an opportunity to request clarification from appropriate advisors or officials regarding any rules that are unclear to the Student, and has received sufficient training to participate in the CDE in manner consistent with the rules established by the FFA for the CDE. It is agreed and understood that Student's participation in the CDE is voluntary.

2. **WAIVER AND RELEASE.** I HEREBY EXPRESSLY WAIVE AND RELEASE ANY AND ALL CLAIMS, KNOWN OR UNKNOWN, AGAINST THE FFA, THE OWNER OF ANY REAL PROPERTY OR PERSONAL PROPERTY USED FOR PURPOSES OR IN FURTHERANCE OF THE CDE, ANY PERSON PRESENT AT THE CDE, INCLUDING WITHOUT LIMITATION ADVISORS, ORGANIZERS, JUDGES, COORDINATORS, SPECTATORS, VOLUNTEERS, DONORS, AND CO-PARTICIPANTS, AND THEIR RESPECTIVE OFFICERS, DIRECTORS, EMPLOYEES, EMPLOYERS, AGENTS, AFFILIATES, SHAREHOLDERS, SUCCESSORS AND ASSIGNS (COLLECTIVELY, "**RELEASEES**"), RELATED TO BODILY INJURY TO OR DISABILITY OR DEATH OF THE STUDENT OR DAMAGE TO ANY OF THE STUDENT'S PROPERTY ARISING OUT OF THE STUDENT'S PARTICIPATION IN OR PRESENCE AT THE CDE.

3. **ASSUMPTION OF RISKS.** I HEREBY KNOWINGLY AND VOLUNTARILY ACCEPT AND ASSUME ANY AND ALL RISKS, FORESEEABLE OR UNFORESEEABLE, KNOWN OR UNKNOWN, OF INJURY TO OR DISABILITY OR DEATH OF THE STUDENT OR DAMAGE TO ANY OF THE STUDENT'S PROPERTY, WHETHER CAUSED BY THE NEGLIGENCE OR WRONGFUL CONDUCT OF THE FFA, THE STUDENT'S ADVISOR OR OTHER MENTOR OR COACH RELATED TO THE STUDENT'S INVOLVEMENT IN THE CDE, THE ORGANIZERS, COORDINATORS, OR JUDGES OF THE CDE, CO-PARTICIPANTS, SPECTATORS, VOLUNTEERS, OR THIRD PARTIES ATTENDING THE CDE, THE OWNER OF ANY REAL OR PERSONAL PROPERTY USED FOR THE CDE, AND THEIR RESPECTIVE EMPLOYEES, EMPLOYERS, AFFILIATES, OR AGENTS. I ACCEPT PERSONAL RESPONSIBILITY FOR ANY LIABILITY, INJURY, LOSS, OR DAMAGE IN ANY WAY CONNECTED WITH THE STUDENT'S PARTICIPATION IN THE CDE. I acknowledge that the Permitted Activities involve the risk of serious bodily injury, death, and/or property damage due to the inherent risks of the Permitted Activities, which could include but are not limited to: (a) possible equipment malfunction or misuse; (b) hazards related to traversing and driving across mostly undeveloped land, including without limitation holes, uneven dirt, fence

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wire, and wild or poisonous animals or insects, (c) slipping or falling, including from elevated locations or while mounting or dismounting equipment; (d) colliding with motorized vehicles, persons, or stationary objects, (e) burns, cuts, and bruises, and (f) the Student's negligence or the negligence of other persons, including without limitation organizers, judges, and co-participants, related to the CDE. If the CDE involves interactions with animals, I understand the inherent risks of such animal activities also may include: (g) the propensity of animals to behave in ways that may result in injury, harm, or death; (h) the unpredictability of an animal's reaction to sounds, sudden movement, and unfamiliar objects, persons, or other animals; (i) collisions with other animals or objects; and (j) a Student's or third person's failure to maintain control over the animal.

4. Consent to Medical Treatment. I authorize FFA and the organizers of the CDE to provide to me, through medical personnel of their choice, customary medical assistance, transportation, and emergency medical services. This consent does not impose a duty upon FFA to provide such assistance, transportation, or services.

5. Publicity Release. I authorize FFA to use my name, photo, materials produced for the CDE or presentation in CDE for FFA materials including but not limited to, educational resources, press releases, web based publicity and other publicity materials.

6. Severability. Each term and provision of the instrument shall be valid and enforced separately to the fullest extent permitted by law. The unenforceability of any one term hereof shall not impact the enforceability of any other term.

7. Applicable Law. This instrument shall be governed, construed, and enforced in accordance with the law of the State of Georgia.

8. Additional Terms. This Authorization, Release, and Waiver shall be applicable for each occasion the Student participates in any CDE organized by the FFA and the terms hereof shall survive indefinitely; provided; however, FFA retains the right as a condition precedent to participating in any CDE to require Participant to deliver an additional Authorization, Waiver, and Release. A signed copy hereof received or maintained electronically shall have the same legal effect as an original.

**THIS IS A WAIVER AND RELEASE OF LIABILITY. I HAVE READ THIS AUTHORIZATION, WAIVER, AND RELEASE OF LIABILITY. I UNDERSTAND THAT I HAVE GIVEN UP SUBSTANTIAL RIGHTS BY SIGNING IT. I AM SIGNING THIS AUTHORIZATION, WAIVER, RELEASE OF LIABILITY VOLUNTARILY. I UNDERSTAND AND AGREE TO ALL OF THE TERMS OF THIS RELEASE.**

Student's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**IF THE STUDENT PARTICIPATING IN THE CDE IS NOT YET 18 YEARS OLD, BOTH PARENTS OR THE LEGAL GUARDIAN(S) MUST SIGN:**

In exchange for my/our child or ward being allowed to participate in the CDE, and as the parent(s) or legal guardian(s) of the above-named Student, I/we verify that I/we fully understand, agree to, and accept all provisions of this Authorization, Waiver, Release of Liability. I represent I have full authority to sign this Authorization, Waiver, Release of Liability on behalf of the Student. I knowingly and willingly grant the Minor (if applicable) permission to engage in the Permitted Activities.

Guardian:  
Printed Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

Guardian:  
Printed Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

Insurance Company: \_\_\_\_\_ Policy Number: \_\_\_\_\_

Guardian Contact Number: \_\_\_\_\_ Minor's Date of Birth: \_\_\_\_\_

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