

DE FFA Middle School Agriculture Mechanics CDE

Updated May 2018

PURPOSE: The Agricultural Mechanics CDE selects and awards those students and teams that demonstrate: (1) mastery of the subject matter and skills common to the systems areas; (2) effective communication skills; (3) superior problem solving techniques; (4) an understanding of modern technology; (5) the ability to function as individuals and as team members working together.

Eligibility: This event is open to all middle school FFA chapters and members in good standing. This event will be held during the Thursday of Delaware FFA June CDE week with the high school agriculture mechanics CDE.

Event Procedures:

A. Team Make-Up

Teams will consist of four members. Team ranking is determined by combining the scores of the four students from each team. Individual ranking is determined by Tool/Parts ID and Measuring Skills.

B. Equipment

1. Needed- Safety Materials Students Must Provide. Each event participant must adhere to the safe practices and work habits appropriate when performing required activities. Participants are responsible and must provide all personal safety equipment including:

- a. Industrial-quality eye protection.
- b. Clothing: Each individual shall furnish and wear appropriate clothing such as long pants, boots/sneakers, and FFA t-shirt for this event. Clothing must be in good repair and fit properly. No open toe nor open heel footwear allowed. Oversized or loose fitting clothing is dangerous around agricultural equipment and is not allowed.
- c. Other Materials: Each participant must have a clipboard, two sharpened No. 2 pencils and a non-programmable electronic calculator. Calculators used in this event should be battery operated and silent.

2. Tools: Bring all tools that are needed to complete the team activity components, including cement/glue and primer. Tools will be provided for the measurement component.

Event Format: The Middle School FFA Agricultural Mechanics Career Development Event is divided into systems areas. Each system includes a broad range of information and performance skills common to agricultural technology and mechanical systems.

1. Machinery and Equipment Systems: repair and maintenance, materials handling, processing, adjustments, metal fabrication
2. Electrical Systems: AC/DC power, electrical safety, electrical standards, sensing devices, electrical wiring, controls, electronics, motors and other electrical loads, operating instructions, and manufacturer's recommendations
3. Energy Systems: mechanical power, chemical power, wind power, solar power, hydraulic power, engine operation, maintenance, trouble-shooting, repair
4. Structural Systems: structures, storage, concrete, masonry, plumbing, electrical, fabrication, construction, building materials

Team:

Teams will be divided randomly amongst the given categories to complete the activity.

2018:

1. Machinery and Equipment Systems- Individually complete a work order.
2. Structural Systems- Individually, using provided blueprint/visual, construct assigned PVC item.

Being added in 2019: Electrical Systems- wire circuit (outlets, switches, GFI)

Individual

Parts/Tool ID: 25 tools/parts from the approved Tool ID list. 4 pts each

Measuring: 20 measuring problems appropriate to the included instructional areas using the following tools: ruler, torque wrench, caliper, speed square, and/or a level.

Being added in 2019: Exam – from prior year’s high school exam.

SCORING:

	Team Score (660pts)	Individual Score (140pts)	
	100pts	0pts	0pts
(1) Team Activity			
Machinery & Equipment (2 students@25pts)	50pts		
Structural Systems (2 students@25pts)	50pts		
(4) Individual			
Tool/Parts ID (25 questions @4pts)	100pts	400pts	100pts
Measuring Skills (20 questions @2pts)	40pts	160pts	40pts

TIE BREAKERS: The team activity scores will be used to break a tie associated with the team rankings. If a tie still exists, the combined ID scores will be used to break the tie. The Tool/Parts ID individual scores will be used to break a tie associated with the individual rankings. If a tie still exists, the Measuring Skills will be used to break the individual tie.

AWARDS: Awards will be presented to individuals and/or teams based upon their rankings at the State Fair FFA Awards Breakfast.

REFERENCES: This list of references is not intended to be all-inclusive. Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

1. National FFA Core Catalog—Past CDE Material (<http://shop.ffa.org/cde-qas-c1413.aspx>)
2. Information specific to each annual event is available on the National FFA Agricultural Technology and Mechanical Systems Career Development Event web page CEV Multimedia. LTD.
3. Agricultural Engineering Technology. (ASABE) Springer Science + Business Media, LLC.
4. Mechanics in Agriculture. Prentice Hall.
5. Agricultural Mechanics Fundamentals and Applications. Delmar and Thompson
6. Modern Agricultural Mechanics, V3. Prentice Hall.
7. Developing Shop Safety Skills. American Association for Vocational Instructional Materials.
8. Power Tool Safety and Operation. Hobar Publications.
9. Practical Farm Buildings. Prentice Hall.

10. National Electrical Code (latest edition). NFPA.
11. Ag Wiring Handbook. Rural Electricity Resource Council.
12. Mechanical Technology in Agriculture. Prentice Hall.
13. Industry websites
14. Tool/Parts ID list (see appendix)
15. Plumbing Rubric (see appendix)

Plumbing Rubric				
	5	3	1	Score
Pieces	Correct pieces selected.	Selected one wrong piece.	Selected 2 or more incorrect pieces	
Primer	One inch of primer visible	At least 1/2" but less than 1" visible	Less than 1/2" visible	
Placement	All pieces are positioned correctly	One piece is not positioned correctly.	More than one piece is not positioned correctly.	
Order of procedures	Applied primer, applied cement and then twisted the pipe (sequential).	Applied primer, applied cement, but did not twist pipe (sequential).	Missed two or more of the three steps (apply primer, apply cement, and twist pipe).	
Safety	Followed all safety procedures immediately.	Eventually followed safety procedures.	Did not follow safety procedures.	
			Total Score:	
			Contestant:	

Tool/Part ID (Identification may be the actual tools or pictures of the tools listed below). The answer should be written as the number to the left of the item.

1	Awl (scratch)
2	Bit brace
3	Bit, Auger
4	Bit, expansion
5	Bit, Phillips Screwdriver
6	Bit, Spade
7	Bit, Standard Screwdriver
8	Bit, Twist Drill
9	Bolt cutter
10	Calipers, inside
11	Calipers, micrometer
12	Calipers, outside
13	Calipers, pocket slide
14	Carpenter level
15	Center punch
16	Chisel, cold
17	Chisel, wood
18	Clamp, Bar
19	Clamp, Block
20	Clamp, C
21	Countersink
22	Dividers
23	Draw knife
24	Drill, electric
25	Drill, hand
26	File, flat
27	File, half-round
28	File, round
29	File, Square
30	File, Triangular
31	Gauge, feeler
32	Gauger, marking
33	Gauger, tap and drill
34	Glass cutter
35	grinder, angle
36	Hammer, ball peen
37	Hammer, curved claw
38	Hammer, ripping claw
39	Hammer, rivet
40	Hammer, welder's chipping
41	Mallet, Rubber
42	Meter Stick
43	Miter box
44	Nail puller
45	Nail Set
46	Nippers, adjustable jaw
47	Pipe cutter
48	Plane, block
49	Plane, jack

50	Pliers, diagonal cutting
51	Pliers, linemen's side cutting
52	Pliers, slip-joint
53	Pliers, Vise Grip
54	Putty knife
55	Rasp, wood
56	Rivet cutter
57	Ruler, flexible steel
58	Ruler, folding wood
59	sander, orbital
60	Saw, adjustable hack
61	Saw, compass
62	Saw, coping
63	Saw, crosscut
64	Saw, rip
65	Scraper
66	Screwdriver, offset
67	Screwdriver, phillips
68	Screwdriver, slot head
69	Socket extension
70	Socket ratchet
71	Sockets
72	Soldering copper
73	soldering gun
74	Square, adjustable combination
75	Square, framing
76	Square, sliding tee bevel
77	Square, speed
78	Square, T
79	Steel tape
80	Vise, metal
81	Wrecking bar
82	Wrench, adjustable (crescent)
83	Wrench, allen
84	Wrench, box
85	Wrench, open-end
86	Wrench, pipe
87	Wrench, ratchet box
88	Wrench, tap and reamer
89	Wrench, torque (ft./lbs.)
90	Wrench, torque (in./lbs.)
91	
92	
93	
94	
95	
96	
97	
98	

Contestant:

Item	Answer
A	
B	
C	
D	
E	
F	
G	
H	
I	
J	
K	
L	
M	
N	
O	
P	
Q	
R	
S	
T	
U	
V	
W	
X	
Y	