WEST VIRGINIA STATE FFA
ZERO TURN ORERATING AND MAINTENANCE CONTEST
High School Division

Scanton	Universal Form C #705C-1
Committee:	
Chair: Seth Neal	Northeast – Chris VanDyne
Eastern – Cody Dent	Northwest – John Smith, Kari Brown, Wendy Knopp
Central – Nick Cox	Southeast – Shelby Adkins
Northcentral – Gene Hovatter	Southwest – Tim Kidwell

Annual meetings will be held after the State Contest is held. Any questions, comments, or concerns can be addressed at this meeting.

EVENT PURPOSE AND OBJECTIVE:

Encourage youth to:

1. Develop leadership character and good citizenship
2. Develop skills and attitudes necessary to safely operate tractors and other equipment.
3. Practice basic and routine tractor care, repair, and maintenance.
4. Demonstrate their knowledge and skill in the areas of lawn care, business management, and tractor operation

EVENT RULES AND REGULATIONS:

Any student which is enrolled in agricultural education and is an FFA member is eligible to participate. This includes 9-12 grade students. Three students from each region may participate in the state event. State winners who have competed in the tractor operations' contest in previous years are not eligible to compete.

1. Appropriate Dress-Comfortable shirt and pants, and work shoes/Boots.
2. **Any contestant who does not report on time *(without prior arrangement)* shall be disqualified!**
3. Only members with previous tractor driving experience will be allowed in the contest.
4. **Each contestant must complete all events.**

Use of Technology in WV CDE and LDE events

1. The use of all electronic devices are prohibited once the career development events starts. If an event requires the use of calculators, the event coordinator will provide exact specifications on the type(s) of devices (including functions) that will be permitted.
2. If a contestant is observed using an electronic device during a contest **(student has his/her Scantron in hand),** the group leader will record the student's name, school and contestant number and give it to the contest coordinator and/or the results tabulator. This individual will be **disqualified** from the contest.

EVENT FORMAT/SCORING

The contest will consist of **Four** Events, each of which will be scored separately.

I. Written Test
II. Problem Solving
III. Tools Parts Identification
IV. Lawnmower Driving

2. Equipment will be provided for each event. All contestants will use the same tractor for each event.
3. All persons other than the judges, the scorers and the contestants will be barred from the contest area during the contest.
4. The Superintendents in charge of this contest will select judges and scorers.
5. In case any situation occurs that is not covered in the rules, the decision of the judges will be final.
6. Meet at the Craft House – Thursday at 8 am. Contestants will have time to FAMILIARIZE themselves with the tractors before the contest begins.
7. The contestant with the lowest deductions will be the winner.

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EVENT I – *Written Exam*

A. Contestants will have **30** minutes to answer fifty (**50**) multiple choice questions on lawnmower servicing, safe operation, care, and maintenance.
B. The test will include multiple-choice questions.
   a. See Test Bank for example Test Questions
      i. www.wvffa.net/Programs
C. Each question answered incorrectly or left unanswered will be valued at ten (**10**) points.

EVENT II – *Problem Solving*

A. Contestants will have **30** minutes to answer ten (**10**) multiple choice problem solving activities relating to lawnmower servicing, safe operation, care and maintenance.
B. The test will include multiple-choice questions. Students will have to search repair manuals to find answers.
   a. See Test Bank for example Test Questions
      i. www.wvffa.net/Programs
C. Each question answered incorrectly or left unanswered will be valued at twenty-five (**25**) points.

EVENT III – *Parts Identification*

A. Each contestant will identify mechanic tools and tractor parts from a gas or diesel Zero Turn. A total of **30** tools and parts will be identified. They may include a torque wrench, open-end wrench, flywheel, piston, or starter etc. Contestants will choose from a bank of answers.
B. Refer to www.snap-on.com, www.valu-bilt.com or www.craftsman.com.
C. Items used for identification will come from the Zero Turn Parts Identification sheet in this packet
D. Each correct answer missed or left unanswered will be valued at ten (**10**) points.

EVENT IV – *Lawnmower Driving*

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).
F. Contestants will have a maximum of four (**4**) minutes to navigate the course without penalty. Time will be stopped after six (**6**) minutes and deductions will be added
G. Time begins when the lawnmower leaves the shed and stops when the lawnmower is parked and turned **OFF.**
H. **See score card for deductions.**

TIE BREAKERS

A. In the event of a tie in the overall contest, 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.

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 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.

REFERENCES

Texts

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

John Deere – Fundamentals of Compact Equipment Series

Compact Equipment: Safety Management for Landscapers, Grounds-Care Businesses and Golf Courses. A primer of safety procedures for compact or outdoor power equipment.Book © 2001

Compact Equipment: Engines. A primer of test and repair procedures for compact-equipment engines.
http://www.deere.com/en_US/compinfo/publications/john_deere_publishing/complete.html

Turfgrass Science and Management by Robert Emmons, Second Edition, 1995, Delmar Publishers. Chapter 11. Mowing
http://www.delmarlearning.com/Browse_CatalogDetail_Print.aspx?xxID=27423&isbn=1418013307

AAVIM – All Machinery Related Publications

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

Lawnmower Engine Manufacturers Service and Repair Manuals

Lawn Equipment Operators Manuals

Lawnmower Dealer Brochures

OTHER HELPFUL INFORMATION

Lawn Equipment Videos
http://www.deere.com/en_US/homeowners/safety/video.html?tm=ho&link=cnav
http://www.dixiechopper.com/support.php

Safety/Maintenance Publications
http://www.deere.com/en_US/homeowners/safety/mowermaintenance.html?aid=
http://www.grounds-mag.com/news/mowers_052606/
http://msucares.com/pubs/publications/p1097.pdf
http://www.toro.com/safety/index.html
http://www.cdc.gov/nasd/menu/topic/machinery_mowers.html
http://www.nsc.org/resources/issues/agrisafe.aspx

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Score Sheet – Zero Turn Driving Event

Contestant _____ Chapter_____

TRACTOR SAFETY RESPONSE (verbal response to Judges)

Deductions

After walk-around and starting tractor

Engine oil level		____x	40	_____
Air Filter		____x	30	_____
Hydraulic fluid level	*(if possible)*	____x	30	_____
Engine Cooling system	*(if possible)*	____x	30	_____
Cutting Blades		____x	30	_____
Air in Tires		____x	20	_____
Belt Tension and Wear		____x	10	_____
Fuel Level		____x	10	_____
Wheel Lugs		____x	10	_____
Battery		____x	10	_____
Belt Shields		____x	10	_____
ROPS (if Equipped)		____x	10	_____
Seat Belt		____x	10	_____

STARTING

Attempting to crank lawnmower (With kill switch engaged)	____x	10	_____
Mounting lawnmower improperly	____x	20	_____
Failure to use seat belt	____x	100	_____

OBSTACAL COURSE

Excess speed when turning & driving	____x	40	_____
Mower Deck (Blades) Engaged	____x	100	_____
Failure to Safely dismount and remove obstacle	____x	40	_____
Dismounting lawnmower improperly	____x	20	_____
Failure to shut down mower in the proper sequence	____x	60	_____
Failure to kill engine when dismounting	____x	100	_____
Failure to apply parking brake when dismounting	____x	100	_____
Failure to unlock parking brake before putting mower in motion	____x	20	_____
Failure to use seat belt	____x	100	_____
Markers scraped (Number)	____x	30	_____
Markers move or upset (Number)	____x	60	_____

PARKING ZERO TURN IN SHED/FINISH LINE

Pull-ups & backups to improve position in shed or lane	____x	10	_____
Failure to Safely dismount and remove obstacle	____x	40	_____
Dismounting lawnmower improperly	____x	20	_____
Failure to shut down mower in the proper sequence	____x	60	_____
Failure to apply parking brake when dismounting	____x	100	_____
Markers scraped (Number)	____x	30	_____
Markers move or upset (Number)	____x	60	_____
Number of inches' wheels off center in shed	____x	20	_____
Efficient completion of skill (Number of seconds over 240 seconds)	____x	1	_____
Time exceeding 6 minutes (360 seconds)	____x	500	_____

Subtotal of Deductions _____

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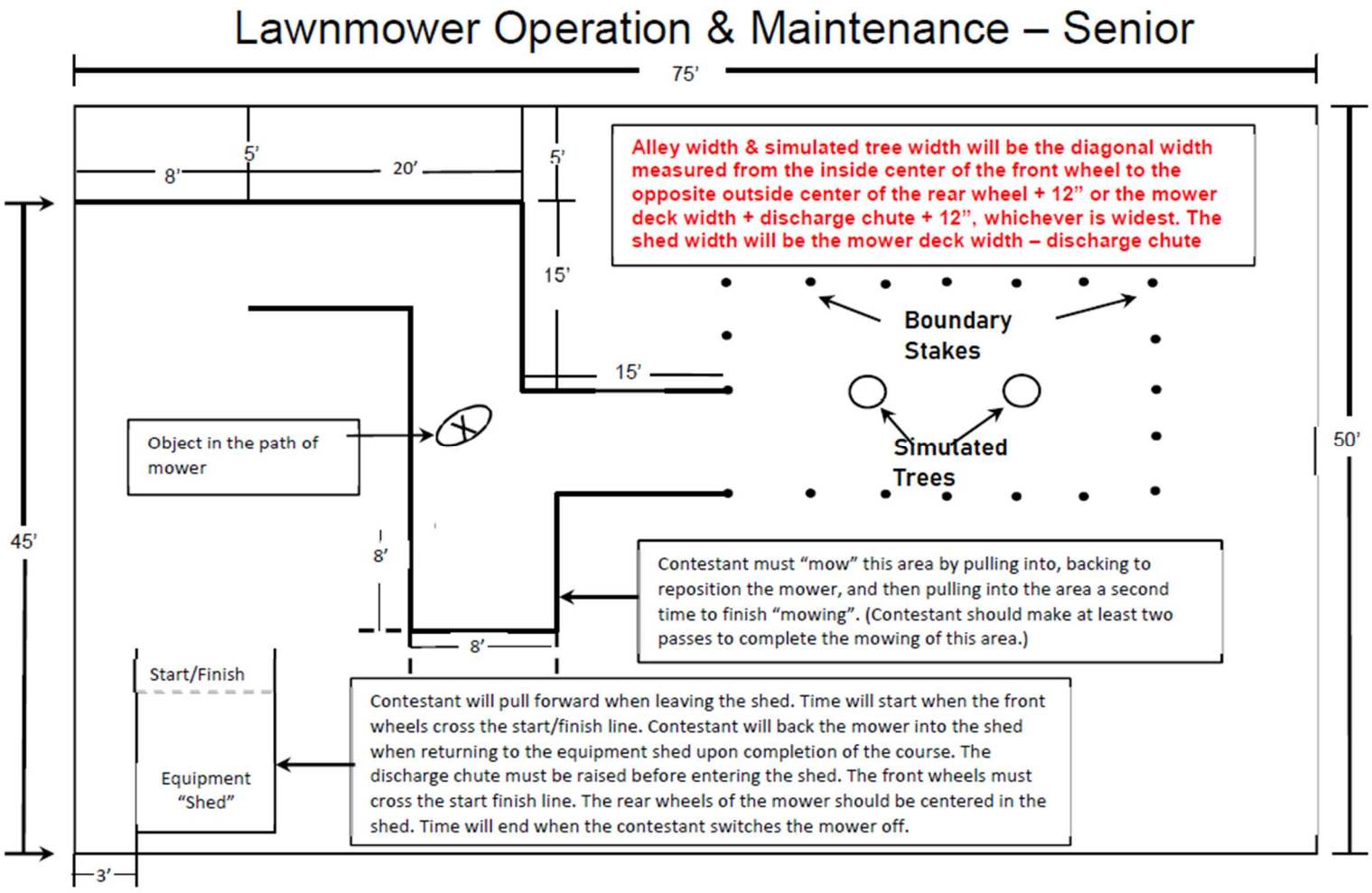

Updated 2019

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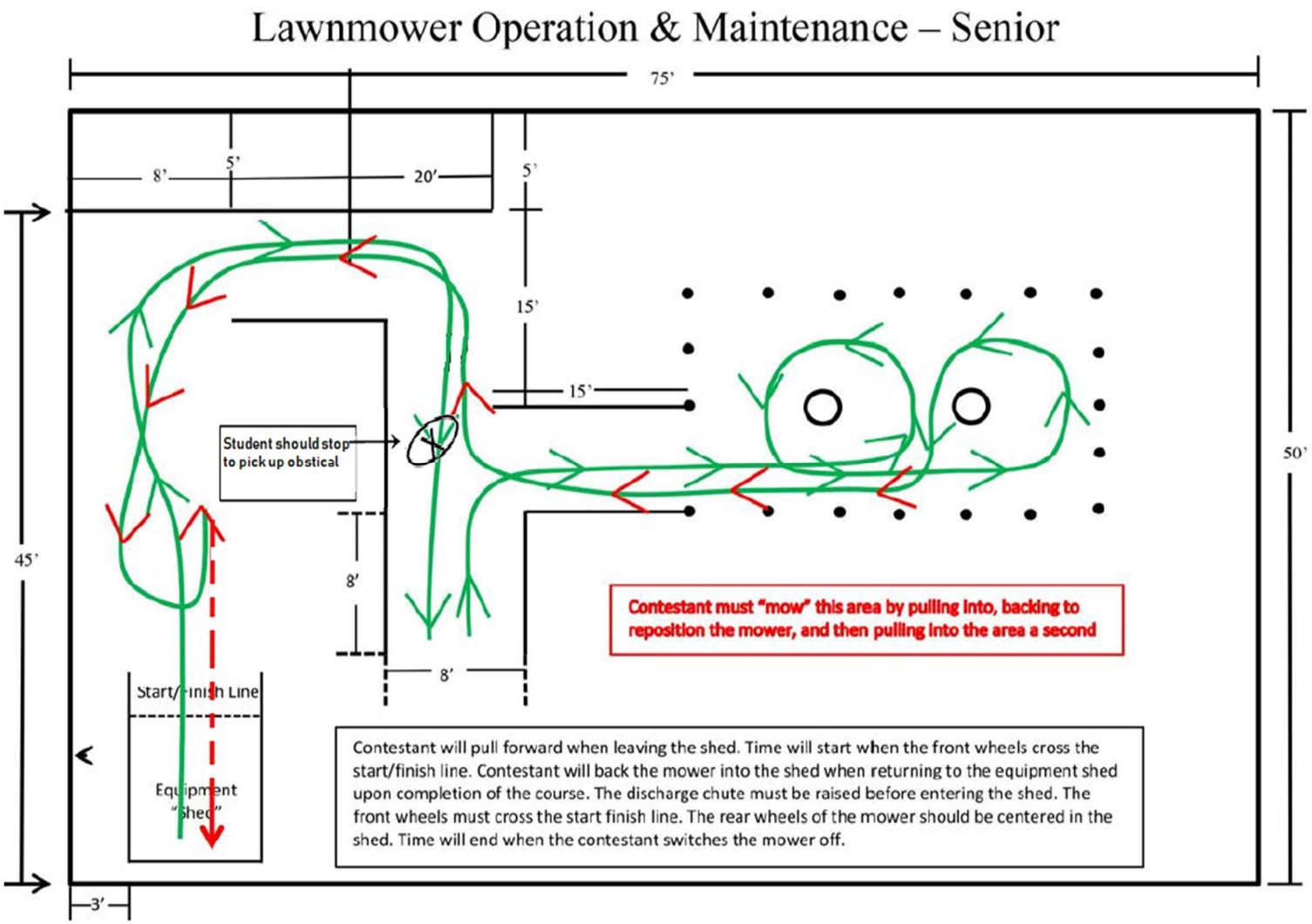

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Zero Turn Parts Identification Sheet

NAME: _____CHAPTER: _____

Penalty Points: Incorrect _____x 10 = _____

Instructions: Bubble the number tag number on the line left of the most correct name for the part on your scantron.

001	6-Point Socket	**032**	Fuel Filter	**063**	ROPS (Roll Over Protective Structure)
002	Air Cleaner Housing	**033**	Fuel Pump	**064**	Seat Safety Switch
003	Air Filter Cover	**034**	Fuel Tank	**065**	Separate Belt
004	Air Filter Element	**035**	Fuse	**066**	Sleeve Bearing
005	Air Filter Pre-Cleaner	**036**	Garden Hose Nozzle	**067**	Slotted Screwdriver
006	Alternator	**037**	Gear	**068**	Spark Plug
007	Anti-Freeze/Coolant Tester	**038**	Grass Clippers	**069**	Spark Plug Wire
008	Ball Bearing	**039**	Headlight	**070**	Sprocket
009	Ball Joint Linkage	**040**	Hydraulic Control Levers	**071**	Starter
010	Brake Pedal	**041**	Hydraulic Oil Hose	**072**	Starter Solenoid
011	Camshaft	**042**	Idler Pump	**073**	Taillight
012	Carburetor	**043**	Ignition Coil	**074**	Tapered Roller Bearing
013	Caster Gauge Wheel	**044**	Ignition Switch	**075**	Throttle Control Lever
014	Choke Control Lever	**045**	Lawn Mower Gauge Wheel	**076**	Tie Rod End
015	Combination Wrench	**046**	Lawn Sprinkler Head	**077**	Tire Tube
016	Connecting Rod	**047**	Mower Deck	**078**	Torque Wrench
017	Crowfoot Wrench	**048**	Mower Deck Height Adjustment	**079**	Torx Screwdriver
018	Cruise Control Set	**049**	Muffler	**080**	Transmission Oil Fill Cap
019	Discharge Chute	**050**	Needle Bearing	**081**	Universal Joint
020	Distributor	**051**	Park Break Control Lever	**082**	Valve
021	Drain Plug	**052**	Phillips Screwdriver	**083**	Valve Ccore
022	Dump Value Release	**053**	Piston	**084**	Valve Cover
023	Edger Blade	**054**	Piston Rings	**085**	Valve Sparking
024	Engine Oil Filter	**055**	PPE (Personal Protective Equipment)	**086**	Valve Stern
025	Engine Oil Dipstick/Fill Cap	**056**	PTO (Power Take Off)	**087**	V-Belt
026	Fire Extinguisher	**057**	Radiator Cap	**088**	V-Belt Pulley
027	Flywheel	**058**	Rear Tire	**089**	Warning Label
028	Forward/Reverse Pedals	**059**	Reflector	**090**	Water Pump
029	Front Axie	**060**	Roller Chain	**091**	Wheel Lug Bolt
030	Front Tire	**061**	Rotary Blade Adapter		
031	Fuel Fill Cap	**062**	Rotary Mower Blade		

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Incorrect Marks ✓ ✗ ▬ ⊙ Correct Mark ●

Team Name / Additional Info

This sheet is for demonstration and practice only. You must use a real scan sheet for actual competition.

Team # (0000–9999)

State (AA–ZZ)

Last Name (A–Z)

First Name (A–Z)

Code (00–99)

Placing Classes

Mark one answer in each column!

	1	2	3	4	5	6	
1234	○	○	○	○	○	○	1234
1243	○	○	○	○	○	○	1243
1324	○	○	○	○	○	○	1324
1342	○	○	○	○	○	○	1342
1423	○	○	○	○	○	○	1423
1432	○	○	○	○	○	○	1432
2134	○	○	○	○	○	○	2134
2143	○	○	○	○	○	○	2143
2314	○	○	○	○	○	○	2314
2341	○	○	○	○	○	○	2341
2413	○	○	○	○	○	○	2413
2431	○	○	○	○	○	○	2431
3124	○	○	○	○	○	○	3124
3142	○	○	○	○	○	○	3142
3214	○	○	○	○	○	○	3214
3241	○	○	○	○	○	○	3241
3412	○	○	○	○	○	○	3412
3421	○	○	○	○	○	○	3421
4123	○	○	○	○	○	○	4123
4132	○	○	○	○	○	○	4132
4213	○	○	○	○	○	○	4213
4231	○	○	○	○	○	○	4231
4312	○	○	○	○	○	○	4312
4321	○	○	○	○	○	○	4321
	1	2	3	4	5	6	

Keep/Cull 1 / Keep/Cull 2 / Keep/Cull 3 / Keep/Cull 4

Mark 4 Keeps and 4 Culls

#	Keep	Cull
1	K	C
2	K	C
3	K	C
4	K	C
5	K	C
6	K	C
7	K	C
8	K	C

Judge 1 / Judge 2 / Judge 3 / Judge 4 (000–999)

Exam 1

1	A B C D E	26	A B C D E
2	A B C D E	27	A B C D E
3	A B C D E	28	A B C D E
4	A B C D E	29	A B C D E
5	A B C D E	30	A B C D E
6	A B C D E	31	A B C D E
7	A B C D E	32	A B C D E
8	A B C D E	33	A B C D E
9	A B C D E	34	A B C D E
10	A B C D E	35	A B C D E
11	A B C D E	36	A B C D E
12	A B C D E	37	A B C D E
13	A B C D E	38	A B C D E
14	A B C D E	39	A B C D E
15	A B C D E	40	A B C D E
16	A B C D E	41	A B C D E
17	A B C D E	42	A B C D E
18	A B C D E	43	A B C D E
19	A B C D E	44	A B C D E
20	A B C D E	45	A B C D E
21	A B C D E	46	A B C D E
22	A B C D E	47	A B C D E
23	A B C D E	48	A B C D E
24	A B C D E	49	A B C D E
25	A B C D E	50	A B C D E

Exam 2

1	A B C D E
2	A B C D E
3	A B C D E
4	A B C D E
5	A B C D E
6	A B C D E
7	A B C D E
8	A B C D E
9	A B C D E
10	A B C D E
11	A B C D E
12	A B C D E
13	A B C D E
14	A B C D E
15	A B C D E
16	A B C D E
17	A B C D E
18	A B C D E
19	A B C D E
20	A B C D E
21	A B C D E
22	A B C D E
23	A B C D E
24	A B C D E
25	A B C D E

Exam 3

1	A B C D E
2	A B C D E
3	A B C D E
4	A B C D E
5	A B C D E
6	A B C D E
7	A B C D E
8	A B C D E
9	A B C D E
10	A B C D E
11	A B C D E
12	A B C D E
13	A B C D E
14	A B C D E
15	A B C D E
16	A B C D E
17	A B C D E
18	A B C D E
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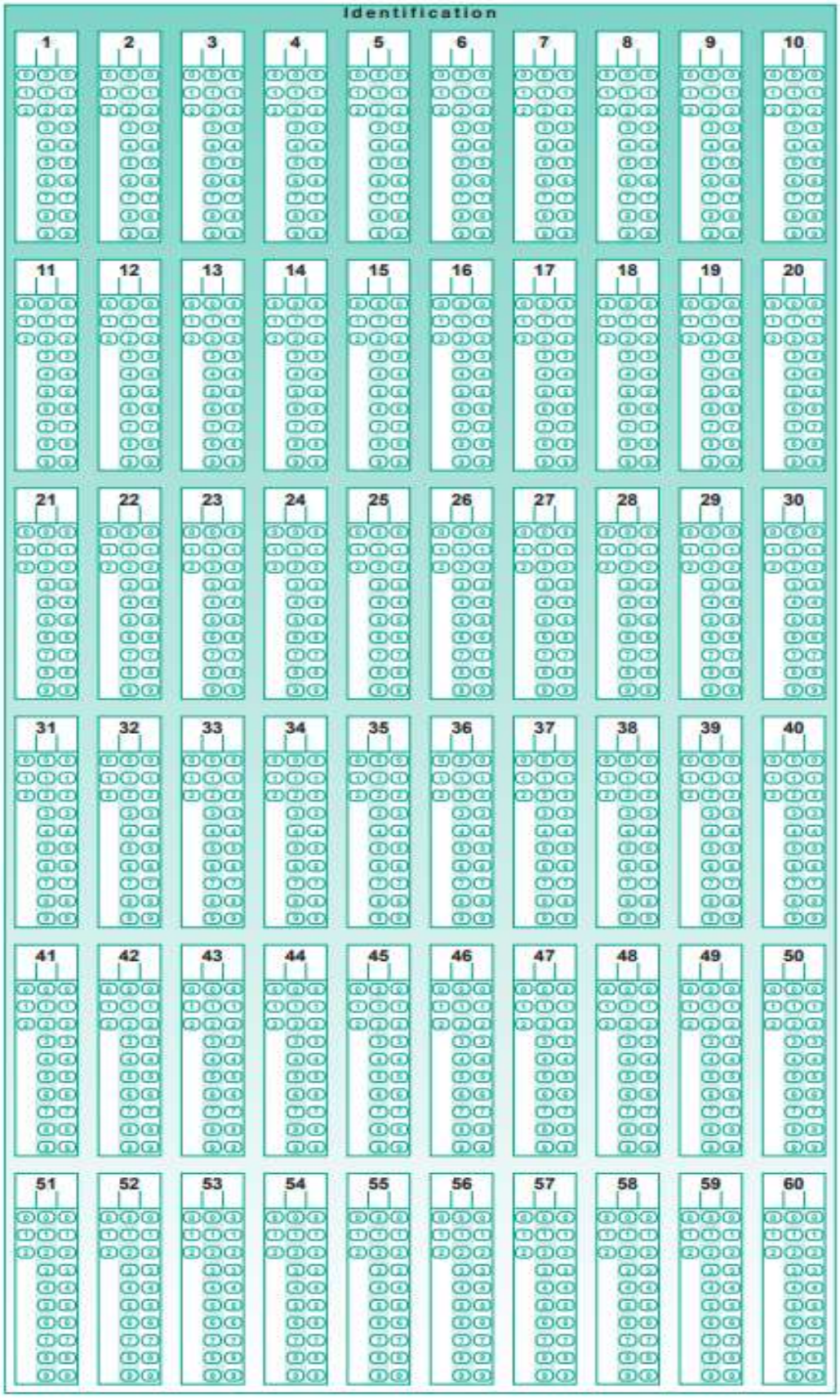
25	A B C D E

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