

Virginia 4H

Tractor Operators Contest Guidelines

I. Description:

This event provides 4H members an opportunity to demonstrate their knowledge of tractor maintenance, safety, and skill in operation. The contest includes the following events:

- Written Examination
- Parts Identification
- Operating a tractor with two-wheel implement attached
- Operating a tractor with four-wheel implement attached

Two 4H participants from each county/club may participate in the state event. Designated judges will preside over the contest and the judge's decisions and placings are final.

II. Procedure:

1. Written Examination

The written examination will consist of 50 questions (true-or-false, multiple-choice, and/or completion) about tractor maintenance and safety. The test questions will be taken from the project literature and related references. A time limit is announced when the examination is given. Each question is worth 20 points. Therefore, the number of questions missed $\times 20$ = total number of points to be deducted.

Rules

- 1) Twenty penalty points will be given for each question answered incorrectly.

Scoring: Question missed ____ $\times 20$ = total Penalty Points ____

2. Parts Identification

The parts identification portion of the contest will require the 4H member to correctly identify 20 parts from the resource list provided. The parts may be photos or actual parts. Each part is worth 20 points. Therefore, the number of parts missed $\times 20$ = total number of points to be deducted.

Rules

- 2) Twenty penalty points will be given for each question answered incorrectly.

Scoring: Question missed ____ $\times 20$ = total Penalty Points ____

3. Driving Events

Preparation for driving Events

New or late model tractors in the 30 – 60 horsepower range will be provided.

A short practice period is provided for instruction in correct and safe operation of the tractor and for the participant to become acquainted with the tractor.

- Participants may practice driving the tractor for no more than 4 minutes.

- Participants may not drive through any part of the event course during the practice period.
- Participants must compete before they are eligible to observe the driving of other participants.
- Differences in the topography of the land where the events are held may require the judges to make certain ground rules before the beginning of the event.
- The same score card is used for the two wheel and the four wheel events.
- The point-deduction system is used to score the event. The participant with the lowest total score is the winner.
- Each participant is scored on safety throughout the event.
- Judges rule on any questions that may arise during the event.

Equipment needed for the tractor operation events

- Standard-make tractor 30 to 60 horsepower
- Two-wheel tractor-trailer or manure spreader on the top of which is placed an 8-foot by 12-foot slat frame
- Four-wheel wagon with an 8-foot by 16-foot frame
- Stop watches (2)
- Rulers or tape measures (4)
- Posts (44 or more)
- Heavy cord or binder twine (400 feet). The cord or twine is tied to the posts at the same height as the widest part of the implement.

Two wheel wagon event – Procedures

1. The participant starts the tractor and allows the engine to warm.
2. The participant drives the tractor and implement to the start/stop line and stops the tractor so that the rear wheels rest on the line. The tractor faces the same direction as the open end of the shed.
3. The participant signals the timekeeper when he/she is ready to begin with engine running, safety belt fastened, brake set, feet on platform, and tractor transmission in neutral or parked position. The timekeeper gives the signal to begin and the time is started.
4. The participant backs the tractor and implement into a 40-foot alley (see diagram that follows.) At a signal from the participant, the judges take the appropriate measurements.
5. The participant drives the tractor and implement out of the alley and through the gates as shown in the diagram.
6. The participant backs the implement into the shed. At a signal from the participant, the judges take the appropriate measurements.
7. The participant drives the tractor and implement to the start/stop line. The participant positions the tractor so that the rear wheels rest on the start/stop line, and the tractor faces in the same direction on the open end of the shed.
8. The participant turns off the tractor and signals the timekeeper.

Four wheel wagon event –Procedures

1. Three scorers are needed for the event (one for timing and recording scores, and two for measuring and observing).
2. If possible, the driving events should run concurrently.
3. The participant is allowed to start and warm up the tractor engine.
4. The participant drives the tractor to the start/stop line and stops the tractor so that the rear wheels rest on the line.
5. The participant signals the timekeeper when ready to begin—tractor engine running, brake set, transmission in neutral or park position.
6. The participant drives the tractor to the implement shed and spots the drawbar. No assistance is allowed in spotting. The wagon tongue is on the ground. The participant makes the hitch without moving the wagon forward more than one foot. A safety-type pin is used whenever possible for the hitch. The participant dismounts from the tractor to insert the pin. The participant must set both brakes and/or leave the gearshift in the neutral or park position whenever he/she dismounts from the tractor.
7. The participant pulls the wagon out of the shed, drives the tractor and wagon through the three gates then backs the wagon into the shed.
8. The participant turns off the tractor and signals the timekeeper once the wagon has been backed into the shed

The resources for the State Tractor Operators written exam can be ordered from:

- ***Safe Operation of Agricultural Equipment***
Hobar Publications, 3943 Meadowbrook Road
Minneapolis, MN 55436
1.800.846.7027
Fax 953.938.7353
- ***“Hydraulics”*** – Textbook 8th Edition
- ***“Engines”*** – Textbook 10th Edition
- ***“ Tractors”*** – Textbook 5th Edition

John Deere Publishing
5440 Corporate Park Drive,
Davenport, IA 52807
1-800-522-7448
<http://www.deere.com/publications>

Results:

Top individuals will be recognized at the conclusion of the event.

TRACTOR OPERATOR'S CAREER DEVELOPMENT EVENT

SCORE SHEET

Participant _____

Club _____

CHECK ONE: Event I _____ Event II _____

Starting Safety

Failure to check neutral position of gear shift	_____ x 25 = _____
Failure to disengage clutch while starting the tractor	_____ x 50 = _____
Failure to set brake before starting engine	_____ x 50 = _____
Failure to be in driver's seat when starting engine	_____ x 50 = _____
Starting tractor with spectators within 10 feet	_____ x 50 = _____
Failure to fasten safety belt around driver	_____ x 50 = _____

Driving Safety

Failure to stay seated	_____ x 50 = _____
Skidding or spinning wheels (front tire must skid the width of the tire to count)	_____ x 50 = _____
Turning too short and fouling implement	_____ x 50 = _____
Operation of tractor at reckless speed	_____ x 50 = _____
Moving tractor with brake set	_____ x 50 = _____
Failure to hitch implement to tractor properly	_____ x 50 = _____
Failure to use safety belt properly	_____ x 50 = _____

Number of Unnecessary Changes in Direction _____ x 10 = _____

Tractor Engine

Stalled	_____ x 50 = _____
Grated gears	_____ x 50 = _____
Rough clutch engagement	_____ x 50 = _____
Engine speed too fast /excessive RPM	_____ x 50 = _____

Posts and Lines

Touched	_____ x 40 = _____
Knocked down or crossed	_____ x 50 = _____

Two Wheel Measurement in Alley (no fractions)

Inches from back post (beyond 3 inches) _____ x 20 = _____

Measurement in Shed (no fractions)

Inches off center at front	_____ x 20 = _____
Inches off center at rear	_____ x 20 = _____
Inches from back post (beyond 3 inches)	_____ x 10 = _____

Failure to Run Prescribed Course _____ x 400 = _____

** If participant exceeds 10 minutes on driving event, participant must end competition in that event and return tractor and implement to starting positions. 400 points will be added to the participant's score.*

Dismounting

Failure to set brakes and/or to place gearshift in park or neutral position	_____ x 50 = _____
Failure to dismount to insert or remove draw pin	_____ x 100 = _____
Failure to bring tractor to complete stop before dismounting	_____ x 100 = _____

Other Safety Violations

Extra riders	_____ x 200 = _____
Improper clothing	_____ x 100 = _____
Obstructed vision	_____ x 100 = _____
_____ (judge's discretion)	_____ x 100 = _____

One or both front wheels of four wheel wagon cross the 28 foot line _____ x 200 = _____

Time*

Minutes	_____ x 15 = _____
Seconds	_____ x .25 = _____

TOTAL POINTS OFF

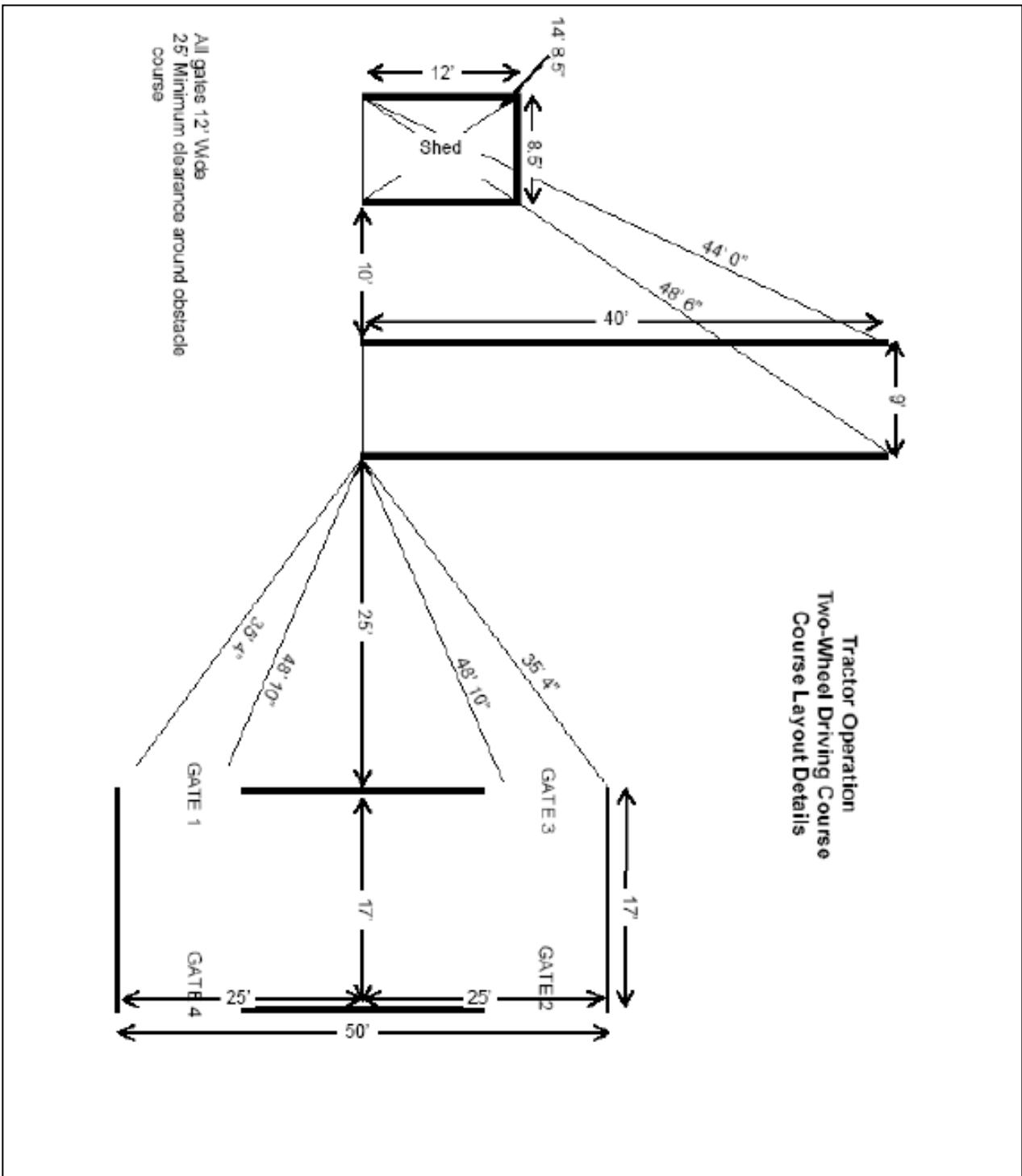
Written examination	Total points deducted	_____
Parts Identification	Total points deducted	_____
Two Wheel Wagon Event	Total points deducted	_____
Four Wheel Wagon Event	Total points deducted	_____
Grand Total Points deducted		_____

Tractor Parts Identification

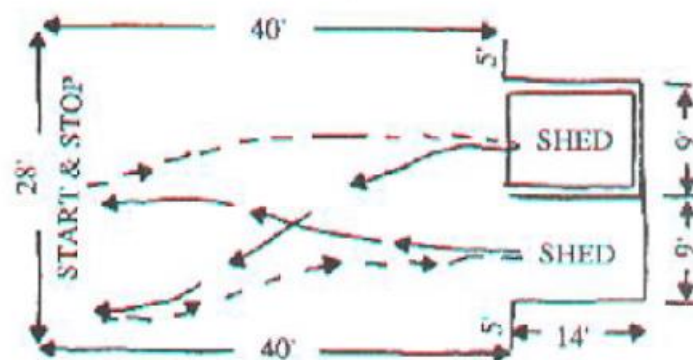
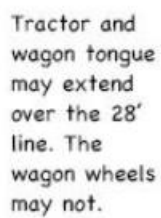
Parts to be identified have numbers attached to them. Select the most correct part name from this list.
Bubble the corresponding number beside the name in the appropriate blank.

Air intake, Engine	- 101	Muffler	- 136
Alternator	- 102	Oil Drain Plug, Crankcase	- 137
Ammeter/Indicator Light	- 103	Oil Filter, Crankcase	- 138
Axle Carrier, Rear	- 104	Oil Filler Cap, Crankcase	- 139
Battery	- 105	Oil Pan, Crankcase	- 140
Bearing, Ball	- 106	Oil Pressure Gauge/Indicator Light	-141
Bearing, Crankshaft	- 107	Oil Pump Screen	- 142
Bearing, Roller	- 108	Parking Brake Control	- 143
Brake Pedal	- 109	Piston	- 144
Camshaft	- 110	Piston Rings	- 145
Clutch Pedal	- 111	Piston Wrist Pin	- 146
Clutch Plate	- 112	P. T. O. Shield	- 147
Clutch Pressure Plate	- 113	Radiator	- 148
Connecting Rod	- 114	Radiator Cap	- 149
Crankshaft	- 115	Seal, Grease/Oil	- 150
Diesel Fuel Tank	- 116	Starter	- 151
Dipstick, Crankcase Oil Level	- 117	Steering Tie Rod	- 152
Drawbar	- 118	Tachometer	- 153
Engine Stop Control	- 119	Temperature Gauge/Indicator Light	- 154
Exhaust Manifold	- 120	Thermostat	- 155
Fan	- 121	Throttle	- 156
Fan Belt	- 122	Throttle Rod	- 157
Flywheel, Engine	- 123	Tire Valve Stem	- 158
Fuel Tank Cap	- 124	Valve, Engine	- 159
Fuel Filter	- 125	Valve Cover, Engine	-160
Fuel Injector Pump	- 126	Valve Cover, Gasket	- 161
Fuel Injector	- 127	Valve Push Rod	- 162
Fuel Pump	- 128	Valve Rocker Arm	- 163
Fuel Tank	- 129	Valve Spring	- 164
Governor	- 130	Warning Light, Rear	- 165
Head Gasket, Engine	- 131	Water Hose	- 166
Hydraulic Hose	- 132	Water Pump	- 167
Hydraulic Reservoir	- 133	Weight Carrier	- 168
Hydraulic Valve Control	- 134	Weights, Front	- 169
Intake Manifold	- 135	Weights, Wheel	- 170

Two wheel course



The tractor will be hooked up and in the shed to start the event. The tractor will be pulled forward then backed down the 40' alley, the member will signal for the judge to take the back measurement, and then the member will pull the tractor and wagon through gate 1 out gate 2, then in gate 3 out gate 4 and then place the wagon back in the shed. Time will stop once the tractor is cut off. There is a ten minute time limit on the event.



DIRECTION
OF TRAVEL: _____ FORWARD

SCALE: 1" = 16'