

Students please affix one of yourself adhesive identification labels to this space. Do not obscure other parts of this page with the label. If you do not have a self adhesive identification label, please complete the following information. Write your name as it appears on your badge.

Your Name: _____

Participation Number:

Two letter state abbreviation. →

State code (0301, 0302, to 0350)

Team member number (01, 02, 03, or 04)

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Students please do not write or mark within this box.

Judges, after this skill sheet has been scored and double checked, write the total score for this activity in the blank below.

Skill Activity Score: _____

Judges Initials: _____

2017 NATIONAL FFA AGRICULTURAL TECHNOLOGY AND MECHANICAL SYSTEMS

CAREER DEVELOPMENT EVENT

MACHINE AND EQUIPMENT SYSTEMS

INDIVIDUAL SKILLS/PROBLEM SOLVING ACTIVITY

There are multiple parts to this activity! Please read and follow all directions carefully! Use your time wisely!

GENERAL INFORMATION:

As a turf manager for a recreational park, understanding the fundamental growth cycles of grass, management of the soil, grass harvesting methods, and machinery selection and maintenance is critical.

For this skill activity, you will be using the John Deere 1025 Compact Utility Tractor.

This skill activity is worth a maximum of **30 points**. You will have **25 minutes** to complete the skill activity. Read through the instructions and procedures carefully before you begin. **(If you do not know, that is okay – Ask before you do it!)**

PROBLEM STATEMENT:

You are the turf manager of a recreational park in Bangor, ME. One of your weekly duties are to mow the recreation fields and maintain the associated equipment owned by the city parks and recreation department. Your recreation park just purchased a John Deere 1025 Compact Utility Tractor a few weeks ago. Today, you went to the vehicle maintenance shed to use the tractor and the tractor would not start. Using provided technical data and electrical tools, complete the following questions and skill.

INSTRUCTIONS:

1. Read the instructions for this skill activity and review all of the handouts.
2. Use all required Personal Protection Equipment. **This means wear your safety glasses!**
3. Using the provided handouts, scratch paper, your calculator, and all the associated questions, answer the following questions. Round up to the hundredth decimal place unless noted.

Questions:

1. List the Station #, model number, and serial number of the tractor you are inspecting:

Station #: _____ (1 point)

Model: _____ (1 point)

Product Identification Number: _____ (1 point)

2. When the engine tachometer reads 3,200 RPM, what is the PTO speed? _____ (2 points)

3. What is the fastest speed an operator should pull an implement that does not have working brakes? **MPH =** _____ (1 point)

4. What ballast does this manufacturer recommend be used for this tractor? _____ (1 point)

5. What engine oil viscosity is recommended when operating in a climate with an air temperature below -22° F?
SAE _____ (1 point)

6. Who is the manufacture of the diesel engine installed in this tractor?
Manufacturer: _____ (1 point)

7. Assume this tractor is used to mow a FIFA size soccer field (120 yards x 80 yards) at a local recreation park. Using a 3 point mount finishing mower, Pioneer # GM1060E, at 5 mph, and a 90% efficiency rate, calculate the theoretical field capacity of this tractor and mower.

Theoretical Field Capacity (Acres/Hour) = _____ (3 points)

8. Using the supplied electrical multi-meter, measure and record the voltage of the battery without the engine running in the space provided.

Voltage = _____ (1 point)

***** READ FIRST *****

Directions: Safely mount the tractor, set the parking brake, place the transmission in neutral and start the tractor. Bring the engine speed to 1,000 rpm using the engine speed hand throttle. Safely dismount the tractor.

9. Using the supplied electrical multi-meter, diagnose the reason the tractor will not start. Once you have diagnosed and tested the problem/part(s), you may ask the assistant for part(s). You may only ask the assistant for the correct part(s). No other guidance will be given. Replace the malfunctioning part(s) with the new part(s). Now attempt to start the tractor according to the instructions above.
10. Using the supplied electrical multi-meter, measure and record the voltage of the battery with the engine running at 1,000 rpm in the space provided.

Voltage = _____ (2 points)

***** READ FIRST *****

Give your answer sheet to your assistant.

1. Safely mount the tractor, put on your seat belt, and release the parking brake.
 2. Bring the engine speed to 1,000 rpm using the Engine Speed Hand Throttle.
 3. Place the hydrostatic transmission in "L" range using the Transmission Range Lever.
 4. Engage the flashers, release the parking brake, depress the Forward Pedal, and drive to the cone that is in front of the tractor.
 5. Once you reach the cone, **STOP!**
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1. Now using the Reverse Pedal, drive the tractor in reverse.
 2. Once you reach the original location of the tractor, **STOP!**
 3. Place the tractor in Neutral.
 4. Set the Park Brake. Turn off the flashers.
 5. Idle down the engine. Turn off the engine.
 6. Remove your seat belt and dismount safely from the tractor.
 7. Give the ignition key to the assistant.

You will be judged by the rubric below on your tractor operation skills.

****Official Use Only ****

Action	Points Available	Points Earned
Safely mounted/dismounted the tractor	1	
Utilized the seatbelt appropriately	1	
Used park brake appropriately	1	
Used transmission appropriately	1	
Used appropriate rpm and speed range	2	
Used flashers appropriately	1	
Safely drove the tractor forward	3	
Safely drove the tractor in reverse	3	
Turned in key to assistant	1	
Total points earned		

Safety deductions, including the use of safety classes _____
(1 point per infraction)

Total Points Earned _____
(30 points maximum)