

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: \_\_\_\_\_

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.

Participation Number:

Two letter state abbreviation. →

State code (0301, 0302, ..... to 0350)

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

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Skill Activity Score: \_\_\_\_\_

Judges Initials: \_\_\_\_\_

**2018 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:**

You are a diversified farmer in your local community who manages a 26-acre organic vegetable farm, fruit orchard, and a 120 head herd of milking goats. As part of your operation, management of the soil, plants, pastures, and machinery selection and maintenance is critical.

For this skill activity, you will be using various Kubota Utility Tractors (Model(s) L3301, MX4800, and M6060). This skill activity is worth a maximum of **30 points**. You will have **25 minutes** to complete the entire skill activity. Read through the instructions and procedures carefully before you begin. **(If you don't know, it is OK to ask questions - Ask before you do it!)**

**PROBLEM STATEMENT:**

You are a farmer in Eldon, MO. One of your annual duties is to till the grazing pastures (20 acres) of your dairy goat operation and plant a winter cover crop. To make this task easier, you are considering purchasing a new tractor and contemplating the correct model to purchase. Prior to visiting with a sales person, you have decided to visit your local dealer to inspect each model and consider ease of maintenance. Using provided technical data and electrical tools, complete the following questions and skills.

## **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 at all times!**
3. Using the provided handouts, scratch paper, your calculator, answer the following questions. Round up to the hundredth decimal place unless noted.
4. Please print legibly all answers. If we can't read it, we can't grade it.

## **Questions:**

1. What are the hydraulic pump capacities on the following tractor models?

**L3301 \_\_\_\_\_ (GPM) – (2 points)**

**MX4800 \_\_\_\_\_ (GPM) – (2 points)**

**M6060 \_\_\_\_\_ (GPM) – (2 points)**

2. What are the PTO speeds and corresponding engine speeds for each of the following tractor models in their current configuration?

**L3301 PTO Speed \_\_\_\_\_ rpm at \_\_\_\_\_ engine rpm (2 points)**  
**MX4800 PTO Speed \_\_\_\_\_ rpm at \_\_\_\_\_ engine rpm (2 points)**  
**M6060 PTO Speed \_\_\_\_\_ rpm at \_\_\_\_\_ engine rpm (2 points)**

3. Which tractor would be the most appropriate to purchase in order to utilize your existing Land Pride Disk Harrow, Model #DH2596?

**Kubota Tractor Model \_\_\_\_\_ (1 point)**

**Briefly explain your reasoning:**

\_\_\_\_\_  
\_\_\_\_\_ (3 points)

4. Of the engine oils displayed, which engine oil is the appropriate oil for all of these tractor models? (Please circle one answer choice)

**Oil A**

**Oil B**

**Oil C**

**(1 point)**

5. Assume the largest hp tractor is used to disk your grazing pasture. Using the provided information for the Land Pride Disk Harrow, Model # DH2596, at 8 mph, and a 92% field efficiency rate, calculate the effective field capacity of this tractor and disk harrow.

**Effective Field Capacity (Acres/Hour) = \_\_\_\_\_** (3 points)

6. On the Kubota MX4800 tractor, use a tape measure and ruler/yard stick to check the fan belt tension. Was this belt properly tensioned? (Please circle only one answer)

**YES**

**NO**

(3 points)

7. Using the multimeter provided, check the alternator connector voltage on the Kubota L3301 tractor. Is this voltage output within recommended specifications? (Please circle only one answer)

**YES**

**NO**

(2 points)

8. On the Kubota L3301 tractor, how much will the alternator voltage normally change when engine temperature reaches 212 degrees F?

\_\_\_\_\_ **change in alternator voltage** (2 points)

9. The Kubota MX 4800 utilizes slow-blow type fuses to protect electrical cabling. The fuse recommended for protecting battery cables is a 60A fuse. Has this fuse been properly installed? (Please circle only one answer)

**YES**

**NO**

(2 points)

**\*\*\*\*Official Use Only \*\*\*\***

**Student Use of Safety Glasses** \_\_\_\_\_  
(1 point)

**Total Points Earned** \_\_\_\_\_  
(30 points maximum)