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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: _____

2022 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:

In this skill activity, you will be evaluating and setting up a John Deere Planter. 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 row crop farmer in Boonville, MO (1,055 acres) and grow two main crops: corn (600 acres) and soybean (229 acres). The remaining acres is in USDA- CRP ground. On your farm, you currently have all John Deere equipment and are thinking of buying a new tractor and planter. Your neighbor across the fence just bought the exact tractor and planter you are contemplating purchasing and has asked you to come over and help with getting it set up for spring planting.

As a farmer, you are constantly having to contemplate immediate and future issues on the farm. The largest current task is the timely planting of your ground during a limited window of opportunity during the spring months. Additionally, as a small family farm, equipment maintenance issues fall upon your shoulders and have recently been more challenging due to aging equipment. Furthermore, you are contemplating getting out of the farming business and renting your ground out to another neighboring farm.

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 cannot read it, we cannot grade it.

Questions:

1. What is the model number of the John Deere planter on display? ***(Print the model number legibly in the space provided. A volunteer will bubble in this answer)***

Model Number _____

A. Correct

B. Incorrect

2. What is the serial number of the John Deere planter on display? ***(Print the serial number legibly in the space provided. A volunteer will bubble in this answer)***

Serial Number _____

A. Correct

B. Incorrect

3. What size tractor (hp) is recommended for pulling this planter?

A. 242/245 hp

B. 285/289 hp

C. 368/370 hp

D. 495/500 hp

4. To check accuracy on your GPS-based speedometer, you measure off 100 feet. It takes approximately 10.91 seconds to travel 88 feet. What is your speed (mph)?

- A. 4.62 mph
- B. 5.50 mph
- C. 6.23 mph
- D. 11.51 mph

5. Calculate the Theoretical Field Capacity of these machines? Use your calculated speed from Question # 4.

- A. 16.58 acres/hour
- B. 21.02 acres/hour
- C. 29.99 acres/hour
- D. 40.83 acres/hour

6. Calculate the Effective Field Capacity of these machines?

- A. 24.49 acres/hour
- B. 29.88 acres/hour
- C. 36.63 acres/hour
- D. 58.00 acres/hour

7. Calculate the corn seed population being dispersed by the planter. Assume you travel 87 feet at a given speed and you count 117 seeds. Your desired corn seed spacing is 9" on the row. In 1/200th of an acre, what is your corn seed population?

- A. 16,000 seeds per acre
- B. 23,400 seeds per acre
- C. 28,995 seeds per acre
- D. 31,222 seeds per acre

8. Adjust to maximum down force for the closing wheel. (***A volunteer will bubble in this answer.***)

A. Correct

B. Incorrect

9. Your desired corn seed planting depth is 1/2". What is the current seed depth that the planter placed the seed?

A. 4" current seed depth

B. 3" current seed depth

C. 2" current seed depth

D. 1" current seed depth

10. Adjust the seed planting depth on your planter row to the minimum planting depth by adjusting the closing wheel downforce. (***A volunteer will bubble in this answer.***)

A. Correct

B. Incorrect

11. Identify the bolt size, grade, and torque setting for the bolt provided.

A. M6, 4.8, 31.9 in.-lb.

B. M8, 4.8, 76.1 in.-lb.

C. M10, 8.8, 23.5 ft.-lb.

D. M 22, 8.8, 263 ft.-lb.

12. What is the maximum operating speed of the planter when using the in-furrow fertilizer application?

- A. 3 mph
- B. 5.5 mph
- C. 10 mph
- D. 13 mph

13. When applying liquid fertilizer in-furrow, what is the maximum number of acres that can be treated, assuming you are using the lowest fertilizer application rate, per tank of liquid fertilizer?

- A. 50 acres
- B. 100 acres
- C. 150 acres
- D. 200 acres

14. What is the row spacing on this planter?

- A. 20 inches
- B. 30 inches
- C. 36 inches
- D. 38 inches

15. What is the electrical system voltage on this planter?

- A. 12 volts
- B. 24 volts
- C. 48 volts
- D. 56 volts