



**2023 State Contest**  
**FFA Agricultural Mechanics CDE**  
**University of Missouri**

\*\*\*\*\*Place Label Here\*\*\*\*\*

Contestant # \_\_\_\_\_  
Contestant Name \_\_\_\_\_  
Chapter \_\_\_\_\_

**Final Score (out of 50)** \_\_\_\_\_

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## **Small Cylinder Engines**

**Instructions:** Points are based on your performance of proper procedures as well as skill activities. Please practice safe methods while completing these activities as some points may be allocated to safety. If you need any clarifications please ask for assistance. Read instructions carefully and thoroughly before completing each question or section.

Point Evaluation	Points Possible	Points Earned
Part Identification	15	_____
Skill Activity	15	_____
Tool Identification	10	_____
Trouble Shooting	10	_____
<b>TOTAL POINTS</b>	<b>50</b>	_____
<i>Touching items listed as</i> <i>“DO NOT TOUCH”</i>	-5	_____

### Part Identification

Identify the part and write the correct letter in the box. (1 point each)

**NOTE: Not all letters will be used.**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_

- A. Connecting Rod
- B. Idle/mixture screw
- C. Connecting Lock/Screw Lock
- D. Crank Shaft
- E. Cylinder Head Screw (Head Bolt)
- F. Cam Shaft
- G. Flywheel Key
- H. Crankcase Cover (Oil Sump)
- I. Piston Pin
- J. Oil Slinger
- K. Compression Ring
- L. Intake Valve
- M. Oil Ring
- N. Cylinder Head
- O. Flywheel
- P. Exhaust Valve
- Q. Coil/Module
- R. Head Gasket
- S. Butterfly valve
- T. Crankcase Gasket
- U. Lifter
- V. Valve Retainer clip

### Tool Identification

Look at tools a-j and list them on the lines below. (1 point each)

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_
- g. \_\_\_\_\_
- h. \_\_\_\_\_
- i. \_\_\_\_\_
- j. \_\_\_\_\_

#### Possible Answers

Angle Grinder  
Bladed Feeler Gauge  
Cylinder Hone  
Flywheel Wrench  
Piston Ring Compressor  
Resistance Meter  
Round Feeler Gauge  
Snap Ring Pliers  
Spark Test Light  
Tongue-and-Groove Pliers  
Torque Wrench  
Torx head Screwdriver  
Valve Spring Compressor  
Wire Stripper

### Trouble Shooting

(10 points)

1. Examine the valve train for the engine tagged **1A** and determine if it is in proper working condition? \_\_\_\_\_ (2 points)

If not, what is the problem with the engine labeled **1A**?

\_\_\_\_\_

2. Is the engine tagged **2B** timed properly? (4 points)

Answer: \_\_\_\_\_

3. What tool is used to measure the problem listed on the **provided sheet 3C**? (2 points)

Answer: \_\_\_\_\_

4. Look at the sparkplugs laid on the table labeled **4s, 4t, 4u, and 4v**. Say whether the engine they were in was rich, normal, or lean. (2 points)

4s. \_\_\_\_\_

4t. \_\_\_\_\_

4u. \_\_\_\_\_

4v. \_\_\_\_\_

**Skill Activity**  
(5 points each)

5. Check the valve lash on Engine **5A** and write it below.

Answer: \_\_\_\_\_

6. Measure the cylinder bore parallel to the crankshaft of engine labeled **6B**.

Answer: \_\_\_\_\_

7. Measure the gap of Engine **7C**'s spark plug in front of you using the proper tool and write it below.

Answer: \_\_\_\_\_