

**2014 Cowboy Classic  
Agricultural Technology and Mechanical Systems  
Energy Systems – Small Gas Engine Skill**

You are in your junior year of high school and just prior to the summer, you started your own lawn care and landscape Maintenance Company. As a result of the generosity of a retired landscaper in the community, you have received the equipment necessary to start your business in exchange for lawn services at his home. In addition to the standard lawn service equipment you were given, you received a 300-gallon skid sprayer for lawn pesticide applications. All of the equipment has been out of service, so the first thing you must do is provide seasonal maintenance to the machinery  
**(Show all work in standard measurement units)**

**At Station 1, In order to obtain the proper specifications from the repair manual you must first identify the specific model, type, and code for your engine.**

Model: 305447 Type: 0110-E1 Code: 05072011

1. At station 2, Using the tools provided, determine the cylinder displacement (CD) for the cylinder provided. The answer must be expressed in cubic inches **5 Pts.**

Bore = 2.67 – 2.68 Stroke = 2.625

$$CD = \frac{\pi \times \text{Bore}^2 \times \text{Stroke}}{4}$$

Answer – 14.68 to 14.80 CI

2. At station 3, check the Piston Ring end gap to determine if the ring needs to be replaced. 4 Pts.

Piston ring end gap measurement .013

Reject? YES NO X

3. At station 4 and 5, Check the armature gap and spark plug gap. 4 Pts. Ea.

Armature gap .005 - .007

Reject? YES NO X

Spark plug gap .026 - .028

Reject? YES X NO

**Tool and Part ID – 10 Pts.**

1. <u>I</u>	6. <u>D</u>	A	Camshaft	F	Ring expander
2. <u>H</u>	7. <u>E</u>	B	Crankshaft	G	Rocker arms
3. <u>J</u>	8. <u>C</u>	C	Flywheel puller	H	Tappets
4. <u>B</u>	9. <u>A</u>	D	Micrometer	I	Torque wrench
5. <u>F</u>	10. <u>G</u>	E	Push Rod	J	Valve spring compressor

Criterion	Points Possible	Points Earned
Questions (1 - 3)	17	
Matching	10	
Safety	3	

Name \_\_\_\_\_ School \_\_\_\_\_ Contestant Number \_\_\_\_\_