

Name _____ School _____

**2015 Wyoming State FFA CDE
Agricultural Technology and Mechanical Systems
Energy Systems – Small Gas Engine Skill**

You have been recently hired at one of the local small engine repair shops. This shop services a large number of local businesses, and one business, Laramie Pest Management Services annually contracts the business to service and maintain the engines they use in their business. One of the engines will require part replacements. **Identify the parts that will need to be replaced and document them in the chart below. Additionally, identify the specific engine system each part belongs to.**

Part Identification		Part Selection			
1. h	6. b	a.	Crankcase Breather	f.	Armature Shaft
2. d	7. c	b.	Fuel Filter	g.	Backplate
3. f	8. e	c.	Fuel Pump	h.	Cylinder Head
4. a	9. g	d.	Rocker Arm	i.	Flywheel
5. i	10. j	e.	Valve Spring	j.	Starter Motor

After identifying the parts that need to be replaced, you begin maintenance on the remaining engines. As you are doing your maintenance check, you determine that several of the motors are not running properly. You have determined that the spark plug gaps need to be measured, the oil levels checked for each of the engines, and that the cylinder head needs to be torqued to meet the proper specifications.

Complete the three tasks for each of the engines with the tools provided.

	Spark Plug Gap Measurement	Is the Spark Plug Gap within specifications?	Is the oil level within specifications?	Cylinder Head Torque Specifications in in. lbs.	Torque the marked cylinder head bolt to proper specifications. ***You must receive judge's signature to obtain points for this section.
1.	.030	Yes	Yes	165 in. lbs.	
2.	.030	No	No	165 in. lbs.	
3.	.030	No	No	165 in. lbs.	

*** Note: The spark plug gap measurement column answer above was intended to be derived from the engine manual. After re-evaluating the question, it could be mistaken by the student that actual measurement was requested. As such, no points were taken from students in this column.

1. When making adjustments to the carburetor idle fuel mixture of a Vanguard V-Twin OHV, what are the 2 initial adjustments that must be made before the final adjustment can occur?

- a. Turn idle mixture screw clockwise until it just seats.
- b. Turn the valve counter clockwise 1-1/4 turns for initial adjustment.

2. What is the recommended standard time frame between cleaning and re-oiling an air cleaner oil-foam element?

Every 25 hours or three months of use.

Criterion	Points Possible	Points Earned
Application	10 (1 point each)	
Questions	17 (1 point each)	
Safety	3	