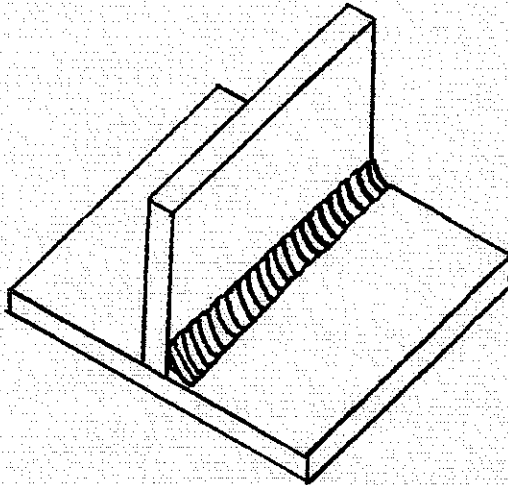


SHOP SKILLS

Arc Welding

Contestant Number _____

During this part of the shop skills phase of the contest complete a fillet weld (one side) according to the drawing. Follow the procedure below: Note you have 6 minutes to complete this job. Read complete procedure before beginning.



FILLET WELD
(One Side)

1. Pick up 4 pieces of arc welding metal.
2. Pick up two E6013 electrodes.
3. Select an arc welding machine.
4. Make adjustments on machine as you feel necessary based on electrode and metal being welded.
5. Follow all safety practices such as having safety glasses on, wearing gloves and proper clothing and having welding helmet in place for welding. Observe safety of others.
6. Use two pieces of metal for practice.
7. Complete the weld for judging. Turn off machine.
8. Clean weld with wire brush and chipping hammer. Cool weld.
9. Mark your contestant number on weld.
10. Submit weld and this sheet to official judge for evaluation.

Evaluation Score Sheet

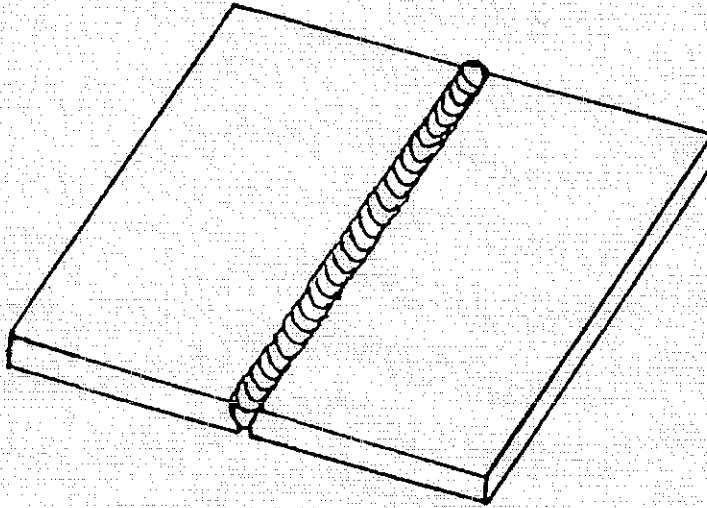
<u>Item</u>	<u>Points</u>	
	<u>Possible</u>	<u>Earned</u>
1. Freedom from spatter	3	_____
2. Freedom from distortion	3	_____
3. Freedom from undercutting	3	_____
4. Freedom from slag inclusions	3	_____
5. Equal length legs	3	_____
6. Flat face	3	_____
7. Uniformity	3	_____
8. Penetration	4	_____

Total 25

SKILLS

Arc Welding

During this part of the shop skills phase of the contest, complete a flat butt weld (one side) according to the drawing. Follow the procedure below. NOTE: You have approximately 15 minutes to complete this job. Read complete procedure before beginning.



FLAT BUTT WELD
 (One Side)

1. Pick up 4 pieces of arc welding metal.
2. Select two electrodes of your choice either E6011 or E6013.
3. Select an arc welding machine.
4. Make adjustments on machine as you feel necessary based on electrode and metal being welded.
5. Follow all safety practices such as having safety glasses on, wearing gloves and proper clothing and having welding helmet in place for welding. Observe safety of others.
6. Use two pieces of metal for practice.
7. Complete the weld for judging. Turn off machine.
8. Clean weld with wire brush and chipping hammer. Cool weld.
9. Mark your contestant number on weld.
10. Submit weld and this sheet to official judge for evaluation.

EVALUATION SCORE SHEET

POINTS

<u>ITEMS</u>	<u>POSSIBLE</u>	<u>EARNED</u>
1. Freedom from spatter	3	_____
2. Freedom from distortion	2	_____
3. Penetration	8	_____
4. Uniform width and height.	3	_____
5. Beginning and ending of weld.	3	_____
6. Freedom from undercutting	3	_____
7. Safety and work habits.	3	_____

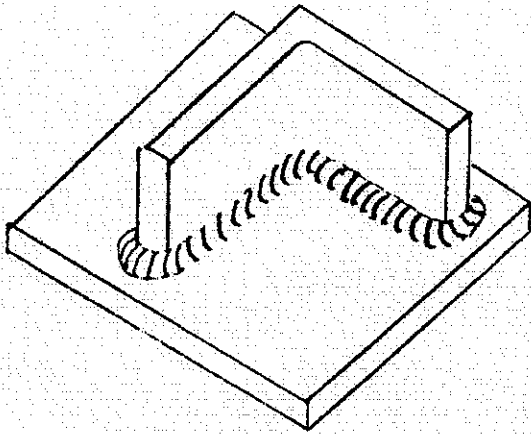
TOTAL 25

SHOP SKILLS

Arc Welding

NAME _____

During this part of the shop skills phase of the contest complete a fillet weld (all around) according to the drawing. Follow the procedure below: Note you have 8 minutes to complete this job. Read complete procedure before beginning.



FILLET WELD
(All Around)

1. Pick up 2 pieces of arc welding metal. (1 piece of angle + 1 piece of plate)
2. Use the E6013 electrode.
3. Select an arc welding machine.
4. Make adjustments on machine as you feel necessary based on electrode and metal being welded. You may try bead on the practice plate provided.
5. Follow all safety practices such as having safety glasses on, wearing gloves and proper clothing and having welding helmet in place for welding. Observe safety of others.
6. Position the angle on the plate as shown.
7. Complete the weld for judging. Turn off machine.
8. Clean weld with wire brush and chipping hammer. Cool weld.
9. Mark your contestant number on bottom side of plate.
10. Submit weld and this sheet to official judge for evaluation.

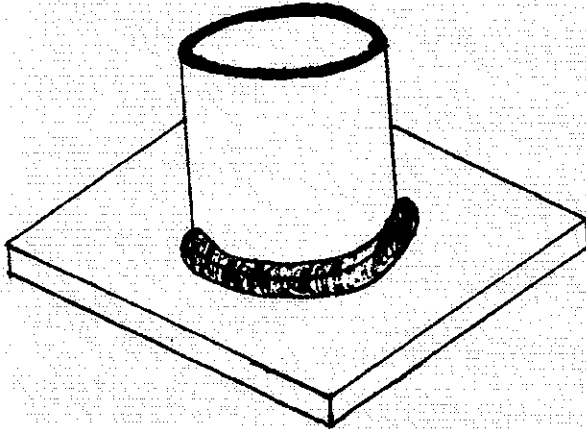
Evaluation Score Sheet

<u>Item</u>	<u>Points</u>	
	<u>Possible</u>	<u>Earned</u>
1. Freedom from spatter	3	_____
2. Freedom from undercutting	3	_____
3. Freedom from slag inclusions	3	_____
4. Correct heat used	3	_____
5. Equal length legs	3	_____
6. Size of weld	3	_____
7. Flat face	3	_____
8. Uniformity	3	_____
9. Safety and work habits	1	_____
TOTAL	25	<input style="width: 50px; height: 30px;" type="text"/>

Shop Skills
Arc Welding

During this part of the shop skills phase of the contest complete a fillet weld (all around) according to the drawing. Follow the procedure below: Note you have 15 minutes to complete this job. Read complete procedure before beginning.

FILLET WELD
(ALL AROUND)



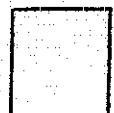
1. Pick up two pieces of arc welding metal (one piece of pipe and one piece of plate for final job and one practices piece of metal.
2. Select electrodes: E6011 or E6013.
3. Select an arc welding machine.
4. Make adjustments on machine as you feel necessary based on electrode and metal being welded. You may practice on plates provided.
5. Follow all safety practices such as having safety glasses on, wearing gloves and proper clothing and having welding helmet in place for welding. Observe safety of others.
6. Position the pipe on the plate as shown.
7. Complete weld for judging. Turn off machine. Leave welding area as you found it
8. Clean weld with wire brush and chipping hammer. Cool weld.
9. Mark your contestant number on bottom side of plate.
10. Submit weld and this sheet to official judge for evaluation.

Evaluation Score Sheet

Points

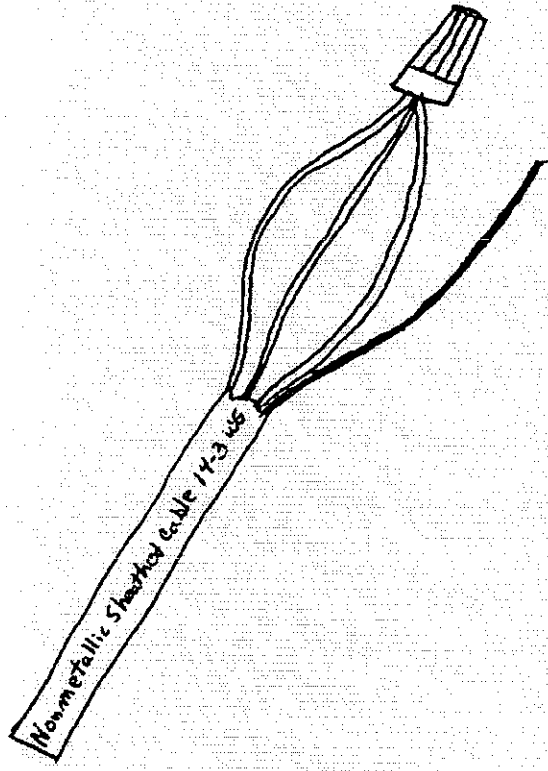
<u>Item</u>	<u>Possible</u>	<u>Earned</u>
1. Freedom from spatter.	3	_____
2. Freedom from undercutting	4	_____
3. Freedom from slag inclusions	3	_____
4. Correct amperage used	3	_____
5. Size of weld	3	_____
6. Flat face	3	_____
7. Uniformity	3	_____
8. Safety and work habits.	3	_____

Total 25



SHOP SKILLS
 Electrical Wiring

- A. You will have 15 minutes to complete this exercise.
- B. All materials needed to complete the exercise are at the work station.
- C. When completed, turn in this sheet and the completed exercise to the judge for evaluation.
- D. Leave your work station in order.



Solderless Electrical Splice

- 1. Using the tools and materials at your work station, make an electrical splice as illustrated.
- 2. Rip the cable back to approximately 4".
- 3. Strip insulation back as required for connector.
- 4. Select proper solderless connector for wire size.
- 5. Splice the 3 insulated conductors leaving the bare ground conductor alone.

Evaluation Score Sheet

<u>Item</u>	<u>Points</u>	
	<u>Possible</u>	<u>Earned</u>
1. Ripping cable covering	3	_____
2. Stripping of conductors	3	_____
3. Selected correct connector	5	_____
4. Strength of splice	6	_____
5. Soundness of splice	5	_____
6. Safety practices, work habits and use of tools	3	_____
TOTAL		25

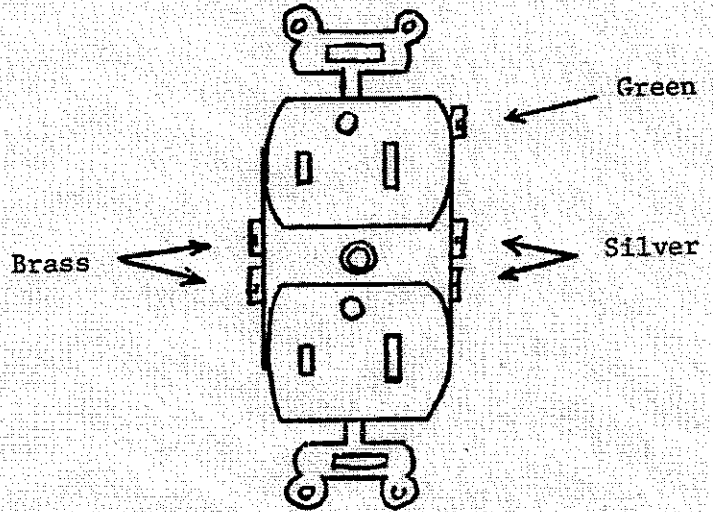
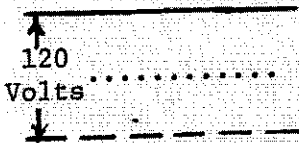


SHOP SKILLS

ELECTRICAL WIRING

Grounded Duplex Receptacle

You will have 15 minutes to complete this exercise. All materials needed are in the container at one of the work stations. First, complete the exercise shown below on paper by connecting the grounded receptacle using _____ lines for the black wire, ----- for the white wire and for the bare wire.



After completing the exercise on paper, complete the actual wiring of the receptacle using the tools and materials at your station. When completed, leave your work station in order, turn in your wiring exercise and this sheet to the judge for evaluation.

Evaluation Score Sheet

<u>Item</u>	<u>Points</u>	
	<u>Possible</u>	<u>Earned</u>
1. Wiring diagram	6	_____
2. Wiring the receptacle		
a. Proper length cable in box	1	_____
b. Stripping of cable	2	_____
c. Stripping of conductors	2	_____
d. Conductors around screws	3	_____
e. Proper connection of receptacle	6	_____
f. Box connector	1	_____
g. Location of cable on stud	2	_____
3. Safety and work habits	2	_____
	TOTAL 25	<div style="border: 1px solid black; width: 50px; height: 50px; display: inline-block;"></div>

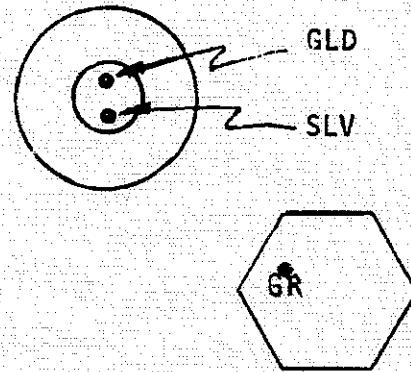
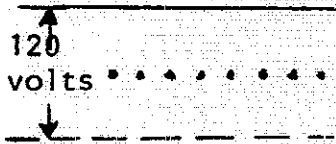
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 DEPARTMENT OF PUBLIC INSTRUCTION
 Career Education Division
 Grimes State Office Building
 Des Moines, Iowa 50319

Contestant Number _____
 Contestant Name _____
 Contestant School _____

SHOP SKILLS

Electrical Wiring-Wiring A Lamp

- A. You will have 15 minutes to complete this exercise.
- B. All materials needed to complete the job are at the work station.
- C. Complete the wiring exercise on paper connecting the lamp by using _____ lines for the black wire, ----for the white wire andfor the bare wire.



- D. Complete the actual wiring of the lamp using materials at your work station. Properly attach the lamp to the octagon box. You will not use the switch boxes on the wiring exercise board.
- E. When completed, leave your work station in order and turn in this sheet along with your wiring exercise to the contest judge for evaluation.

Evaluation Score Sheet

<u>Item</u>	<u>Points</u>	
	<u>Possible</u>	<u>Earned</u>
1. Wiring diagram.	6	_____
2. Wiring the lamp:		
a. Proper length of cable in box.	2	_____
b. Stripping of cable and conductors.	2	_____
c. Box connector.	2	_____
d. Conductors around screws	2	_____
e. Proper connection of lamp.	5	_____
f. Circuit properly grounded.	3	_____
3. Safety and work habits.	3	_____
TOTAL	25	_____



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SKILLS

Electric Wiring

- A. You will have 15 minutes to complete this exercise.
- B. All materials needed to complete the exercise are at the work station.
- C. Complete an electrical junction box connection of two, 14-2W Ground electrical cable. Complete the connections in the octagon box on the wiring board so it is ready to have the box cover added but do not cover the box.
- D. When completed, turn in this sheet and the completed exercise to the judge for evaluation.
- E. Leave your work station in order.

EVALUATION SCORE SHEET

<u>ITEMS</u>	<u>POINTS</u>	
	<u>POSSIBLE</u>	<u>EARNED</u>
1. Correct length conductor in box.	3	_____
2. Box clamps properly tightened.	4	_____
3. Ripping cable and stripping of conductors.	4	_____
4. Proper grounding of system	3	_____
5. Selected correct connector	3	_____
6. Strength and soundness of splices.	5	_____
7. Conductors properly placed in box.	2	_____
8. Safety practices, work habits and use of tools	2	_____
TOTAL	25	_____

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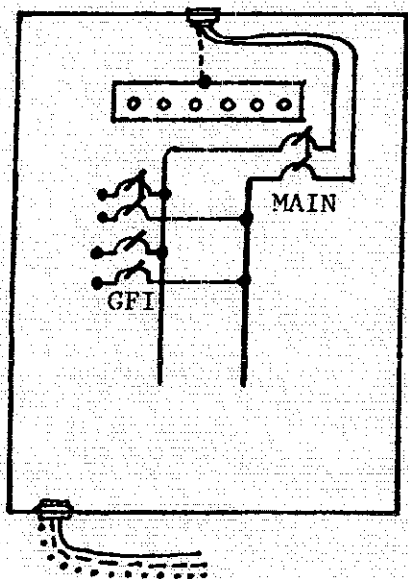
Contestant School _____

SHOP SKILLS

Electrical Circuits

Connecting a Branch Circuit in a Service Entrance Panel

You will have 15 minutes to complete this exercise. All material needed to complete the job are at the work station. Complete the exercise on the drawing below connecting a circuit breaker in a service entrance panel for a 120 volt non GFI protected lighting branch circuit. Use lines for the black wire, — for the white wire and ... for the bare wire. Answer the three questions below.



SERVICE
 ENTRANCE
 PANEL

Questions, Determine:

1. Size of service entrance panel: _____ amps.
2. Size of main circuit breaker: _____ amps.
3. Size of branch circuit breaker used: _____ amps.

Complete the actual wiring of the service entrance panel using materials at your work station. Properly attach the cable to the correct circuit breaker for the 120 volt non GFI protected lighting circuit. When completed, leave your work station in order and request the judge to evaluate your wiring exercise.

EVALUATION SCORE SHEET

<u>ITEMS</u>	<u>POINTS</u>	
	<u>POSSIBLE</u>	<u>EARNED</u>
1. Wiring Diagram and questions	6	_____
2. Wiring the service entrance panel		
a) Proper length of cable in panel.	2	_____
b) Stripping of cable and conductors.	2	_____
c) Box connector.	2	_____
d) Conductors secured to terminal screws.	2	_____
e) Proper circuit breaker used.	3	_____
f) Circuit properly connected	3	_____
g) Circuit properly grounded.	3	_____
3. Safety and work habits	2	_____
Total	25	<div style="border: 1px solid black; width: 40px; height: 40px; display: inline-block;"></div>

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 Career Education Division
 Grimes State Office Building
 Des Moines, Iowa 50319

Contestant Number _____

Contestant Name _____

Contestant School _____

SHOP SKILLS

Power And Machinery

Small Gas Engines

- A. You will have 15 minutes to complete this exercise.
- B. Note your engine number on this sheet. ENGINE NUMBER _____
- C. Complete the operations specified below. You may use the operator's manual.
- D. Do Not start the engine.
- E. When completed, raise your hand so the judge may evaluate your work.
- F. Leave work station in order when completed.

EVALUATION SCORE SHEET

<u>Item</u>	<u>POINTS</u>	
	<u>Possible</u>	<u>Earned</u>
1. Engine make and number information:		
a. Engine make _____	1	_____
b. Model number _____	1	_____
c. Type number _____	1	_____
d. Code number _____	1	_____
2. Engine specifications; Determine:		
a. Crankcase oil capacity _____ pints.	1	_____
b. Recommended fuel _____	1	_____
c. Oil change interval _____ hrs.	1	_____
d. Maximum horsepower _____	1	_____
3. Spark plug maintenance:		
a. Remove spark plug		_____
b. Determine gap specifications _____	1	_____
c. Reset gap.	3	_____
d. Replace spark plug, torque to 200 inch pounds.	3	_____
4. Carburetor adjustments:		
a. Initial needle valve setting _____ turns open	1	_____
b. Adjust needle valve (do not jam needle against the seat)	3	_____
c. Initial idle valve setting _____ throttle open.	1	_____
d. Adjust idle valve.	3	_____
5. Safety practices and work habits	2	_____
TOTAL	25	_____

SKILLS

Small Engine Power

- A. You will have 15 minutes to complete this exercise.
- B. Note your ENGINE NUMBER _____.
- C. Complete the operations specified below. You may use the operator's manual.
- D. DO NOT START THE ENGINE.
- E. When completed, raise your hand so the judge may evaluate your work.
- F. Leave work station in order when completed.

EVALUATION SCORE SHEET

<u>ITEMS</u>	<u>POINTS</u>	
	<u>POSSIBLE</u>	<u>EARNED</u>
1. Engine pre-operational checks		
a) check crankcase oil level. Low - okay - overfill (circle one)	2	_____
b) check fuel tank level. low - okay- overfill (circle one)	2	_____
c) check choke position open - closed (circle one)	2	_____
2. Engine maintenance and tune-up specifications; record below:		
a) spark plug gap _____	1	_____
b) ignition point gap _____	1	_____
c) valve clearance (intake) _____ (exhaust) _____	1 1	_____ _____
d) initial carburetor adjustments (turns open)		
needle valve _____	1	_____
idle valve _____	1	_____
e) Lubricating oil		
viscosity (summer) _____	1	_____
API (type) _____	1	_____
3. Ignition check		
a) using the ignition (spark) tester, check for spark . . spark okay - no spark (circle one)	5	_____
b) gap the spark plug to specification.	5	_____
4. Safety practices and work habits	2	_____
TOTAL	25	<input type="checkbox"/>

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DEPARTMENT OF PUBLIC INSTRUCTION
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Grimes State Office Building
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CONTESTANT NUMBER _____
CONTESTANT NAME _____
CONTESTANT SCHOOL _____

SHOP SKILLS

Power and Machinery - Small Gas Engines

INSTRUCTIONS:

- A. You will have 15 minutes to complete this exercise.
- B. Note your ENGINE NUMBER _____.
- C. Complete the operations specified below. You may use the operator's manual.
- D. DO NOT start the engine.
- E. When completed, raise your hand so the judge may evaluate your work.
- F. Leave work station in order when completed.

EVALUATION SCORE SHEET

<u>ITEM</u>	<u>POINTS</u>	
	<u>POSSIBLE</u>	<u>EARNED</u>
1. Engine maintenance and tune-up specifications; record below.		
a) spark plug gap _____	2	_____
b) ignition point gap _____	2	_____
c) valve clearance (intake) _____	1	_____
(exhaust) _____	1	_____
d) initial carburetor adjustments (turns open)		
needle valve _____	2	_____
idle valve _____	2	_____
e) lubricating oil		
viscosity (summer) _____	1	_____
API (type) _____	1	_____
2. Ignition system adjustment; complete on engine provided:		
a) adjust breaker point gap	5	_____
b) adjust spark plug gap.	5	_____
NOTE: <u>Do not</u> install dust cover or flywheel)		
3. Safety practices and work habits.	3	_____
TOTAL	25	<input style="border: 1px solid black; width: 60px; height: 30px;" type="text"/>

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Contestant Number _____
 Contestant Name _____
 Contestant School _____

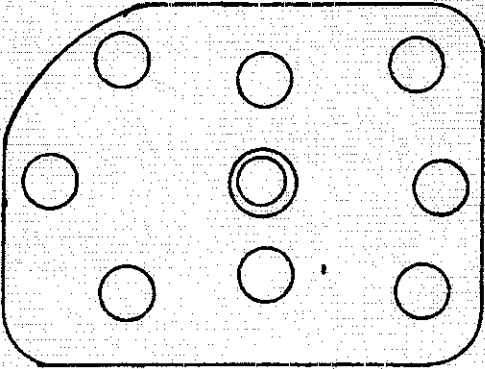
SKILLS

Power and Machinery - Small Gas Engines

INSTRUCTIONS

- A. You will have 15 minutes to complete this exercise.
- B. Note your ENGINE NUMBER _____.
- C. Complete the operations specified below. You may use the operator's manual.
- D. DO NOT start the engine.
- E. When completed, raise your hand so the judge may evaluate your work.
- F. Leave work station in order when completed.

SKILL PROCEDURES AND EVALUATION SCORE SHEET

<u>ITEM</u>	<u>POINTS</u>	
	<u>POSSIBLE</u>	<u>EARNED</u>
1. Engine Carburetion		
a) Identify the carburetor style on this engine (Record - be specific) _____	1	_____
b) Determine the type of choke (check one) Manual _____ Automatic _____	1	_____
c) Record initial carburetor adjustments (turns open)		
Needle valve _____	1	_____
Idle valve _____	1	_____
NOTE: <u>DO NOT</u> adjust carburetor		
2. Engine Compression		
a) Determine the cylinder head torque sequence; identify the sequence on the drawing by number		
	3	_____
b) Perform the torque procedure.	5	_____
3. Engine Ignition		
a) Measure and record the length of the breaker plunger _____ "	5	_____
b) Measure and record the armature air gap. _____ " _____ " . .	5	_____
4. Safety practices and work habits	3	_____
TOTAL	25	_____

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CONTESTANT NUMBER _____
 CONTESTANT NAME _____
 CONTESTANT SCHOOL _____

SKILLS
 Agricultural Power and Machinery
 Small Engine Power

INSTRUCTIONS:

- A. You will have 15 minutes to complete this exercise.
- B. Note the ENGINE NUMBER _____.
- C. Complete the operations specified below. You may use the operator's manual.
- D. DO NOT start the engine.
- E. When completed, raise your hand so the judge may evaluate your work.
- F. Leave the work station in order when completed.

SKILL PROCEDURES AND EVALUATION SCORE SHEET

ITEMS	POINTS	
	POSSIBLE	EARNED
I. Parts Measurement (English Micrometer): Measure the journals listed and record measurements below.		
A. Crankshaft Record Measurement		
1) PTO Journal _____	3	_____
2) Crankpin _____	3	_____
3) Magneto Journal _____	3	_____
II. Check Clearance: check the tappet clearance and spark plug gap, record below:		
A. Valve tappets		
1) Intake valve _____	3	_____
2) Exhaust valve _____	3	_____
B. Spark plug _____	3	_____
III. Engine Specifications: Use the manual provided to look up the engine crankshaft reject sizes, valve clearance and spark plug gap; record below:		
A. Crankshaft reject size		
1) PTO Journal _____	1	_____
2) Crankpin _____	1	_____
3) Magneto journal _____	1	_____
B. Valve tappet clearance		
1) Intake _____	1	_____
2) Exhaust _____	1	_____
C. Spark plug gap _____	1	_____
IV. Safety Practices and Work Habits.	1	_____
TOTAL.	25	

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Grimes State Office Building
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CONTESTANT NUMBER _____

CONTESTANT NAME _____

CONTESTANT SCHOOL _____

SKILLS
Agricultural Power & Machinery
Small Engine Power

INSTRUCTIONS:

- A. You have 15 minutes to complete this exercise.
- B. Note the ENGINE NUMBER _____
(Record)
- C. Complete the operations specified below. You may use the manual provided.
- D. DO NOT start the engine.
- E. When completed, raise your hand so the judge may evaluate your work.
- F. Leave the work station in order when completed.

SKILL PROCEDURES AND EVALUATION SCORE SHEET

<u>ITEMS</u>	<u>POSSIBLE</u>	<u>POINTS</u> <u>EARNED</u>
1. Identify the type of carburetor on this engine and record _____	3	_____
2. Determine the needle valve initial setting and record _____	2	_____
3. Determine the idle valve initial setting and record _____	2	_____
4. Adjust the needle valve initial setting on the engine.	5	_____
5. Adjust the idle valve initial setting on the engine.	5	_____
6. <u>Outline</u> the final carburetor adjustment procedure for this engine.		
A. _____		
B. _____		
C. _____		
D. _____		
E. _____		
F. _____		
G. _____	6	_____
7. Safety Practices and Work Habits.	2	_____
Total Points	25	_____



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CONTESTANT NUMBER _____

CONTESTANT NAME _____

CONTESTANT SCHOOL _____

SKILLS

Agricultural Power & Machinery
Small Engine Power

INSTRUCTIONS:

- A. You have 15 minutes to complete this exercise.
- B. Note the ENGINE NUMBER _____
(Record)
- C. Complete the operations specified below. You may use the manual provided.
- D. DO NOT start the engine.
- E. When completed, raise your hand so the judge may evaluate your work.
- F. Leave the work station in order when completed.

SKILL PROCEDURES AND EVALUATION SCORE SHEET

<u>ITEMS</u>	<u>POINTS</u>	
	<u>POSSIBLE</u>	<u>EARNED</u>
1. Measure and record the valve tappet clearances.		
Exhaust valve _____"	4	_____
Intake valve _____"	4	_____
2. Measure and record the spark plug gap.		
Spark plug gap _____"	4	_____
3. Outline service procedures for the oil foam air cleaner	4	_____

4. Perform service to oil foam air cleaner	5	_____
5. Safety Practices	4	_____

Total Points 25

