POWER SYSTEMS: SMALL ENGINES & AUTO	
CURRICULUM/CONTENT AREA	COURSE LENGTH
Applied & Technical Education (ATE)	*1 term, repeatable 1X*
GRADE LEVEL	DATE LAST REVIEWED
9-12	*2022*
PREREQUISITE(s) *if applicable*	BOARD APPROVAL DATE
none	*11/15/2022*
PRIMARY RESOURCE *if applicable*	

DESIRED RESULTS

COURSE DESCRIPTION AND PURPOSE

Small engines is designed to introduce the next generation of small engine consumers and entry-level technicians to the industry. Individuals that take this course will have acquired the entry-level technical knowledge and skills necessary to service and maintain 2-stroke and 4-stroke small engines.

ENDURING UNDERSTANDINGS *Students will understand that...*	ESSENTIAL QUESTIONS *Students will keep considering...*
Creativity, innovation, and critical thinking are essential for success in a technologically advanced world.	Why is creativity and innovation important? How is creativity and innovation used in [name of career pathway]?
	How do teams efficiently and effectively solve problems in an increasingly complex world?
	What strategies and processes can I use to become a more effective creator, thinker and problem solver?
The ability to communicate and collaborate with people with diverse backgrounds and perspectives is key to participation in a global economic society.	Why is communication and collaboration important? How do positive work behaviors and personal qualities impact communication and collaboration?
	What is effective teamwork? What strategies can I use/teams use to work better together? How can perspectives and experiences of a diverse group develop innovative solutions to a given problem?
Career and technical education provides pathways to high-demand, high-wage career opportunities, and personal fulfillment.	Why is career and life readiness important? What jobs and careers are available to meet individual and societal needs locally, regionally, and nationally?
	How might technical knowledge and skills influence one's employability and advancement opportunities within various work settings?
	What are employability skills? How do I prepare myself for a career that is in demand now and in 5, 10, or 20 years from now?

PRIORITY CAREER & TECHNICAL STANDARDS

Students will be skilled at...

Creativity, Critical Thinking, Communication and Collaboration

4C2: Students will formulate and defend judgments and decisions by employing critical thinking skills.

a: I develop effective resolutions for a given problem, decision or opportunity using available information.

b: I develop and implement a resolution for a new situation using personal knowledge and experience.

Career Development

CD4: Students will identify and apply employability skills.

a: I identify and demonstrate positive work behaviors and personal qualities needed to be employable.

b: I demonstrate skills related to seeking and applying for employment to find and obtain a desired job.

c: I identify and exhibit traits for retaining employment.

d: I develop positive relationships with others.

Information, Media, Technology

IMT1: Students will access, interpret and evaluate information from a variety of sources in order to inform and support premises, arguments, decisions, ideas and initiatives.

a: I choose appropriate sources of data and information for a given purpose.
b: I determine the relevance, validity and timeliness of data and information.
c: I select relevant information necessary for making decisions and solving problems
d: I apply data and information to communicate ideas and create new opportunities.

PRIORITY CONTENT STANDARDS

Students will know...

Standard: BB1: Students will analyze the core concepts of technology.

Standard: ENG1: Students will analyze and demonstrate the attributes of design.

Standard: ENG3: Students will demonstrate and analyze the role of troubleshooting, research and development, invention and innovation and experimentation in problem solving.

Standard: ICT1: Students will analyze, select and use information and communication technologies.

Standard: MNF1: Students will be able to select and use manufacturing technologies.

Potential INDUSTRY-RECOGNIZED CREDENTIALS (IRCs) Opportunties associated with the course	Potential WORK BASED LEARNING (WBL) opportunities associated with the course
Potential DUAL CREDIT Opportunties associated with the course	

EMPLOYABILITY/SHOP SAFETY		
STAGE 1: Desired Unit Results *What will students understand as a result of the unit?*		**STAGE 2: Assessment Evidence** *By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?*
ESSENTIAL QUESTION (s) *What thought-provoking questions will foster inquiry, understanding, and transfer of learning?*		**Success Criteria with Standards** *The criteria for evaluating performance on standards is constant.*
Why is career and life readiness important? What jobs and careers are available to meet individual and societal needs locally, regionally, and nationally?		CTE Rubric (to be developed)
What are employability skills? How do I prepare myself for a career that is in demand now and in 5, 10, or 20 years from now?		
PRIORITY CAREER & TECHNICAL STANDARDS & Learning Targets		**Performance Tasks Options/ Assessment Strategies by Standard** *Students may be given options to show their learning in varied ways.*
Creativity, Critical Thinking, Communication and Collaboration **4C2: Students will formulate and defend judgments and decisions by employing critical thinking skills.**		
a: I develop effective resolutions for a given problem, decision or opportunity using available information.	4C2.a.13.h: I can predict how an action could result in unintended consequences, both positive and negative.	*Safety, Tests, demonstrations and continuous observation*
b: I develop and implement a resolution for a new situation using personal knowledge and experience.	4C2.b.6.h: I can use existing knowledge to develop a resolution for a new situation, problem or opportunity.	*Safety, Tests, demonstrations and continuous observation*
Career Development **CD4: Students will identify and apply employability skills.**		
a: I identify and demonstrate positive work behaviors and personal qualities needed to be employable.	CD4.a.9.h: I can use positive workqualities typically desired in each of the career cluster's pathways.	*Continuous observation, daily rubric*
	CD4.a.10.h: I can manage work roles and responsibilities to balance them with other life roles and responsibilities.	*Continuous observation, daily rubric*
c: I identify and exhibit traits for retaining employment.	CD4.c.5.h: I can maintain appropriate dress and behavior for the job to contribute to a safe and effective workplace/jobsite.	*Continuous observation, daily rubric*
PRIORITY CONTENT STANDARDS & Learning Targets		**Performance Tasks Options/ Assessment Strategies by Standard** *Students may be given options to show their learning in varied ways.*
Standard: MNF1: Students will be able to select and use manufacturing technologies.	**MNF1.a.7.h:** I can identify safety and health protections and procedures that are critical to worker well-being.	*Weekly safety and work assessments*
	MNF1.a.8.h: I can use appropriate tools, materials, and machines to repair a malfunctioning system.	*Weekly safety and work assessments*

Stage 3: Learning Activities

A brief summary of the key learning activities- How will students build knowledge & develop skills? How will learning be relevant, accessible, and engaging? How will the learning unforld in a natural flow?

GUIDING UNIT QUESTIONS	**STRATEGIES/ACTIVITIES**	**RESOURCES/MATERIALS**
Using Costas Level of Thinking, what questions will hook and hold students so that they develop a deep understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and rigor of the standards. This may include questions that guide project based/ problem based learning	*What learning strategies and experiences will authentically engage students so that they gain understanding the desired results? This includes strategies and activities that help learners acquire targeted knowledge and skills, make meaning of important ideas, and transfer their learning to new situations. Consider how the learning will be tailored and flexible to address the interests and learning styles of all students.*	*This includes an applicable textbooks, software, industry recognized certification software/tools, subcriptions (such asPLTW), etc.*

TOOLS/MEASUREMENT/FASTENERS		
STAGE 1: Desired Unit Results *What will students understand as a result of the unit?*		**STAGE 2: Assessment Evidence** *By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?*
ESSENTIAL QUESTION (s) *What thought-provoking questions will foster inquiry, understanding, and transfer of learning?*		**Success Criteria with Standards** *The criteria for evaluating performance on standards is constant.*
What strategies and processes can I use to become a more effective creator, thinker and problem solver?		CTE Rubric (to be developed)
How might technical knowledge and skills influence one's employability and advancement opportunities within various work settings?		
PRIORITY CAREER & TECHNICAL STANDARDS & Learning Targets		**Performance Tasks Options/ Assessment Strategies by Standard** *Students may be given options to show their learning in varied ways.*
Creativity, Critical Thinking, Communication and Collaboration **4C2: Students will formulate and defend judgments and decisions by employing critical thinking skills.**		
a: I develop effective resolutions for a given problem, decision or opportunity using available information.	4C2.a.11.h: I can determine the information needed to address an identified problem.	*Continuous observation, discussion, quizzes, tests*
	4C2.a.12.h: I can contrast the benefits and drawbacks of various proposed resolutions to a given situation.	*Continuous observation, discussion, quizzes, tests*
	4C2.a.15.h: I can determine the best resolution for a problem, decision or opportunity based on given criteria.	*Continuous observation, discussion, quizzes, tests*
b: I develop and implement a resolution for a new situation using personal knowledge and experience.	4C2.b.5.h: I can apply past experience to develop a course of action for a new situation.	*Continuous observation, discussion, quizzes, tests*
	4C2.b.6.h: I can use existing knowledge to develop a resolution for a new situation, problem or opportunity.	*Continuous observation, discussion, quizzes, tests*
Career Development **CD4: Students will identify and apply employability skills.**		
a: I identify and demonstrate positive work behaviors and personal qualities needed to be employable.	CD4.a.6.h: I can evaluate how self-discipline, self-worth, positive attitude and integrity displayed in a work situation affect employment status.	*Continuous observation, daily rubric*
	CD4.a.9.h: I can use positive workqualities typically desired in each of the career cluster's pathways.	*Continuous observation, daily rubric*
	CD4.a.10.h: I can manage work roles and responsibilities to balance them with other life roles and responsibilities.	*Continuous observation, daily rubric*
c: I identify and exhibit traits for retaining employment.	CD4.c.4.h: I can model behaviors that demonstrate reliability and dependability.	*Continuous observation, daily rubric*
	CD4.c.5.h: I can maintain appropriate dress and behavior for the job to contribute to a safe and effective workplace/jobsite.	*Continuous observation, daily rubric*
Information, Media, Technology **IMT1: Students will access, interpret and evaluate information from a variety of sources in order to inform and support premises, arguments, decisions, ideas and initiatives.**		
c: I select relevant information necessary for making decisions and solving problems	IMT1.c.6.h: I can interpret and select appropriate information to develop a resolution for a given situation.	*Continuous observation, discussion, demonstration*
PRIORITY CONTENT STANDARDS & Learning Targets		**Performance Tasks Options/ Assessment Strategies by Standard** *Students may be given options to show their learning in varied ways.*
Standard: BB1: Students will analyze the core concepts of technology.	**BB1.b.6.h:** I can choose and perform the material processing operations of forming (e.g., bending, pressing, drawing, rolling), bonding (e.g., gluing, soldering, brazing, spot welding, gas welding, arc welding), fastening (e.g., screws, nuts & bolts, rivets, clips, pins, nails) and finishing (e.g., surface preparation, cleaning, treatment, coating).	*Continuous observation, discussion, demonstration, quizzes, tests*
Standard: MNF1: Students will be able to select and use manufacturing technologies.	**MNF1.a.8.h:** I can use appropriate tools, materials, and machines to repair a malfunctioning system.	*Continuous observation, discussion, demonstration, quizzes, tests*
	MNF1.a.9.h: I can select and apply the appropriate units and scales for situations involving measurement.	*Continuous observation, discussion, demonstration, quizzes, tests*
Stage 3: Learning Activities *A brief summary of the key learning activities- How will students build knowledge & develop skills? How will learning be relevant, accessible, and engaging? How will the learning unforld in a natural flow?*		
GUIDING UNIT QUESTIONS *Using Costas Level of Thinking, what questions will hook and hold students so that they develop a deep understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and rigor of the standards. This may include questions that guide project based/ problem based learning*	**STRATEGIES/ACTIVITIES** *What learning strategies and experiences will authentically engage students so that they gain understanding the desired results? This includes strategies and activities that help learners acquire targeted knowledge and skills, make meaning of important ideas, and transfer their learning to new situations. Consider how the learning will be tailored and flexible to address the interests and learning styles of all students.*	**RESOURCES/MATERIALS** *This includes an applicable textbooks, software, industry recognized certification software/tools, subcriptions (such asPLTW), etc.*

2/4 CYCLE ENGINE THEORY		
STAGE 1: Desired Unit Results *What will students understand as a result of the unit?*		**STAGE 2: Assessment Evidence** *By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?*
ESSENTIAL QUESTION (s) *What thought-provoking questions will foster inquiry, understanding, and transfer of learning?*		**Success Criteria with Standards** *The criteria for evaluating performance on standards is constant.*
Why is creativity and innovation important? How is creativity and innovation used in [name of career pathway]?		CTE Rubric (to be developed)
What strategies and processes can I use to become a more effective creator, thinker and problem solver?		
PRIORITY CAREER & TECHNICAL STANDARDS & Learning Targets		**Performance Tasks Options/ Assessment Strategies by Standard** *Students may be given options to show their learning in varied ways.*
Creativity, Critical Thinking, Communication and Collaboration **4C2: Students will formulate and defend judgments and decisions by employing critical thinking skills.**		
a: I develop effective resolutions for a given problem, decision or opportunity using available information.	4C2.a.11.h: I can determine the information needed to address an identified problem.	*Continuous observation, discussion, quizzes, tests*
	4C2.a.12.h: I can contrast the benefits and drawbacks of various proposed resolutions to a given situation.	*Continuous observation, discussion, quizzes, tests*
	4C2.a.15.h: I can determine the best resolution for a problem, decision or opportunity based on given criteria.	*Continuous observation, discussion, quizzes, tests*
b: I develop and implement a resolution for a new situation using personal knowledge and experience.	4C2.b.5.h: I can apply past experience to develop a course of action for a new situation.	*Continuous observation, discussion, quizzes, tests*
	4C2.b.6.h: I can use existing knowledge to develop a resolution for a new situation, problem or opportunity.	*Continuous observation, discussion, quizzes, tests*
Career Development **CD4: Students will identify and apply employability skills.**		
a: I identify and demonstrate positive work behaviors and personal qualities needed to be employable.	CD4.a.6.h: I can evaluate how self-discipline, self-worth, positive attitude and integrity displayed in a work situation affect employment status.	*Continuous observation, daily rubric*
	CD4.a.9.h: I can use positive workqualities typically desired in each of the career cluster's pathways.	*Continuous observation, daily rubric*
	CD4.a.10.h: I can manage work roles and responsibilities to balance them with other life roles and responsibilities.	*Continuous observation, daily rubric*
c: I identify and exhibit traits for retaining employment.	CD4.c.4.h: I can model behaviors that demonstrate reliability and dependability.	*Continuous observation, daily rubric*
	CD4.c.5.h: I can maintain appropriate dress and behavior for the job to contribute to a safe and effective workplace/jobsite.	*Continuous observation, daily rubric*
Information, Media, Technology **IMT1: Students will access, interpret and evaluate information from a variety of sources in order to inform and support premises, arguments, decisions, ideas and initiatives.**		
PRIORITY CONTENT STANDARDS & Learning Targets		**Performance Tasks Options/ Assessment Strategies by Standard** *Students may be given options to show their learning in varied ways.*
Standard: BB1: Students will analyze the core concepts of technology.	**BB1.a.5.h:** I can describe how systems can fail because of design flaws, defect parts, poorly matched parts or they were used beyond their design capabilities.	*Continuous observation, discussion, demonstration, quizzes, tests*
	BB1.a.6.h: I can describe how the outputs of one subsystem are the inputs of another subsystem given a prominent energy, power and transportation system.	*Continuous observation, discussion, demonstration, quizzes, tests*
Standard: MNF1: Students will be able to select and use manufacturing technologies.	**MNF1.a.8.h:** I can use appropriate tools, materials, and machines to repair a malfunctioning system.	*Continuous observation, discussion, demonstration, quizzes, tests*
	MNF1.a.9.h: I can select and apply the appropriate units and scales for situations involving measurement.	*Continuous observation, discussion, demonstration, quizzes, tests*

Stage 3: Learning Activities

A brief summary of the key learning activities- How will students build knowledge & develop skills? How will learning be relevant, accessible, and engaging? How will the learning unforld in a natural flow?

GUIDING UNIT QUESTIONS *Using Costas Level of Thinking, what questions will hook and hold students so that they develop a deep understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and rigor of the standards. This may include questions that guide project based/ problem based learning*	**STRATEGIES/ACTIVITIES** *What learning strategies and experiences will authentically engage students so that they gain understanding the desired results? This includes strategies and activities that help learners acquire targeted knowledge and skills, make meaning of important ideas, and transfer their learning to new situations. Consider how the learning will be tailored and flexible to address the interests and learning styles of all students.*	**RESOURCES/MATERIALS** *This includes an applicable textbooks, software, industry recognized certification software/tools, subcriptions (such asPLTW), etc.*

LUBRICATION SYSTEM		
STAGE 1: Desired Unit Results *What will students understand as a result of the unit?*		**STAGE 2: Assessment Evidence** *By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?*
ESSENTIAL QUESTION (s) *What thought-provoking questions will foster inquiry, understanding, and transfer of learning?*		**Success Criteria with Standards** *The criteria for evaluating performance on standards is constant.*
Why is creativity and innovation important? How is creativity and innovation used in Transportation?		CTE Rubric (to be developed)
How might technical knowledge and skills influence one's employability and advancement opportunities within various work settings?		
What strategies and processes can I use to become a more effective creator, thinker and problem solver?		
PRIORITY CAREER & TECHNICAL STANDARDS & Learning Targets		**Performance Tasks Options/ Assessment Strategies by Standard** *Students may be given options to show their learning in varied ways.*
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	4C2.a.12.h: I can contrast the benefits and drawbacks of various proposed resolutions to a given situation.	*Continuous observation, discussion, quizzes, tests*
	4C2.a.15.h: I can determine the best resolution for a problem, decision or opportunity based on given criteria.	*Continuous observation, discussion, quizzes, tests*
b: I develop and implement a resolution for a new situation using personal knowledge and experience.	4C2.b.5.h: I can apply past experience to develop a course of action for a new situation.	*Continuous observation, discussion, quizzes, tests*
	4C2.b.6.h: I can use existing knowledge to develop a resolution for a new situation, problem or opportunity.	*Continuous observation, discussion, quizzes, tests*
Career Development **CD4: Students will identify and apply employability skills.**		
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	CD4.a.9.h: I can use positive workqualities typically desired in each of the career cluster's pathways.	*Continuous observation, daily rubric*
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A brief summary of the key learning activities- How will students build knowledge & develop skills? How will learning be relevant, accessible, and engaging? How will the learning unforld in a natural flow?

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COOLING SYSTEM		
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IGNITION /ELECTRICAL SYSTEM		
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	CD4.a.9.h: I can use positive workqualities typically desired in each of the career cluster's pathways.	*Continuous observation, daily rubric*
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Standard: BB1: Students will analyze the core concepts of technology.	**BB1.a.5.h:** I can describe how systems can fail because of design flaws, defect parts, poorly matched parts or they were used beyond their design capabilities.	*Continuous observation, discussion, demonstration, quizzes, tests*
	BB1.a.6.h: I can describe how the outputs of one subsystem are the inputs of another subsystem given a prominent energy, power and transportation system.	*Continuous observation, discussion, demonstration, quizzes, tests*
Standard: MNF1: Students will be able to select and use manufacturing technologies.	**MNF1.a.8.h:** I can use appropriate tools, materials, and machines to repair a malfunctioning system.	*Continuous observation, discussion, demonstration, quizzes, tests*
	MNF1.a.9.h: I can select and apply the appropriate units and scales for situations involving measurement.	*Continuous observation, discussion, demonstration, quizzes, tests*

Stage 3: Learning Activities

A brief summary of the key learning activities- How will students build knowledge & develop skills? How will learning be relevant, accessible, and engaging? How will the learning unforld in a natural flow?

GUIDING UNIT QUESTIONS *Using Costas Level of Thinking, what questions will hook and hold students so that they develop a deep understanding of the desired results? The guiding questions are more topic-specific to the particular unit. They guide the exploration of the essential questions and rigor of the standards. This may include questions that guide project based/ problem based learning*	**STRATEGIES/ACTIVITIES** *What learning strategies and experiences will authentically engage students so that they gain understanding the desired results? This includes strategies and activities that help learners acquire targeted knowledge and skills, make meaning of important ideas, and transfer their learning to new situations. Consider how the learning will be tailored and flexible to address the interests and learning styles of all students.*	**RESOURCES/MATERIALS** *This includes an applicable textbooks, software, industry recognized certification software/tools, subcriptions (such asPLTW), etc.*

INTERNAL ENGINE PARTS		
STAGE 1: Desired Unit Results *What will students understand as a result of the unit?*		**STAGE 2: Assessment Evidence** *By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?*
ESSENTIAL QUESTION (s) *What thought-provoking questions will foster inquiry, understanding, and transfer of learning?*		**Success Criteria with Standards** *The criteria for evaluating performance on standards is constant.*
Why is creativity and innovation important? How is creativity and innovation used in Transportation?		CTE Rubric (to be developed)
How might technical knowledge and skills influence one's employability and advancement opportunities within various work settings?		
What strategies and processes can I use to become a more effective creator, thinker and problem solver?		
PRIORITY CAREER & TECHNICAL STANDARDS & Learning Targets		**Performance Tasks Options/ Assessment Strategies by Standard** *Students may be given options to show their learning in varied ways.*
Creativity, Critical Thinking, Communication and Collaboration **4C2: Students will formulate and defend judgments and decisions by employing critical thinking skills.**		
a: I develop effective resolutions for a given problem, decision or opportunity using available information.	4C2.a.11.h: I can determine the information needed to address an identified problem.	*Continuous observation, discussion, quizzes, tests*
	4C2.a.12.h: I can contrast the benefits and drawbacks of various proposed resolutions to a given situation.	*Continuous observation, discussion, quizzes, tests*
	4C2.a.15.h: I can determine the best resolution for a problem, decision or opportunity based on given criteria.	*Continuous observation, discussion, quizzes, tests*
b: I develop and implement a resolution for a new situation using personal knowledge and experience.	4C2.b.5.h: I can apply past experience to develop a course of action for a new situation.	*Continuous observation, discussion, quizzes, tests*
	4C2.b.6.h: I can use existing knowledge to develop a resolution for a new situation, problem or opportunity.	*Continuous observation, discussion, quizzes, tests*
Career Development **CD4: Students will identify and apply employability skills.**		
a: I identify and demonstrate positive work behaviors and personal qualities needed to be employable.	CD4.a.6.h: I can evaluate how self-discipline, self-worth, positive attitude and integrity displayed in a work situation affect employment status.	*Continuous observation, daily rubric*
	CD4.a.9.h: I can use positive workqualities typically desired in each of the career cluster's pathways.	*Continuous observation, daily rubric*
	CD4.a.10.h: I can manage work roles and responsibilities to balance them with other life roles and responsibilities.	*Continuous observation, daily rubric*
c: I identify and exhibit traits for retaining employment.	CD4.c.4.h: I can model behaviors that demonstrate reliability and dependability.	*Continuous observation, daily rubric*
	CD4.c.5.h: I can maintain appropriate dress and behavior for the job to contribute to a safe and effective workplace/jobsite.	*Continuous observation, daily rubric*
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Stage 3: Learning Activities

A brief summary of the key learning activities- How will students build knowledge & develop skills? How will learning be relevant, accessible, and engaging? How will the learning unforld in a natural flow?

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ENGINE DISASSEMBLY/REASSEMBLY		
STAGE 1: Desired Unit Results *What will students understand as a result of the unit?*		**STAGE 2: Assessment Evidence** *By what criteria will performances of understanding be assessed? Through what authentic performance tasks will students demonstrate the desired unit results?*
ESSENTIAL QUESTION (s) *What thought-provoking questions will foster inquiry, understanding, and transfer of learning?*		**Success Criteria with Standards** *The criteria for evaluating performance on standards is constant.*
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CARBURETOR/FUEL SYSTEMS	
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