

HS Transportation Technology

Transportation Technologies are concerned with the ability to use, manage, assess, and understand the complex network of interconnected components that operate on land, on water, in the air, and in space to move humans or resources from one location to another. As life and work become more complex, transportation systems become more indispensable to the smooth workings of society. Because transportation has become such an integral part of life, people often take it for granted or consider it an ordinary part of the world. People need to understand the various systems that are interconnected into this network so that they may understand the environmental, social, and economic issues related to this complex area of technology. Issues such as appropriate or alternative technologies, the effects of the development of individual versus mass transportation on urban development would all fall under this category. As we develop further into space exploration, we need to understand that transportation is no longer limited to our world but can be used as a tool to open up the worlds around us.

MAJOR CONCEPTS and TOPICS

For all Major Concepts, material should be overlaid, as appropriate, to include instruction and practice with safety issues, historical aspects, impacts, and management and control of the technology and exploratory occupational information. Sub-topics of these elements include:

1. *Historical aspects*
2. *Impacts*
 - a. *Cultural*
 - b. *Social*
 - c. *Economic*
 - d. *Political*
 - e. *Environmental*
3. *Management/Control*
 - a. *Management processes to plan organize and control*
4. *Safety*
 - a. *Safety devices*
 - b. *Agencies and regulations*
 1. *Local*
 2. *State*
 3. *Federal*
5. *Careers*

1. **Transportation Systems and Engines**
 - a. **Transportation Systems**
 - b. **External Combustion Engines**
 - c. **Internal Combustion Engines**
 - d. **Gasoline Automotive Engines**
 - e. **Diesel Automotive Engines**
 - f. **Electric**
2. **Small Engine**
 - a. **Small Engine Operation**
 - b. **Small Engine Safety**
 - c. **Maintaining and Troubleshooting Small Engines**
 - d. **Equipment Powered by Small Engines**

- 3. Modes
 - a. Land (includes utilities and pipelines, i.e. Gas, Water/Sewage, Electrical/Cable, Fiber)
 - b. Water
 - c. Air
 - d. Space (includes satellite and rocketry technologies)
- 4. Utilities
 - a. Gas
 - b. Water/Sewage
 - c. Electrical/Cable
 - d. Fiber
 - e. Satellite/wave

CONTENT AREA COMPETENCIES

1. Students will understand that the study of technology involves an organized set of concepts, processes, and systems that are specific to the study of technology.
2. Students will understand that the implementation of technological solutions requires the application of human and material resources, processes, and systems.
3. Students will understand that technological systems require input, processes, output, and feedback.
4. Students will understand that relationships exist among technologies and between technology and other fields of study.
5. Students will understand that there are interrelationships among the individual, society, technology, and the environment.
6. Students will understand that solving problems relating to a variety of technological systems requires the use of technical information.
7. Students will understand that they must develop the ability to question, investigate, experiment, and evaluate; habits of mind necessary to a lifelong learner.
8. Students will understand that solving technological problems involves cooperation, collaboration, and individual contributions.
9. Students will understand that technological problem solving requires the application of the design process.
10. Students will understand that all technological systems require the development of safe and acceptable applications of techniques, equipment, and materials.
11. Students will understand that safe practices, attitudes, and awareness are essential within all areas and levels of technologies.
12. Students will understand that there is a need for human societies to develop, control, and maintain a variety of technological systems such as medical, agricultural, biological, energy and power, information and communication, transportation, manufacturing and construction.
13. Students will understand that it is important to develop leadership abilities through participation in co-curricular activities such as the Technology Student Association.

Major Concept: Transportation Systems and Engines

Topics

- a. Transportation systems
- b. External combustion engines
 1. Steam turbines
 2. Sterling engines
- c. Internal combustion engines

	<ol style="list-style-type: none"> 1. Gasoline automotive engines 2. Diesel automotive engines d. Electric motors e. Air powered motors
Concept Competencies	<ol style="list-style-type: none"> 1. Students will understand that the study of technology involves an organized set of concepts, processes, and systems that are specific to the study of technology. 2. Students will understand that the implementation of technological solutions requires the application of human and material resources, processes, and systems. 3. Students will understand that technological systems require input, processes, output, and feedback. 4. Students will understand that relationships exist among technologies and between technology and other fields of study. 5. Students will understand that there are interrelationships among the individual, society, technology, and the environment. 6. Students will understand that solving problems relating to a variety of technological systems requires the use of technical information. 7. Students will understand that they must develop the ability to question, investigate, experiment, and evaluate; habits of mind necessary to a lifelong learner. 8. Students will understand that solving technological problems involves cooperation, collaboration, and individual contributions. 9. Students will understand that technological problem solving requires the application of the design process. 10. Students will understand that all technological systems require the development of safe and acceptable applications of techniques, equipment, and materials. 11. Students will understand that safe practices, attitudes, and awareness are essential within all areas and levels of technologies. 12. Students will understand that there is a need for human societies to develop, control, and maintain a variety of technological systems such as medical, agricultural, biological, energy and power, information and communication, transportation, manufacturing and construction. 13. Students will understand that it is important to develop leadership abilities through participation in co-curricular activities such as the Technology Student Association.
Knowledge/Skills	<p>Define a transportation system.</p> <p>List the five types of transportation systems.</p> <p>Name several transportation system inputs.</p> <p>Recognize several transportation system processes.</p> <p>State the expected output of a transportation system.</p> <p>Identify the types of goals that affect a transportation system.</p> <p>Identify and define the six separate systems that make up a vehicular</p>

system.

Name the different kinds of land vehicles.

Cite the types of propulsion systems used in land vehicles.

State how drive systems function.

Define and describe the components of a suspension system.

Identify the function of automobile structural systems.

Identify several water vehicles.

Define the four types of propulsion.

Define aircraft.

Identify aviation services.

Cite the uses of each type of jet engine.

List common types of aircraft instruments.

State how an airplane flies.

Define the structural parts of an airplane.

Define spacecraft.

State what makes a spacecraft fly.

Identify the two types of space transportation modes.

List the different types of space vehicles.

State the function of a rocket engine.

Identify the structures of various types of spacecraft

Explain how diesel-electric locomotives function.

Describe the difference between series and parallel hybrid systems.

Figure gearbox ratios for different applications.

Describe how thrusters operate in the vacuum of space.

Demonstrate how magnetic levitation (maglev) systems operate.

Relate how an ion engine operates.

Discuss the aerodynamics of a delta wing.

Research technical information when solving transportation problems.

Work individually to solve transportation problems.

Work cooperatively to solve transportation problems.

Demonstrate safe and acceptable applications of techniques, equipment and materials.

Demonstrate safe attitudes and practices in all levels and areas of transportation technology.

<p>Sample Performance Assessment SPA#1</p>	<p>You are a propulsion engineer employed by the experimental division of General Motors Corporation. Your group has been tasked to design a small “UrbanMobile” that can be used to commute short distances. The vehicle must have room for two people and cargo space for 4 bags of groceries. While others design the vehicle, you must research various types of engines and motors and propose a system that will be used in the “UrbanMobile”. Your proposed solution must be fuel efficient and environmentally friendly. You will research the various propulsion systems and select two possible solutions. You will chart the trade-offs of these two solutions and recommend a power supply for this new vehicle. Your presentation to the rest of your group is due in 4 days.</p>
<p>Topics in SPA#1</p>	<ul style="list-style-type: none"> a. Transportation systems b. External combustion engines <ul style="list-style-type: none"> 1. Steam turbines 2. Sterling engines c. Internal combustion engines <ul style="list-style-type: none"> 1. Gasoline automotive engines 2. Diesel automotive engines d. Electric motors e. Air powered motors
<p>Concept Competencies Addressed in SPA#1</p>	<ul style="list-style-type: none"> 1. Students will understand that the study of technology involves an organized set of concepts, processes, and systems that are specific to the study of technology. 2. Students will understand that the implementation of technological solutions requires the application of human and material resources, processes, and systems. 3. Students will understand that technological systems require input, processes, output, and feedback. 4. Students will understand that relationships exist among technologies and between technology and other fields of study. 5. Students will understand that there are interrelationships among the individual, society, technology, and the environment. 6. Students will understand that solving problems relating to a variety of technological systems requires the use of technical information. 7. Students will understand that they must develop the ability to question, investigate, experiment, and evaluate; habits of mind necessary to a lifelong learner. 8. Students will understand that solving technological problems involves cooperation, collaboration, and individual contributions. 9. Students will understand that technological problem solving requires the application of the design process. 10. Students will understand that all technological systems require the development of safe and acceptable applications of techniques, equipment, and materials. 11. Students will understand that safe practices, attitudes, and awareness

	<p>are essential within all areas and levels of technologies.</p> <p>12. Students will understand that there is a need for human societies to develop, control, and maintain a variety of technological systems such as medical, agricultural, biological, energy and power, information and communication, transportation, manufacturing and construction.</p> <p>13. Students will understand that it is important to develop leadership abilities through participation in co-curricular activities such as the Technology Student Association.</p>
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SPA#1 Rubric

Level 4	Level 3	Level 2	Level 1
<p>The student will:</p> <p>Thoroughly research various types of engines and motors, listing many plusses and minuses of each.</p> <p>Clearly justify a solution, and backup, that is fuel efficient.</p> <p>Clearly justify a solution, and backup, that is environmentally friendly.</p> <p>Develop a large illustrated wall chart that points out the trade-offs of these two solutions and recommends a power supply for this new vehicle.</p> <p>Expertly prepare a PowerPoint presentation explaining the solution to the rest of the group in 4 days or less.</p>	<p>The student will:</p> <p>Research various types of engines and motors, listing the plusses and minuses of each.</p> <p>Propose a solution, and backup, that is fuel efficient.</p> <p>Propose a solution, and backup, that is environmentally friendly.</p> <p>Compile a chart that illustrates the trade-offs of these two solutions and recommends a power supply for this new vehicle.</p> <p>Prepare a PowerPoint presentation explaining the solution to the rest of the group in 4 days.</p>	<p>The student will:</p> <p>Research some engines and motors, listing the plusses and minuses of each.</p> <p>Propose a solution, and backup, that may not be the most fuel efficient.</p> <p>Propose a solution, and backup, that may not be the most environmentally friendly.</p> <p>Incompletely compile a chart that illustrates some of the trade-offs of these two solutions and recommends a power supply for this new vehicle.</p> <p>Prepare a presentation explaining the solution to the rest of the group in 5 days.</p>	<p>The student will:</p> <p>Research a couple engines and/or motors, listing 1-2 of the plusses and minuses of each.</p> <p>Propose a solution, that may not be the most fuel efficient.</p> <p>Propose a solution, that may not be the most environmentally friendly.</p> <p>List some of the trade-offs of these two solutions and recommend a power supply for this new vehicle.</p> <p>Prepare a paper explaining the solution to the rest of the group in 6 or more days.</p>

Major Concept: Small Gasoline Engines

Topics	<ul style="list-style-type: none">a. Small engine theoryb. Small engine operation<ul style="list-style-type: none">1. Mechanical systems2. Lubrication systems3. Cooling systems4. Fuel systems5. Ignition systems6. Starting systemsd. Small Engine Safety<ul style="list-style-type: none">1. Harmful gases2. Handling gasoline3. Electric shocke. Maintaining and Troubleshooting Small Engines<ul style="list-style-type: none">1. Tool use2. Proceduresf. Equipment Powered by Small Engines
Concept Competencies	<ul style="list-style-type: none">1. Students will understand that the study of technology involves an organized set of concepts, processes, and systems that are specific to the study of technology.2. Students will understand that the implementation of technological solutions requires the application of human and material resources, processes, and systems.3. Students will understand that technological systems require input, processes, output, and feedback.4. Students will understand that relationships exist among technologies and between technology and other fields of study.5. Students will understand that there are interrelationships among the individual, society, technology, and the environment.6. Students will understand that solving problems relating to a variety of technological systems requires the use of technical information.7. Students will understand that they must develop the ability to question, investigate, experiment, and evaluate; habits of mind necessary to a lifelong learner.8. Students will understand that solving technological problems involves cooperation, collaboration, and individual contributions.9. Students will understand that technological problem solving requires the application of the design process.10. Students will understand that all technological systems require the development of safe and acceptable applications of techniques, equipment, and materials.11. Students will understand that safe practices, attitudes, and awareness are essential within all areas and levels of technologies.12. Students will understand that there is a need for human societies to develop, control, and maintain a variety of technological systems

	such as medical, agricultural, biological, energy and power, information and communication, transportation, manufacturing and construction.
Knowledge/Skills	<p>Identify the differences between internal and external combustion engines.</p> <p>Recognize the basic process by which two-stroke and four-stroke gasoline engines operate.</p> <p>Select the correct tool for a specific application.</p> <p>Describe the operating procedures for at least five subsystems of the small gas engine.</p> <p>Discuss helpful hints for successfully disassembling and reassembling complex machinery, such as small gas engines.</p> <p>Troubleshoot and diagnose six common causes of engine malfunctions.</p> <p>Perform live adjustments and take measurements from a running engine.</p> <p>Use repair manuals to locate specifications, such as torque ratings, clearances, torque patterns, and replacement part codes.</p> <p>Work individually to solve small engine problems.</p> <p>Work cooperatively to solve small engine problems.</p> <p>Demonstrate safe and acceptable applications of techniques, equipment and materials.</p> <p>Demonstrate safe attitudes and practices in all levels and areas of small engine technology.</p>

Sample Performance Assessment SPA#2	Your neighbor has come to you for help in troubleshooting the engine on his lawn mower. From your small engine class, you know you must question the neighbor to get as much information about the engine as possible. You will need to identify the engine make and model. You must test compression, ignition and carburetion. If you find that some parts need replacing, you must identify them by part number and replace those parts. Once the engine is running, you must tune the engine to the manufacturer's specifications.
Topics in SPA#2	<ul style="list-style-type: none"> a. Small engine theory b. Small engine operation <ul style="list-style-type: none"> 1. Mechanical systems 2. Lubrication systems 3. Cooling systems 4. Fuel systems 5. Ignition systems 6. Starting systems c. Small Engine Safety <ul style="list-style-type: none"> 1. Harmful gases 2. Handling gasoline

	<ul style="list-style-type: none"> 3. Electric shock d. Maintaining and Troubleshooting Small Engines <ul style="list-style-type: none"> 1. Tool use 2. Procedures e. Equipment Powered by Small Engines
Concept Competencies Addressed in SPA#2	<ul style="list-style-type: none"> 1. Students will understand that the study of technology involves an organized set of concepts, processes, and systems that are specific to the study of technology. 2. Students will understand that the implementation of technological solutions requires the application of human and material resources, processes, and systems. 3. Students will understand that technological systems require input, processes, output, and feedback. 4. Students will understand that relationships exist among technologies and between technology and other fields of study. 5. Students will understand that there are interrelationships among the individual, society, technology, and the environment. 6. Students will understand that solving problems relating to a variety of technological systems requires the use of technical information. 7. Students will understand that they must develop the ability to question, investigate, experiment, and evaluate; habits of mind necessary to a lifelong learner. 8. Students will understand that solving technological problems involves cooperation, collaboration, and individual contributions. 9. Students will understand that technological problem solving requires the application of the design process. 10. Students will understand that all technological systems require the development of safe and acceptable applications of techniques, equipment, and materials. 11. Students will understand that safe practices, attitudes, and awareness are essential within all areas and levels of technologies. 12. Students will understand that there is a need for human societies to develop, control, and maintain a variety of technological systems such as medical, agricultural, biological, energy and power, information and communication, transportation, manufacturing and construction.
SPA#2 Rubric	

Level 4	Level 3	Level 2	Level 1
The student will: Question the neighbor to get as much information about the engine's condition	The student will: Question the neighbor to get as much information about the engine's condition	The student will: Question the neighbor to get some information about the engine's condition	The student will: Incompletely question the neighbor to get some information about the engine's condition

<p>when it stopped, or never started, as possible and identify one or more possible problems to investigate further.</p> <p>Identify the engine make, model, type and any other identifying information.</p> <p>Expertly test the engine's compression system and determine whether further investigation is required.</p> <p>Expertly test the engine's ignition system and determine whether further investigation is required.</p> <p>Expertly test the engine's carburetion system and determine whether further investigation is required.</p> <p>Identify all parts, by part number, that need replacing and pricing of those parts.</p> <p>Expertly replace parts to proper specifications.</p> <p>Expertly tune the engine to the manufacturer's specifications.</p>	<p>when it stopped, or never started, as possible.</p> <p>Identify the engine make, model and type.</p> <p>Adequately test the engine's compression system.</p> <p>Adequately test the engine's ignition system.</p> <p>Adequately test the engine's carburetion system.</p> <p>Identify any parts, by part number, that need replacing.</p> <p>Adequately replace parts as necessary.</p> <p>Adequately tune the engine to the manufacturer's specifications.</p>	<p>when it stopped, or never started.</p> <p>Identify the engine make and/or model but no other identifying information.</p> <p>Inadequately test the engine's compression system.</p> <p>Inadequately test the engine's ignition system.</p> <p>Inadequately test the engine's carburetion system.</p> <p>Identify any parts that need replacing.</p> <p>Inadequately replace parts.</p> <p>Tune the engine, but not to proper specifications.</p>	<p>when it stopped, or never started.</p> <p>Inadequately identify the engine.</p> <p>Improperly test the engine's compression system.</p> <p>Improperly test the engine's ignition system.</p> <p>Improperly test the engine's carburetion system.</p> <p>Improperly identify some parts that need replacing.</p> <p>Improperly replace parts.</p> <p>Not be able to start the engine to be tuned.</p>
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Major Concept: Modes

<p>Topics</p>	<ul style="list-style-type: none"> a. Land (includes utilities and pipelines, i.e. Gas, Water/Sewage, Electrical/Cable, Fiber) <ul style="list-style-type: none"> 1. Pathways 2. Suspension systems 3. Structural systems 4. Support systems b. Water <ul style="list-style-type: none"> 1. Purposes and principles 2. Suspension systems 3. Structural systems 4. Support systems c. Air <ul style="list-style-type: none"> 1. Routes 2. Suspension systems 3. Structural systems 4. Support systems d. Space <ul style="list-style-type: none"> 1. Space environment 2. Spacecraft flight & Orbiting 3. Suspension systems 4. Structural systems 5. Support systems
<p>Concept Competencies</p>	<ul style="list-style-type: none"> 1. Students will understand that the study of technology involves an organized set of concepts, processes, and systems that are specific to the study of technology. 2. Students will understand that the implementation of technological solutions requires the application of human and material resources, processes, and systems. 3. Students will understand that technological systems require input, processes, output, and feedback. 4. Students will understand that relationships exist among technologies and between technology and other fields of study. 5. Students will understand that there are interrelationships among the individual, society, technology, and the environment. 6. Students will understand that solving problems relating to a variety of technological systems requires the use of technical information. 7. Students will understand that they must develop the ability to question, investigate, experiment, and evaluate; habits of mind necessary to a lifelong learner. 8. Students will understand that solving technological problems involves cooperation, collaboration, and individual contributions. 9. Students will understand that technological problem solving requires the application of the design process. 10. Students will understand that all technological systems require the

	<p>development of safe and acceptable applications of techniques, equipment, and materials.</p> <p>11. Students will understand that safe practices, attitudes, and awareness are essential within all areas and levels of technologies.</p> <p>12. Students will understand that there is a need for human societies to develop, control, and maintain a variety of technological systems such as medical, agricultural, biological, energy and power, information and communication, transportation, manufacturing and construction.</p> <p>13. Students will understand that it is important to develop leadership abilities through participation in co-curricular activities such as the Technology Student Association.</p>
Knowledge/Skills	<p>Identify three different types of land transportation routes.</p> <p>Cite examples of the three types of pathways.</p> <p>List the different modes of land transportation.</p> <p>Define and describe the components of a suspension system.</p> <p>Identify the function of automobile structural systems.</p> <p>Name the support systems for land transportation</p> <p>Name the support systems of water transportation.</p> <p>Cite the support systems used in air transportation.</p> <p>Identify the two types of space transportation modes.</p> <p>Name the functions of orbiter suspension systems.</p> <p>Identify the structures of various types of spacecraft</p> <p>List several support systems for space vehicles.</p> <p>Define intermodal transportation.</p> <p>State the importance of intermodal transportation in our society.</p> <p>Identify the importance of containerization.</p> <p>List and discuss the advantages of intermodal transportation.</p> <p>Define passenger and cargo intermodal transportation.</p> <p>Discuss the different routes of water transportation.</p> <p>Explain the modes of water transportation.</p> <p>Research and determine the major sea-lanes used in transoceanic transportation.</p> <p>Plan an intermodal shipping route.</p>

Sample Performance Assessment SPA#3	Due to the size and complexity of NASA’s rockets and spacecrafts, the components for the Space Transportation System (STS) are built all over the country and shipped to Kennedy Space Center (KSC)
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	<p>Florida. The orbiter arrives from California on the back of a 747, the solid rocket boosters (SRB's) arrive by rail from Utah, and the external tank (ET) arrives by barge from Mississippi. You are a systems engineer employed by United Space Alliance (USA) and it is your responsibility to schedule the arrival of all components to the launch site. You will need to research federal regulations and safety requirements related to the transportation of these elements, the beginning locations, transportation routes, number of days to transport and the best routes available. Your chart will also include any processing of the components that must be done at KSC prior to transporting them to the Vehicle Assembly Building where they will be "stacked" into a working system. You will post this information on a large chart in the VAB at KSC. This must be done in five days.</p>
<p>Topics in SPA#3</p>	<ul style="list-style-type: none"> a. Land (includes utilities and pipelines, i.e. Gas, Water/Sewage, Electrical/Cable, Fiber) <ul style="list-style-type: none"> 1. Pathways 2. Suspension systems 3. Structural systems 4. Support systems b. Water <ul style="list-style-type: none"> 1. Purposes and principles 2. Suspension systems 3. Structural systems 4. Support systems c. Air <ul style="list-style-type: none"> 1. Routes 2. Suspension systems 3. Structural systems 4. Support systems d. Space <ul style="list-style-type: none"> 1. Space environment 2. Spacecraft flight & Orbiting 3. Suspension systems 4. Structural systems 5. Support systems
<p>Concept Competencies Addressed in SPA#3</p>	<ul style="list-style-type: none"> 1. Students will understand that the study of technology involves an organized set of concepts, processes, and systems that are specific to the study of technology. 2. Students will understand that the implementation of technological solutions requires the application of human and material resources, processes, and systems. 3. Students will understand that technological systems require input, processes, output, and feedback. 4. Students will understand that relationships exist among technologies and between technology and other fields of study. 5. Students will understand that there are interrelationships among the individual, society, technology, and the environment.

	<ol style="list-style-type: none"> 6. Students will understand that solving problems relating to a variety of technological systems requires the use of technical information. 7. Students will understand that they must develop the ability to question, investigate, experiment, and evaluate; habits of mind necessary to a lifelong learner. 8. Students will understand that solving technological problems involves cooperation, collaboration, and individual contributions. 9. Students will understand that technological problem solving requires the application of the design process. 10. Students will understand that all technological systems require the development of safe and acceptable applications of techniques, equipment, and materials. 11. Students will understand that safe practices, attitudes, and awareness are essential within all areas and levels of technologies. 12. Students will understand that there is a need for human societies to develop, control, and maintain a variety of technological systems such as medical, agricultural, biological, energy and power, information and communication, transportation, manufacturing and construction. 13. Students will understand that it is important to develop leadership abilities through participation in co-curricular activities such as the Technology Student Association.
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SPA#3 Rubric

Level 4	Level 3	Level 2	Level 1
<p>The student will:</p> <p>Develop and post a multi-color wall chart that clearly shows the schedule for the arrival of all the components to the launch site.</p> <p>Thoroughly research all federal regulations and safety requirements related to the transportation of these elements and summarize them in a short report.</p> <p>Expertly illustrate all the beginning locations of each</p>	<p>The student will:</p> <p>Develop and post a colorful wall chart that shows the schedule for the arrival of all the components to the launch site.</p> <p>Completely research all federal regulations and safety requirements related to the transportation of these elements.</p> <p>Clearly indicate all the beginning locations of each</p>	<p>The student will:</p> <p>Develop and post a wall chart that shows the schedule for the arrival of all the components to the launch site.</p> <p>Incompletely research federal regulations and safety requirements related to the transportation of these elements.</p> <p>Indicate all the beginning locations of each component on the</p>	<p>The student will:</p> <p>Develop and post a wall chart that shows the schedule for the arrival of some of the components to the launch site.</p> <p>Incompletely research some federal regulations and some safety requirements related to the transportation of these elements.</p> <p>Poorly indicate some of the beginning locations of each component on</p>

<p>component on the chart.</p> <p>Expertly illustrate all the transportation routes of each component on the chart.</p> <p>Expertly illustrate the number of days and the lead time required to transport the components to the launch site.</p> <p>Expertly illustrate the best routes available to transport the components to the launch site.</p> <p>Expertly illustrate any processing of the components that must be done at KSC prior to transporting them to the VAB where they will be “stacked” into a working system.</p> <p>Complete and post this chart in five days or less.</p>	<p>component on the chart.</p> <p>Clearly indicate all the transportation routes of each component on the chart.</p> <p>Clearly indicate the number of days and the lead time required to transport the components to the launch site.</p> <p>Clearly indicate the best routes available to transport the components to the launch site.</p> <p>Clearly indicate any processing of the components that must be done at KSC prior to transporting them to the VAB where they will be “stacked” into a working system.</p> <p>Complete and post this chart in five days.</p>	<p>chart.</p> <p>Indicate all the transportation routes of each component on the chart.</p> <p>Indicate the number of days and the lead time required to transport the components to the launch site.</p> <p>Indicate the best routes available to transport the components to the launch site.</p> <p>Indicate any processing of the components that must be done at KSC prior to transporting them to the VAB where they will be “stacked” into a working system.</p> <p>Complete and post this chart in six or seven days.</p>	<p>the chart.</p> <p>Poorly indicate some of the transportation routes of each component on the chart.</p> <p>Poorly indicate the number of days and the lead time required to transport some of the components to the launch site.</p> <p>Poorly indicate undesirable routes to transport the components to the launch site.</p> <p>Poorly indicate any processing of the components that must be done at KSC prior to transporting them to the VAB where they will be “stacked” into a working system.</p> <p>Post an incomplete chart in eight or more days.</p>
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Many of the “Knowledge/Skills” for this document came from the transportation sections of the following text:

Litowitz, Len S., Brown, Ryan A., Energy, Power and Transportation Technology, The Goodheart-Willcox Company, Inc., 2007