# Lesson Plan Template

**Instructor:** Robert Christner, James Macdonald, Shawna Sipp  
**Date:**

**Course Title:** Automotive Service Technology  
**Specific Topic:** Raising and Supporting a Vehicle.

**Reading Assignment:** Raising and Supporting Vehicles Safely (IML on-line Curriculum)

### Performance Objectives:

After completion of the lesson, students will be able to:

1. Know Terms and Definitions
2. Lifting Devises
3. Common Support devises
4. Principles of lifting and supporting vehicles

### Standards:

1. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.
2. Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in text, defining the question the author seeks to address.
3. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. [Reading ES]

### Assessment

AS1-L3-U2 Assignment Sheet. (summative)  
Episodic Notes: diagram and explain procedures of operations  
Rubric for student scoring

### Materials:

Episodic Notes worksheet  
AS1-L3-U2 worksheet  
Rubric scoring guide

### Procedure:

**Entire Class:**  
Introduction and Method of activating prior knowledge –  
Students discuss if they have every used a automotive lift or jack in a shop

Method of setting purpose – Students will demonstrate proper use of automotive lifts and supports devices.
**Entire Class:**
Present power point on lifts and safety devises
Demonstrate proper use of automotive lifts and support devises

**Group:**
Students will practice operating automotive lifts and supports devises

**Individual:**
Student will read the provided reading on IML and note their responses on the episodic note guide.
Student re-reads assigned text and complete study guide questions

<table>
<thead>
<tr>
<th>Application of Material:</th>
<th>We have demonstrated and indentified the use of automotive shop lifts and safety procedures to allow students to be safe and productive in a shop environment.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Extension Questions:</strong></td>
<td>Is Identification of proper vehicle supporting techniques and lifting points extremely important for safe automotive repair.</td>
</tr>
<tr>
<td><strong>Accommodations needed:</strong></td>
<td></td>
</tr>
</tbody>
</table>
UNIT 2: SAFETY

LESSON 3: RAISING AND SUPPORTING VEHICLES SAFELY

I. Terms and definitions

A. Jack — A device, such as a hydraulic floor jack, that raises the front, rear, or side of a vehicle off the ground.

B. Lift — A piece of hydraulic equipment used to lift the whole vehicle off the ground.

C. Lifting — Using a device to raise a vehicle off the ground for the purpose of inspection, service, or repair.

D. Safety stands — Lightweight frames used to support a vehicle after being lifted by a jack.

E. Torque box areas — The four corners of the passenger compartment regardless of whether the vehicle actually has torque boxes.

F. Torque boxes — Located in each corner of the passenger compartment and designed to minimize damage to the compartment in a collision.

G. Wheel blocks or wheel chocks — Blocks that are placed on one or more wheels before lifting to keep the vehicle from rolling.

II. Common lifting devices

A. In order to inspect or repair a vehicle, it is frequently necessary to get the vehicle off the ground to provide access to the underside.

B. A wide variety of equipment is available for lifting vehicles, such as lifts and hydraulic floor jacks. Most equipment is hydraulic, but there are also pneumatic lifts.
C. Hydraulic lift

1. Functions hydraulically to raise the whole vehicle off the floor
2. Allows for inspection under the vehicle
3. Allows repairs to be done at a more comfortable height for the technician
4. Safety
   a. Refer to service information for positioning the vehicle on the lift and follow all safety precautions for operating the lift.
   b. Before lifting the vehicle, check for proper clearance on all sides of the vehicle in the lift area so that the vehicle does not hit other objects.
   c. Do not lift vehicles with passengers inside or with the doors, hood, or luggage lid open.
   d. Be sure that the lift’s locking mechanism is in the locked position before walking under the lift.
   e. Be familiar with safety lock release mechanisms for safe lowering of vehicles.
D. Hydraulic floor jack

1. Uses mechanical force, with the operator using a lever to pump up the jack
2. Is mounted on four wheels for portability
3. Used often in raising the front, rear, or side of a vehicle for placement on safety stands
4. Safety
   a. Ensure the vehicle being lifted is on a level, solid surface.
   b. Always be sure the release valve is completely closed before attempting to lift a vehicle.
   c. Refer to service information to find the correct lift point on the vehicle to position the saddle of the jack.
   d. Never crawl under a vehicle held up only by a jack, either hydraulic or pneumatic. Always use safety stands to support the vehicle.
   e. Be sure that the load-capacity rating for the safety stands is sufficient to safely support the vehicle.
   f. After positioning the safety stands under the vehicle, shake the body of the vehicle to make sure it is stable.
   g. After raising a vehicle with a floor jack, be sure the handle of the jack is pointed straight up.
   h. Do not operate hydraulic jacks if they are leaking because they may fail.
i. Do not lift vehicles with passengers inside or with the doors, hood, or luggage lid open.

j. Make sure everyone in the vicinity is standing well away from a raised vehicle before opening the release valve to lower it. When lowering a vehicle, the release mechanism should be opened a little at a time, and then closed, to lower the vehicle a little at a time.

CAUTION: If the release mechanism is opened all the way, it will drop the vehicle to the floor instantly. This may cause injury to the operator and others in the area as well as damage to vehicle.

III. Common support devices

A. Safety stands

1. Sturdy metal devices that support the vehicle after being lifted by a jack

2. Available in different heights and load capacities

3. Placed under secure points on the vehicle such as the frame and axle housing

NOTE: Refer to service information and the manufacturer’s instructions for the correct points to place safety stands.
B. Wheel blocks, also known as wheel chocks

1. Wedge-shaped blocks used as a safety measure, in addition to safety stands, to keep the vehicle from rolling after being lifted

2. Used before lifting the vehicle with a jack

3. Placed in the front and rear of a wheel that will remain on the ground after lifting

IV. Principles of lifting and supporting vehicles

A. Each vehicle has specific lifting points. Consult current service information or the owner’s manual for each model to determine proper lifting points.

CAUTION: Identification of proper lifting points is extremely important. Damage caused by improper lifting can be severe. Common sense, along with an understanding of vehicle construction and vehicle supporting techniques, must be used in each repair instance.

B. The purpose of raising the vehicle is to get the vehicle high enough in the air to safely inspect, service, or repair the underside.

C. Before lifting a vehicle, check both the vehicle and equipment manufacturer’s recommendations.

D. In getting the vehicle off the ground, there are two separate points to be considered as follows:

1. Proper lifting methods
2. Proper supporting methods

E. Lift and support points

**NOTE:** The correct lift and support points depend on the model of the vehicle and the type of lift equipment being used. Refer to service information and the manufacturer’s instructions.

1. Torque box areas are generally acceptable lift points.

   a. These areas are designed to absorb twisting (torque) force caused by a collision and route damage away from the passenger compartment.

   b. The four torque box areas are located at the corners of the passenger section.

   c. Even if the vehicle does not have actual torque boxes, the four corners of the passenger compartment are referred to as torque box areas.

   d. Torque box areas are generally the strongest areas of the vehicle for lifting and supporting.
2. The pinchweld area of the rocker panel, which is the factory weld that fuses the bottom flange of the outer rocker panel to the inner rocker panel, is a strong support area on unibody vehicles.
LIFTING AND SUPPORTING VEHICLES

Directions — Answer the following questions by writing all responses on this sheet.

1. Define the following lift or support devices.
   
   A. Jack
   
   B. Lift
   
   C. Safety stand

2. List three safety rules for raising a vehicle with a lift.
   
   A.
   
   B.
   
   C.
3. List five safety rules for raising a vehicle with a hydraulic floor jack.
   A.
   B.
   C.
   D.
   E.

4. What are torque box areas?

5. Choose a vehicle make and model and a piece of lifting equipment for raising the vehicle. Refer to service information for the vehicle and equipment specifications for the lifting equipment to complete the information below. Please be specific.

   Make and model: ______________________________________________________________
Device(s) used to raise the vehicle:

Proper lift points on the vehicle for the lift device:

Support device(s) used and proper locations:
TASK: Show understanding of four actions of LIFT SAFETY. Draw an action of each LIFT SAFETY (you may need to combine safety actions) then, in complete sentences, describe each LIFT SAFETY drawing and the importance of the action.
TASK: Show understanding of four actions of LIFT PROCEDURES. Draw an action of each LIFT PROCEDURE (you may need to combine procedure actions) then, in complete sentences, describe each LIFT PROCEDURE drawing and the importance of the action.

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LIFTING A VEHICLE WITH A 2-POST LIFT

Equipment:

- Personal protective equipment (PPE)
- Vehicle lifting equipment

Procedure:

CAUTION: When lifting a vehicle, always use proper lifting equipment and observe all safety precautions.

CAUTION: Identification of proper lifting points is extremely important. Damage caused by improper lifting can be severe. Common sense, along with an understanding of vehicle construction and vehicle supporting techniques, must be used in each repair instance.

CAUTION: Never crawl under a vehicle held up only by a jack, either hydraulic or pneumatic. Always use safety stands to support the vehicle.

1. Wear PPE while performing the procedures on this job sheet.

2. Using service information, locate a procedure for lifting a vehicle. Make sure the procedure is appropriate for the make and model of the vehicle. Have the instructor check the box to approve the procedure.

3. Describe the steps needed to properly lift a vehicle using a 2-post lift

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Be certain that the instructor approves the procedure and checks this box.

Using the procedure, lift the vehicle.

Instructor Approved
LIFT A VEHICLE WITH A 4 POST DRIVE ON LIFT

Equipment:

Personal protective equipment (PPE)
Vehicle lifting equipment

Procedure:

CAUTION: When lifting a vehicle, always use proper lifting equipment and observe all safety precautions.

CAUTION: Identification of proper lifting points is extremely important. Damage caused by improper lifting can be severe. Common sense, along with an understanding of vehicle construction and vehicle supporting techniques, must be used in each repair instance.

CAUTION: Never crawl under a vehicle held up only by a jack, either hydraulic or pneumatic. Always use safety stands to support the vehicle.

1. Wear PPE while performing the procedures on this job sheet.

2. Using service information, locate a procedure for lifting a vehicle. Make sure the procedure is appropriate for the make and model of the vehicle. Have the instructor check the box to approve the procedure.

3. Describe the steps needed to properly lift a vehicle using a 4 post drive on lift

________________________________________________________________________________
________________________________________________________________________________
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________________________________________________________________________________

Be certain that the instructor approves the procedure and checks this box.

Instructor Approved

Using the procedure, lift the vehicle.

Instructor Approved
LIFT A VEHICLE WITH A FLOOR JACK AND JACK STAND

Equipment:

Personal protective equipment (PPE)
Vehicle lifting equipment

Procedure:

CAUTION: When lifting a vehicle, always use proper lifting equipment and observe all safety precautions.

CAUTION: Identification of proper lifting points is extremely important. Damage caused by improper lifting can be severe. Common sense, along with an understanding of vehicle construction and vehicle supporting techniques, must be used in each repair instance.

CAUTION: Never crawl under a vehicle held up only by a jack, either hydraulic or pneumatic. Always use safety stands to support the vehicle.

1. Wear PPE while performing the procedures on this job sheet.

2. Using service information, locate a procedure for lifting a vehicle. Make sure the procedure is appropriate for the make and model of the vehicle. Have the instructor check the box to approve the procedure.

3. Describe the steps needed to properly lift a vehicle using a floor jack and stands

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Be certain that the instructor approves the procedure and checks this box.

Instructor Approved

Using the procedure, lift the vehicle.

Instructor Approved
Rubric: Reading Comprehension Answers
This rubric addresses the expectation of a student when answering content reading questions.

<table>
<thead>
<tr>
<th>Answer</th>
<th>PROVIDING A REQUIRED RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RESUBMIT</strong></td>
<td>1 pts Not enough information present to assess.</td>
</tr>
<tr>
<td><strong>CLOSER: RESUBMIT</strong></td>
<td>2 pts 1st person used. Crucial information and comprehension missing.</td>
</tr>
<tr>
<td><strong>CORRECT</strong></td>
<td>3 pts 1st person used. Summary is justified with evidence of understanding reading.</td>
</tr>
<tr>
<td><strong>INSIGHTFUL</strong></td>
<td>4 pts Answer identifies extremes and examine information and justifies with other knowledge, content and vocabulary.</td>
</tr>
</tbody>
</table>

**Reading Standard 3**
Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

| **RESUBMIT** | Answer reflects guessing, impulse, minimization and lack of comprehension. Student reverts to comfort level of skill. |
| **CLOSER: RESUBMIT** | Some steps in the multistep process are summarized proficiently, others are incorrect. Final answer shows errors in comprehension. |
| **CORRECT** | Written multistep instructions, procedures and technical tasks are answered correctly in student's own language. Final product shows correct comprehension. |
| **INSIGHTFUL** | |

**Reading Standard 7**
Translate quantitative or technical information expressed in words in a text into visual form and translate information expressed visually or mathematically into words.

| **RESUBMIT** | Technical vocabulary is not translated into visuals or vice versa. |
| **CLOSER: RESUBMIT** | Technical vocabulary is incorrectly translated into visuals. Comprehension of technical vocabulary shows errors. |
| **CORRECT** | Technical vocabulary is translated into correct visual depictions and vice versa. Student's answer comprehends vocabulary and what the visual representation of the vocabulary depicts. |
| **INSIGHTFUL** | |

**Reading Standard 8**
Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problems.

| **RESUBMIT** | Support of claim or information is not evident. Reading comprehension is not evident. |
| **CLOSER: RESUBMIT** | Answer is limited and does not show evaluation of support of claims. Comprehension is limited. |
| **CORRECT** | Answer documents how well or how incorrect the information or claim is supported. |
| **INSIGHTFUL** | |

Build free rubrics at [www.iRubric.com](http://www.iRubric.com).

Rubric Code: U7A46W
**Shawna Sipp**

Student: _____________________

**Rubric: Reading Summary**

This rubric addresses the expectation of a student when summarizing content reading.

<table>
<thead>
<tr>
<th><strong>Summary</strong></th>
<th><strong>AN ACCOUNT OF MAIN IDEAS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reading Standard 3</strong></td>
<td>Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.</td>
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<td><strong>CORRECT</strong></td>
<td>3 pts 1st person used. Summary is justified with evidence of understanding.</td>
</tr>
<tr>
<td><strong>INSIGHTFUL</strong></td>
<td>4 pts Summary of extremes examine information and justify with other knowledge, content and vocabulary.</td>
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<td><strong>RESUBMIT</strong></td>
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<td><strong>CLOSER: RESUBMIT</strong></td>
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<td><strong>CORRECT</strong></td>
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<td><strong>CLOSER: RESUBMIT</strong></td>
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**Rubric Code:** U7A46W
### Rubric: Reading Reflection

This rubric addresses the expectation of a student when reflecting on content reading.

#### Reflect
TO THINK DEEPLY AND CAREFULLY ABOUT

<table>
<thead>
<tr>
<th>Standard</th>
<th>RESUBMIT</th>
<th>CLOSER: RESUBMIT</th>
<th>CORRECT</th>
<th>INSIGHTFUL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reading Standard 3</strong>&lt;br&gt;Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.</td>
<td>Not enough information present to assess.</td>
<td>Crucial information and comprehension missing.</td>
<td>1st person used. Reflection is justified with evidence of understanding.</td>
<td>Description of extremes examine information and justify with other knowledge, content and vocabulary.</td>
</tr>
<tr>
<td><strong>Reading Standard 7</strong>&lt;br&gt;Translate quantitative or technical information expressed in words in a text into visual form and translate information expressed visually or mathematically into words.</td>
<td>Process reflects guessing, impulse and lack of comprehension. Student reverts to comfort level of skill.</td>
<td>Some steps in the multistep process are proficient, others are incorrect. Final product shows errors in comprehension.</td>
<td>Written multistep instructions, procedures and technical tasks are completed correctly. Final product shows correct comprehension.</td>
<td></td>
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