**Lesson Information**

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| Lesson: (3 of 3) Troubleshooting, Part 2 Length: 90 minutes  Unit: (3 of 3) System Installation and Upkeep  Course: HVAC |

**Content Assumptions**

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**Essential Questions**

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| 1. How are problems with cooling systems detected and corrected? 2. How are problems with heating systems (and heat pumps) detected and corrected? |

**Objectives Assessments**

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| After completing this lesson, students will be able to:   1. Describe the proper methods of troubleshooting and correcting problems within heating and cooling systems, including their components. | 1. Troubleshooting flowchart — rubric |

**Activities/Instruction**

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| **Show and Tell** (60 minutes)  Using classroom, library, and/or Internet resources (as listed in the Materials section), Instructor explains how to detect and correct problems in cooling and heating systems and their components. Students ask questions and take notes.  **Troubleshooting Flowchart** (30 minutes)  Using their notes and a flowchart program (like the one given in the Materials section), students create troubleshooting guides for detecting and correcting problems in cooling and heating systems and their components. |

**Materials**

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| For students:   * https://www.lucidchart.com/ (Flowchart-creating program)   For Instructor:   * http://www.achrnews.com/keywords/4364-hvac-troubleshooting (Forum for discussions about HVAC system problems) * http://hvacfun.com/tt-tech-tips-index.htm (General guides for troubleshooting and maintaining HVAC systems) * http://www.hvacpartsoutlet.com/troubleshootingguides.aspx (General guides for troubleshooting and maintaining HVAC systems) * [TROUBLESHOOTING FLOWCHART RUBRIC] |