



**Goodheart-Willcox Correlation of  
 Modern Refrigeration and Air Conditioning, 21st Edition © (2021)  
 to Florida Standards for Modern Refrigeration  
 Course: 8713010-Air Conditioning, Refrigeration and Heating Technology 1**

<b>Florida Standard</b>		<b>Correlating Textbook Pages</b>
01.0 Methods and strategies for using Florida Standards for grades 09-10 reading in Technical Subjects for student success in Air Conditioning, Refrigeration and Heating Technology.		
<b>01.01 Key Ideas and Details</b>		
01.01.1	Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.  LAFS.910.RST.1.1	24-25, 27, 31, 45, 54-67, 72-81, 88-89, 111, 119-121, 439-142, 149-150, 167
01.01.2	Determine the central ideas or conclusions of a text; trace the text’s explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.  LAFS.910.RST.1.2	iii-v, 121, 135, 139, 140-141, 147, 149-150, 154, 169, 202, 229, 230-231, 236-237, 237-238
01.01.3	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.  LAFS.910.RST.1.3	149-150, 621-624
<b>01.02 Craft and Structure</b>		
01.02.1	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 9–10 texts and topics.  LAFS.910.RST.2.4	1485-1525
01.02.2	Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).  LAFS.910.RST.2.5	52-69, 745
01.02.3	Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.  LAFS.910.RST.2.6	621-625, 648-649



Florida Standard		Correlating Textbook Pages
<b>01.03 Integration of Knowledge and Ideas</b>		
01.03.1	Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words. LAFS.910.RST.3.7	54-67
01.03.2	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 problem. LAFS.910.RST.3.8	620-627, 813-816
01.03.3	Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts. LAFS.910.RST.3.9	664-667 , 907-908
<b>01.04 Range of Reading and Level of Text Complexity</b>		
01.04.1	By the end of grade 9, read and comprehend literature [informational texts, history/social studies texts, science/technical texts] in the grades 9–10 text complexity band proficiently, with scaffolding as needed at the high end of the range.	504-544, 550-580
01.04.2	By the end of grade 10, read and comprehend literature [informational texts, history/social studies texts, science/technical texts] at the high end of the grades 9–10 text complexity band independently and proficiently. LAFS.910.RST.4.10	504-544, 550-580
02.0	Methods and strategies for using Florida Standards for grades 09-10 writing in Technical Subjects for student success in Air Conditioning, Refrigeration and Heating Technology.	
<b>02.01 Text Types and Purposes</b>		
02.01.1	Write arguments focused on discipline-specific content. LAFS.910.WHST.1.1	586- 591, 591-593
02.01.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes. LAFS.910.WHST.1.2	621-624



Florida Standard		Correlating Textbook Pages
<b>02.02 Production and Distribution of Writing</b>		
02.02.1	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. LAFS.910.WHST.2.4	11-13
02.02.2	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. LAFS.910.WHST.2.5	11-13
02.02.3	Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology’s capacity to link to other information and to display information flexibly and dynamically. LAFS.910.WHST.2.6	11-13
<b>02.03 Research to Build and Present Knowledge</b>		
02.03.1	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. LAFS.910.WHST.3.7	122 (Soft Skills for HVACR), 381 (Thinking Green), 444 (Soft Skills for HVACR), 578 (Soft Skills for HVACR)
02.03.2	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation. LAFS.910.WHST.3.8	451 (Critical Thinking) , 465 (Critical Thinking), 501 (Critical Thinking),
02.03.3	Draw evidence from informational texts to support analysis, reflection, and research. LAFS.910.WHST.3.9	547 (Critical Thinking), 583 (Critical Thinking), 608 (Thinking Green)



Florida Standard		Correlating Textbook Pages
<b>02.04 Range of Writing</b>		
02.04.1	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.  LAFS.910.WHST.4.10	605 (Pro Tip), 620 (Pro Tip), 625 (Pro Tip)
03.0 Methods and strategies for using Florida Standards for grades 09-10 Mathematical Practices in Technical Subjects for student success in Air Conditioning, Refrigeration and Heating Technology.		
03.01	Make sense of problems and persevere in solving them. MAFS.K12.MP.1.1	53-83, 1518-1525
03.02	Reason abstractly and quantitatively. MAFS.K12.MP.2.1	53-83, 1518-1525
03.03	Construct viable arguments and critique the reasoning of others. MAFS.K12.MP.3.1	639 (Soft Skills for HVACR), 642-643 (Critical Thinking)
03.04	Model with mathematics. MAFS.K12.MP.4.1	53-83, 1518-1525
03.05	Use appropriate tools strategically. MAFS.K12.MP.5.1	99-124
03.06	Attend to precision. MAFS.K12.MP.6.1	99-124
03.07	Look for and make use of structure. MAFS.K12.MP.7.1	21-37
03.08	Look for and express regularity in repeated reasoning. MAFS.K12.MP.8.1	39 (Critical Thinking), 46 (Service Call Troubleshooting), 51 (Critical Thinking)
CTE Standards and Benchmarks		Correlating Textbook Pages
04.0 Demonstrate the importance of health, safety and environmental management systems in organizations and their importance to organizational performance and regulatory compliance --The student will be able to:		
04.01	Describe personal and jobsite safety rules and regulations that maintain safe and healthy work environments.	21-37, 612 (Safety Note), 619 (Safety Note), 633 (Safety Note), 646 (Safety Note)



CTE Standards and Benchmarks		Correlating Textbook Pages
04.02	Explain the reasons for regular safety meetings and for company safety policies.	21-37, 618 (Code Alert), 620 (Caution), 649 (Caution)
04.03	Explain the need for employee-background checks and medical examinations.	11-15
04.04	Identify and use appropriate fire extinguishers and other such safety devices.	21-37
04.05	Identify and follow emergency and rescue procedures.	21-37
04.06	Identify and use safe-handling practices as they relate to hazardous and volatile fluids, compounds and gases.	21-37
04.07	Understand and apply Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA) and Department of Transportation (DOT) hazardous materials safety requirements.	160, 693, 915
04.08	Apply specific safety and recovery practices for refrigerants used in the industry.	21-37
04.09	Apply specific safety practices as they relate to handling and storing cylinders and materials.	21-37
04.10	Select and wear proper protective clothing and equipment.	21-37
04.11	Identify and use specific safety practices when using soldering and brazing skills.	145-151
04.12	Identify and use OSHA practices when working with heating, air-conditioning and refrigeration systems and equipment.	693
04.13	Follow safety precautions when using hand and power tools.	36
04.14	Demonstrate an understanding of first aid, Cardiopulmonary Resuscitation (CPR) and the use of portable defibrillators.	36
04.15	Explain emergency procedures to follow in response to workplace accidents.	21-37



CTE Standards and Benchmarks		Correlating Textbook Pages
04.16	Create a disaster and/or emergency response plan.	21-37
05.0 Identify, use and maintain the tools and tool accessories used in the heating, air-conditioning and refrigeration industry--The student will be able to:		
05.01	Identify and use basic hand tools and tool accessories; power tools (electric, mechanical and pneumatic, if available); pipe and tube-working tools; and specialized tools of the trade.	99-124
05.02	Apply appropriate care and maintenance procedures for tools and tool accessories, following the directions in the tool-equipment manufacturer's manual.	99-124
06.0 Demonstrate mathematics knowledge and skills--The student will be able to:		
06.01	Demonstrate knowledge of arithmetic operations.	53-83, 1518-1525
06.02	Analyze and apply data and measurements to solve problems and interpret documents.	53-83, 1518-1525
06.03	Construct charts/tables/graphs using functions and data.	53-83, 1518-1525
07.0 Demonstrate a practical knowledge of basic electricity and of the electrical components of heating, air-conditioning and refrigeration equipment--The student will be able to:		
07.01	Explain the principles of electricity.	259-274
07.02	Explain single- and three-phase power distribution.	283
07.03	Define and explain watts, ohms, volts and amps.	56, 260, 261
07.04	Identify and explain electrical measuring tools and devices.	375-383
07.05	Explain the standards for and ways to measure watts, resistance, voltage and amperage using appropriate instruments or devices.	375-383
07.06	Identify and explain appropriate electrical wiring symbols.	267, 383-385



CTE Standards and Benchmarks		Correlating Textbook Pages
07.07	Draw and explain a wiring schematic diagram for a control system.	267, 383-385
07.08	Create a wiring schematic for an air conditioner an electric furnace, a heat pump, an oil furnace (optional) and a gas furnace.	267, 383-385
07.09	Explain codes and standards and safety requirements for working with the electrical components used in heating, air conditioning and refrigeration.	22-23, 283-284, 627, 1164, 1362-1363
07.10	Troubleshoot protection devices, such as fuses and breakers.	42-46, 1489-1501
07.11	Interpret tables and charts from the National Electrical Codes (NEC).	283, 627, 1164
08.0 Troubleshoot heating, air-conditioning and refrigeration electrical control systems and their components--The student will be able to:		
08.01	Identify and explain the operations of electrical control systems and their components (zone damper motors, duel fuel lock out controls, outdoor thermostats/low ambient controls, defrost controls/timers and auxiliary heating controls).	337-368
08.02	Identify, install and troubleshoot controls for heating, air-conditioning and refrigeration systems.	337-368
08.03	Explain the operation of different types of electromechanical thermostats.	592
08.04	Wire basic heating, air-conditioning and refrigeration systems.	804-811, 991-1001, 1361-1381
08.06	Troubleshoot operational problems for different types of electromechanical thermostats.	592
08.06	Explain the electrical and mechanical operations of the basic heat pump.	1049-1076, 1237



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<b>CTE Standards and Benchmarks</b>		<b>Correlating Textbook Pages</b>
09.0 Select and test electrical generation and distribution components for commercial heating and air conditioning systems--The student will be able to:		
09.01	Determine wire sizes and voltage drops.	269-270, 284-285
09.02	Describe the operation of various types of transformers.	273-274
09.03	Draw and identify various power-transformers.	273-274
09.04	Test, size and replace protection devices such as fuses and breakers, motor starters and overloads.	359-363