

Extreme Makeover CTE Standards Edition

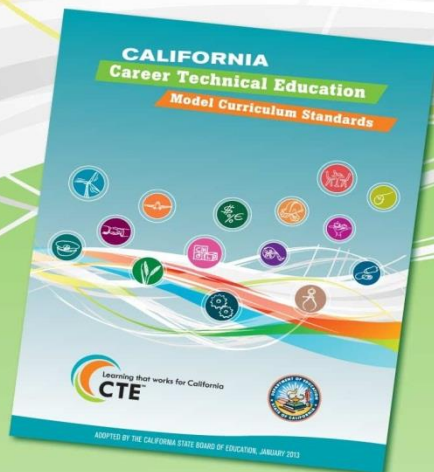
Presented by
Russell Weikle, Director
Career and College Transition Division
California Department of Education



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California's Career Technical Education:

Preparing Students for the 21st Century and Beyond



The newly revised standards include:

- Standards for Career Ready Practice
- Alignment with the Common Core State Standards
- Revisions to the industry sectors to be in line with the business community
- New pathways such as Games and Simulation, International Business, Mental and Behavioral Health, and Emergency Response



<http://www.cde.ca.gov/ci/ct/sf/ctcmstandards.asp>



New Model CTE Standards

- Fewer, clearer, deeper
- Research and evidence based
- Reasonable in scope
- Essential, rigorous, clear, specific and coherent
- Aligned with postsecondary and work expectations
- Measurable



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CTE Standards are a tool to:

- ▶ Foster the Career Readiness of all students.
- ▶ Support mastery of essential employability skills and rigorous academic content
- ▶ Develop a highly skilled and educated workforce which contributes to economic prosperity
- ▶ Support a seamless transition to postsecondary education and/or career entry
- ▶ Improve student achievement
- ▶ Put knowledge into practice



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Foundation for Standards Development

Research

- Bloom's Taxonomy (Revised)
- Rigor and Relevance Framework – Bill Daggett
- Knowledge Dimension – Anderson, Lorin and David Krathwohl
- Depth of Knowledge – Norman L. Webb



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Beyond Knowledge Construct

Knowledge

Metacognitive
form a coherent
whole

Procedural
How parts relate,
find coherence

Conceptual
clarify, give
examples

Factual
recognize, recall,
Locate

			DOK 4
		DOK 3	
	DOK 2		
DOK 1			

Use

Apply

Solve

Create

Performance

One-step
process to
solve a routine
problem

Multi-step
process to
solve routine
problems

Non-routine
problems
using multiple
steps

Solutions to real
world non-
routine, complex
problems using
multiple steps

Verbs used in MCS development

Factual

Access
Define
Describe
Find
Identify
Label
List
Locate
Match
Name
Recall
Recite
Recognize
Remember
Retrieve
Select
State

Conceptual

Adhere
Apply
Classify
Communicate
Compare
Demonstrate
Develop
Discriminate
Employ
Explain
Implement
Infer
Interpret
Maintain
Organize
Participate
Practice
Promote
Summarize
Transfer
Understand
Use

Procedural

Analyze
Assess
Comply
Compare
Contrast
Deconstruct
Deduce
Defend
Detect
Diagram
Differentiate
Discern
Distinguish
Enhance
Evaluate
Experiment
Explore
Illustrate
Integrate
Research
Solve
Test

Metacognitive

Advocate
Build
Compile
Compose
Construct
Create
Design
Devise
Formulate
Invent
Plan
Predict
Produce
Reconstruct
Reorganize
Synthesize



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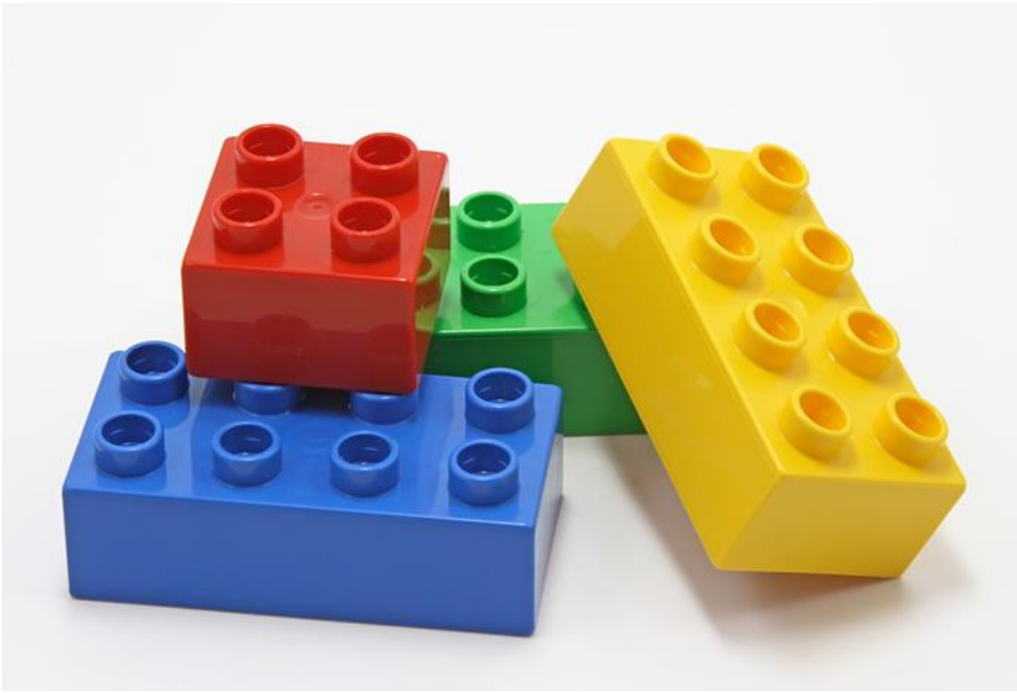
Performance

Use	Apply	Solve	Create
One-step process to solve a routine problem	Multi-step process to solve routine problems	Non-routine problems using multiple steps	Solutions to real world non-routine, complex problems using multiple steps

Develop a wind-resistant solar carport for the student parking lot and convince the school board to fund it.

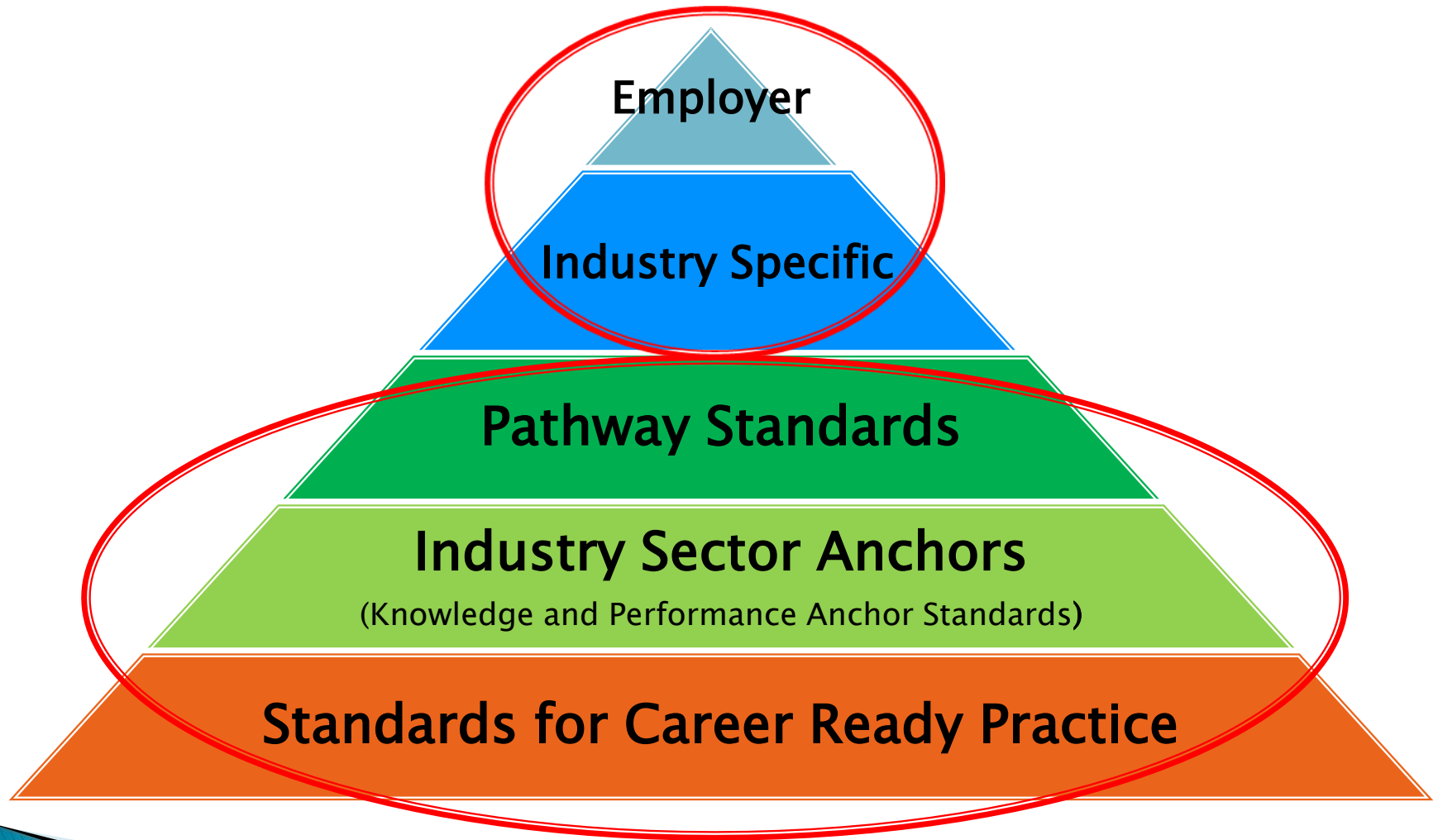
Explain the advantages and disadvantages of using recycled building materials

**Construct a small
scale model of a
garage using
only recycled
materials**

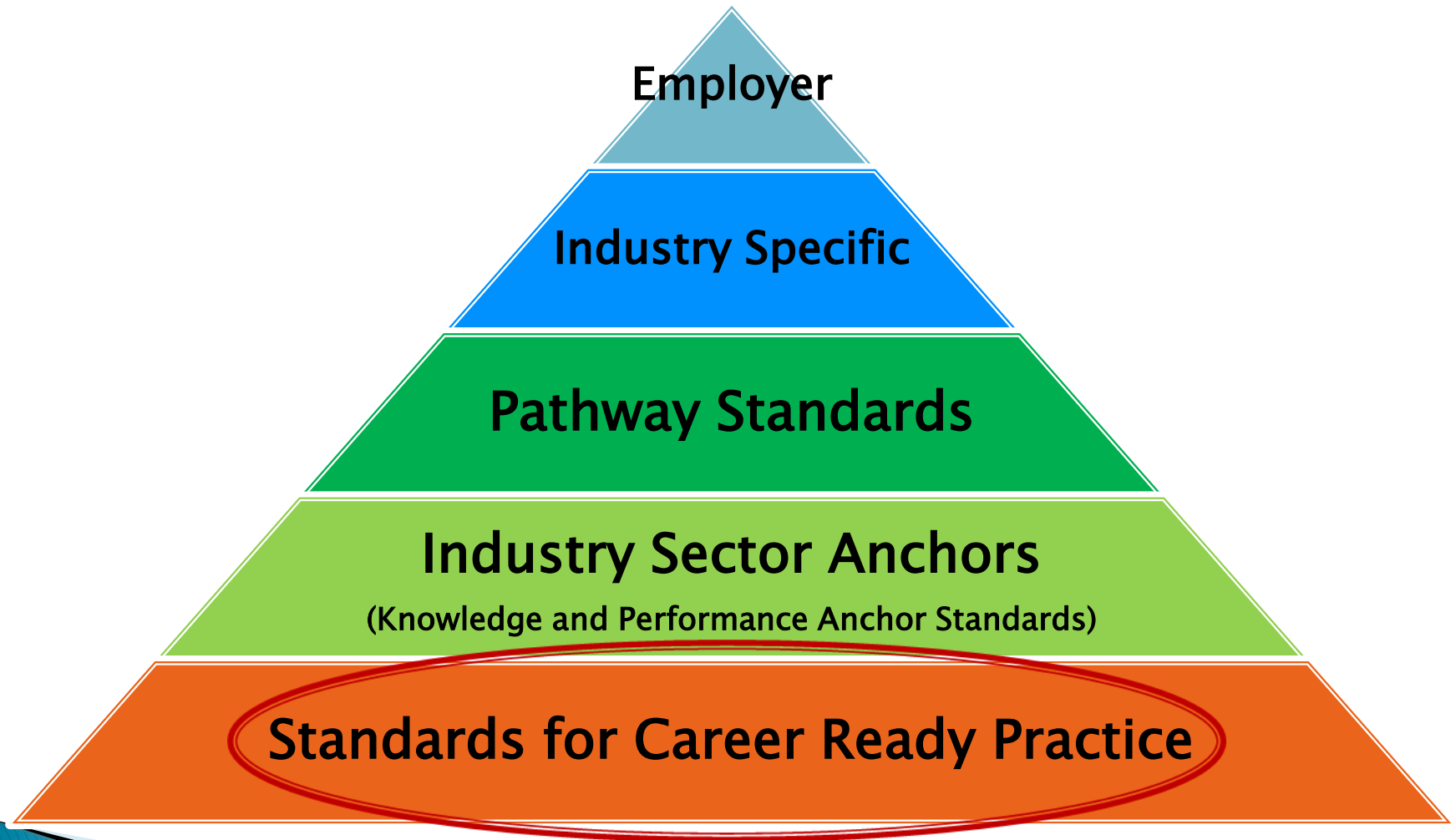


Structure of Model Curriculum Standards

CTE Standards Continuum



CTE Standards Continuum



Standards for Career Ready Practice

- Adapted from the National Common Career Technical Core
- Align with the Skills for the 21st Century
- Describe the fundamental knowledge and skills needed to be ready for careers AND college
- Not exclusive to a career pathway, CTE program of study, a particular discipline, or grade level



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Standards for Career Ready Practice

- Increase in complexity and expectation as student advance through a program of study
- Are taught and reinforced in all career exploration or career preparation programs, or integrated into core curriculum
- For ALL students, not just CTE students



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Standards for Career Ready Practice

1. Apply appropriate technical skills and academic knowledge
2. Communicate clearly, effectively, and with reason
3. Develop an education and career plan aligned to personal goals
4. Apply technology to enhance productivity
5. Utilize critical thinking to make sense of problems and persevere in solving them
6. Practice personal health and understand financial literacy



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Standards for Career Ready Practice (continued)

7. Act as a responsible citizen in the workplace and the community
8. Model integrity, ethical leadership, and effective management
9. Work productively in teams while using cultural/global competence
10. Demonstrate creativity and innovation
11. Employ valid and reliable research strategies
12. Understand the environmental, social, and economic impacts of decisions



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Standards for Career Ready Practice

Example

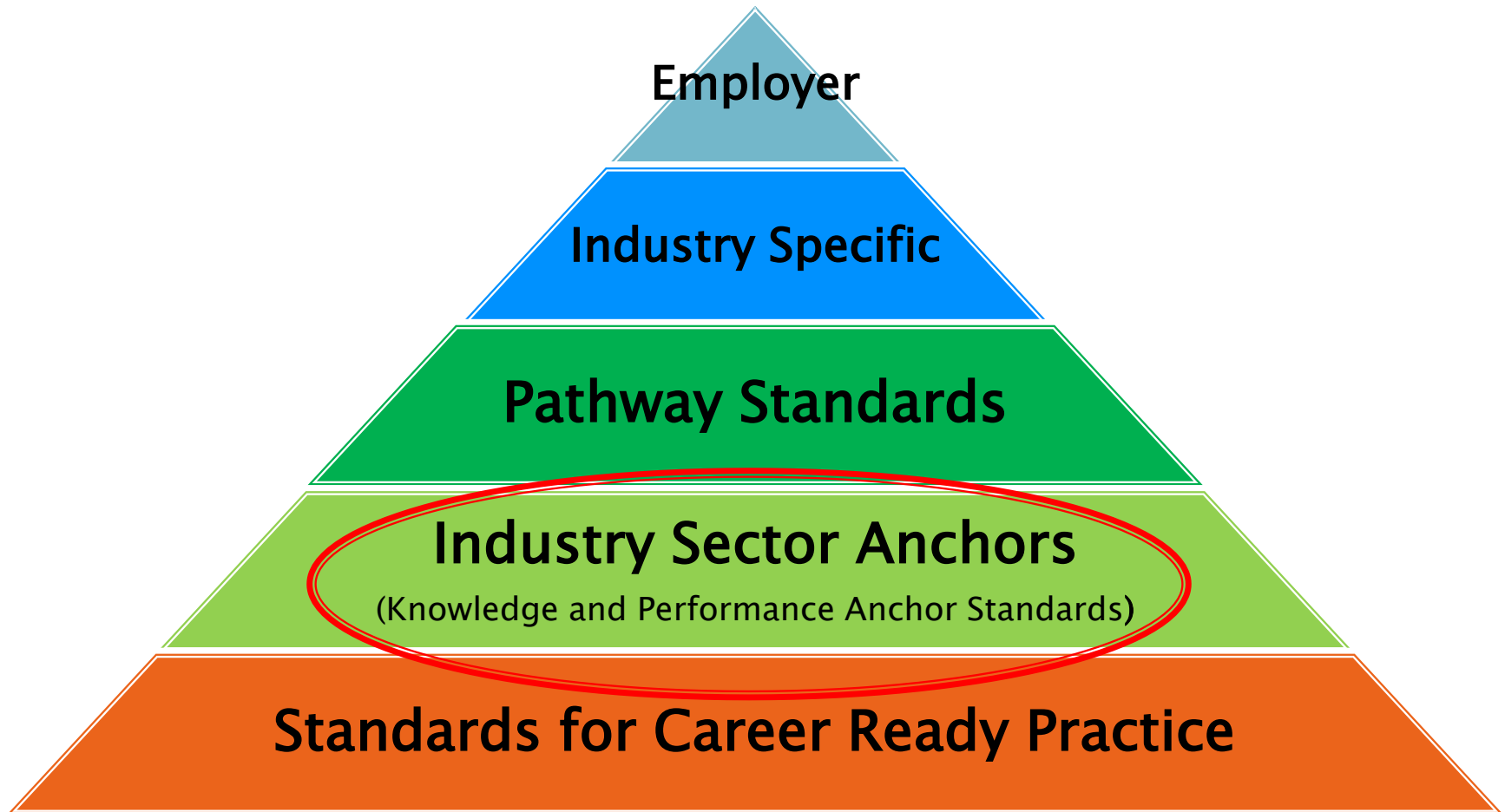
3. Develop an education and career plan aligned to personal goals.

Career-ready individuals take personal ownership of their own educational and career goals and manage their individual plan to attain these goals. They recognize the value of each step in the educational and experiential process, and that nearly all career paths require ongoing education and experience to adapt to practices, procedures, and expectations of an ever changing work environment. They seek counselors, mentors, and other experts to assist in the planning and execution of education and career plans.



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CTE Standards Continuum



CTE Anchor Standards

- Drawn from
 - *Preparing Students for the 21st Century Economy* (American Association of Colleges of Teacher Education and Partnership for the 21st Century)
 - *Skills and Assessments: What Business Wants* (American Association of Colleges and Universities and Peter D. Hart Research Associates, Inc.)
 - *Importance of Skills and Knowledge for College and Career Readiness* (MetLife Survey of The American Teacher)
 - *Are They Really Ready to Work?* (Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century U.S. Workforce)



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CTE Anchor Standards

- **Build on** the Standards for Career Ready Practice
- **Common** across the 15 industry sectors
- **Apply to all pathways** within a specific industry sector
- Anchor Standard 1: **Academics**, guides users to the sector specific core academic standards **related to each industry sector**, which are listed in the **Alignment Matrix** located at the end of each sector section.
- Anchor standards 2-10 are **deliberately aligned** to one of the **Common Core English Language Arts** standards
- Anchor Standard 11: Demonstration and Application, **highlights classroom, laboratory and workplace learning** specific to the individual sector and pathways.



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CTE Anchor Standards

1. **ACADEMICS**
2. **COMMUNICATIONS**
3. **CAREER PLANNING & MANAGEMENT**
4. **TECHNOLOGY**
5. **PROBLEM SOLVING & CRITICAL THINKING**
6. **HEALTH & SAFETY**
7. **RESPONSIBILITY & FLEXIBILITY**
8. **ETHICS & LEGAL RESPONSIBILITIES**
9. **LEADERSHIP & TEAMWORK**
10. **TECHNICAL KNOWLEDGE & SKILLS**
11. **DEMONSTRATION & APPLICATION**



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Knowledge and Performance Standards

2.0 Communications

Acquire, and use accurately, Building and Construction Trades sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia forms. (Direct alignment with standard 2.6)

- 2.1 Recognize the elements of
- 2.2 Identify barriers to accurate
- 2.3 Interpret
- 2.4 Demonstrate elements of spelling, grammar, and format
- 2.5 Communicate information in a variety of media and formats.
- 2.6 Advocate and practice safe, legal information and communications technology.

Performance Indicator
2.1, 2.2, 2.3 . . .



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Anchor Standard with Performance Indicators

2.0 Communications

Acquire and use accurately, Agriculture and Natural Resources sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats.

- 2.1 Recognize the elements of communication using a sender–receiver model.
- 2.2 Identify barriers to accurate and appropriate communication.
- 2.3 Interpret verbal & nonverbal communications and respond appropriately.
- 2.4 Demonstrate elements of written and electronic communication, such as accurate spelling, grammar and format.
- 2.5 Communicate information and ideas effectively to multiple audiences using a variety of media and formats.
- 2.6 Advocate and practice, safe, legal and responsible use of digital media information and communication technologies.



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College and Career Readiness Anchor Standards

College and Career Readiness Anchor Standards

The K-12 Common Core standards define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

READING	WRITING	SPEAKING AND LISTENING	LANGUAGE
Key Ideas and Details <ol style="list-style-type: none"> 1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text. 2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas. 3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text. 	Text Types and Purposes** <ol style="list-style-type: none"> 1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. 2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. 3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences. 	Comprehension and Collaboration <ol style="list-style-type: none"> 1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively 2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally. 3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric. 	Conventions of Standard English <ol style="list-style-type: none"> 1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. 2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
Craft and Structure <ol style="list-style-type: none"> 4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. 5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole. 6. Assess how point of view or purpose shapes the content and style of a text. 	Production and Distribution of Writing <ol style="list-style-type: none"> 4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. 5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach 6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others 	Presentation of Knowledge and Ideas <ol style="list-style-type: none"> 4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience 5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations. 6. Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate 	Knowledge of Language <ol style="list-style-type: none"> 3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening
Integration of Knowledge and Ideas <ol style="list-style-type: none"> 7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.* 8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence. 9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take. 	Research to Build and Present Knowledge <ol style="list-style-type: none"> 7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation. 8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism. 9. Draw evidence from literary or informational texts to support analysis, reflection, and research. 		Vocabulary Acquisition and Use <ol style="list-style-type: none"> 4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate 5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. 6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.
Range of Reading and Level of Text Complexity <ol style="list-style-type: none"> 10. Read and comprehend complex literary and informational texts independently and proficiently. 	Range of Writing <ol style="list-style-type: none"> 10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences. 		

*Please see "Research to Build and Present Knowledge" in Writing and "Comprehension and Collaboration" in Speaking and Listening for additional standards relevant to gathering, assessing, and applying information from print and digital sources.

** These broad types of writing include many subgenres. See Appendix A for definitions of key writing types (found at corestandards.org).

A New Level of Performance

Agriculture and Natural Resources

Former Foundation Standard: Communications

Students understand the principles of effective oral, written, and multimedia communications.

ELA Common Core Standard: Listening & Speaking

Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the career and college readiness level (LS 11–12.6)

New Anchor Standard 2: Communications

Acquire and use accurately, Agriculture and Natural Resources sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats.
(Deliberate Alignment)



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Anchor Standards Alignment

Energy, Environment, and Utilities

ELA Common Core Standard: Writing Standard

Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback including new arguments and information

CTE Anchor Standard 5: Problem Solving and Critical Thinking

Use existing and emerging technology to investigate, research, and produce products and services, including new information, as required in the Engineering and Architecture sector workplace environment. (Direct alignment to WS 11–12.6)



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Anchor Standards Alignment

Former Standard in Building Trades and Construction

Students understand health and safety policies, procedures, regulations, and practices, including the use of equipment and handling of hazardous materials.

New Standard in Building and Construction Trades

Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the Building and Construction Trades sector workplace environment.

(Direct alignment with RSTS 9-10, 11-12.4)



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Anchor Standards Alignment

Career Ready Practice

Develop an education and career plan aligned to personal goals.

Industry Sector Anchor Standard

Career Planning and Management:

Integrate multiple sources of career information from diverse formats to make informed career decisions and manage personal career plans.

Aligns with English Language Arts Standard

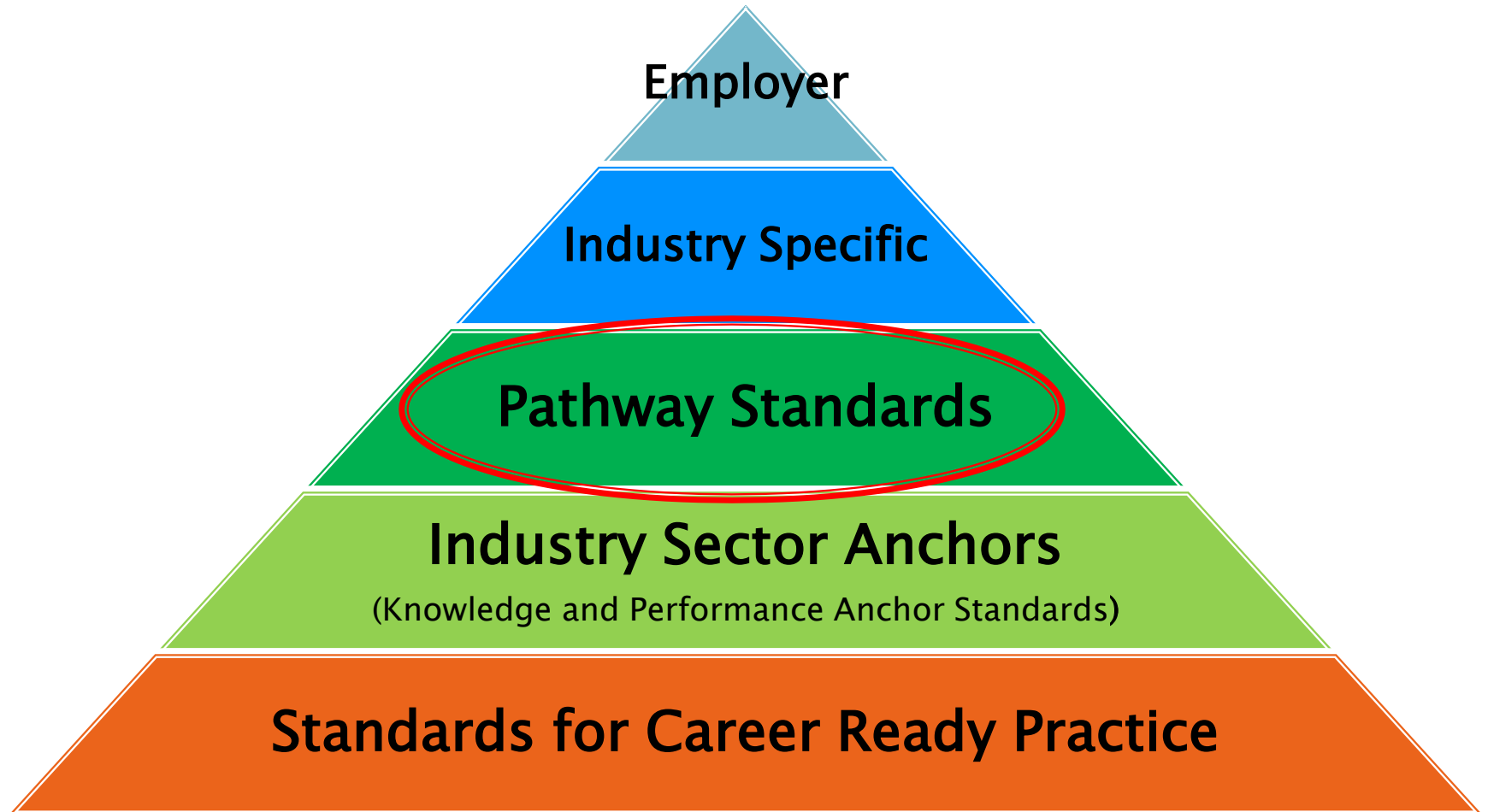
Reading Standards for Informational Text:

Integrate and evaluate multiple sources of information presented in different media or formats as well as in words in order to address a question or solve a problem. (RSIT 11-12.7)



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CTE Standards Continuum



Pathway Standards

- ▶ Unique within an industry sector
- ▶ Organized by careers within the industry sector of similar functions, services, and work environments
- ▶ Describe what students should know and be able to do once the standards content is achieved
- ▶ Build from simple to complex knowledge and performance
- ▶ Incidental Alignment with Academic Standards



Identification Criteria

- Has an occupational focus
- Consistent in size and scope
- Comprised of similar functions
- Inclusive of all aspects of the industry
- Includes 8–12 pathway specific standards
- Demonstrates sequence potential
- Lead to high skill, high wage, or high demand jobs
- Reasonable and appropriate for high school
- Sustainable and viable over next 10 years



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MCS Pathway Standards

Unique to industry sector

Describes what students should know and be able to do

Builds from simple to complex knowledge and performance



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Standard with Performance Indicators

- C4.0 Perform and document maintenance procedures in accordance with the recommendations of the manufacturer.
 - C4.1 Communicate the procedures and practices of various manufacturers regarding service, repair and maintenance schedules.
 - C4.2 Demonstrate how to properly document maintenance and repair procedures in accordance with applicable rules, laws, and regulations (e.g., Bureau of Auto Repair [BAR], Occupational Health and Safety Administration [OSHA], and the California Air Resources Board [CARB]).
 - C4.3 Use reference books, technical service bulletins, and other documents and materials related to the service industry available in print and through electronic retrieval systems to accurately diagnose and repair systems, equipment, and vehicles.
 - C4.4 Complete a work order, including customer information, description of repairs, and billing information, in accordance with applicable rules, laws, and regulations.



Integration with Common Core State Standards

Alignment Process

- ▶ Identify pathway standards that have a substantial and natural alignment to a core curriculum standard
- ▶ Determine if the pathway standard will enhance, reinforce or apply a specific core subject standard
- ▶ Developed an alignment matrix at end of each Industry Sector



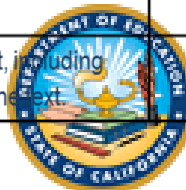
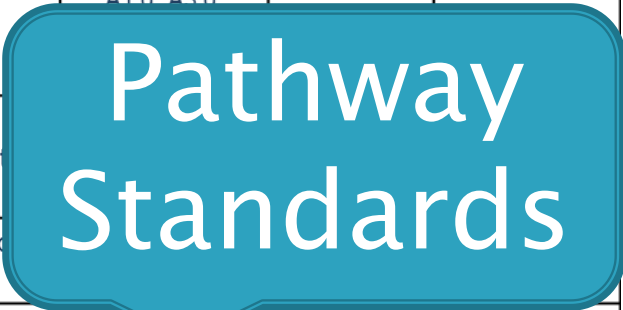
Industry Sector Anchor Standards Academic (1.0)

Academic Alignment Matrix

HOSPITALITY, TOURISM, AND RECREATION	PATHWAYS		
	A. Food Science, Dietetics and Nutrition	B. Food Service and Hospitality	C. Hospitality, Tourism and Recreation
ENGLISH LANGUAGE ARTS			
Language Standards - LS (Standard Area, Grade Level, Standard #)			
11-12.1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0, A9.0, A10.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0, B10.0, B11.0, B12.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0, C8.0, C9.0, C10.0, C11.0, C12.0
11-12.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0, A9.0, A10.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0, B10.0, B11.0, B12.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0, C8.0, C9.0, C10.0, C11.0, C12.0
11-12.3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0, A9.0, A10.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0, B10.0, B11.0, B12.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0, C8.0, C9.0, C10.0, C11.0, C12.0
11-12.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grades 11–12 reading and content</i> , choosing flexibly from a range of strategies.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0, A9.0, A10.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0, B10.0, B11.0, B12.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0, C8.0, C9.0, C10.0, C11.0, C12.0
11-12.6. Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0, A9.0, A10.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0, B10.0, B11.0, B12.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0, C8.0, C9.0, C10.0, C11.0, C12.0
Reading Standards for Information Text - RSIT (Standard Area, Grade Level, Standard #)			
11-12.2. Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0, A9.0, A10.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0, B10.0, B11.0, B12.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0, C8.0, C9.0, C10.0, C11.0, C12.0

Academic Alignment Matrix

BUSINESS AND FINANCE	PATHWAYS		
	A. Business Management	B. Financial Services	C. International Business
ENGLISH LANGUAGE ARTS			
Language Standards – LS (Standard Area, Grade Level, Standard #)			
11.1. Demonstrate command of language conventions and usage when writing or speaking.	A1.0, A3.0		
11.2. Demonstrate command of language conventions, punctuation, and spelling when writing.			
11.3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to enhance the expression of ideas.			
11.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grades 11–12 reading and content</i> , choosing flexibly from a range of strategies.	A2.0, A3.0	B4.0, B5.0	C2.0, C6.0
11.5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	A1.0	B4.0, B10.0	C2.0, C6.0
11.6. Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.	A1.0	B2.0, B10.0	C1.0, C6.0, C8.0
Reading Standards for Informational Text – RSIT (Standard Area, Grade Level, Standard #)			
11.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.	A4.0	B5.0, B6.0, B8.0	C1.0, C8.0
11.2. Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.	A3.0, A5.0	B5.0	



Academic Alignment Matrix

BUILDING AND CONSTRUCTION TRADES	PATHWAYS			
	A. Cabinetry, Millwork, and Woodworking	B. Engineering and Heavy Construction	C. Mechanical Systems Installation and Repair	D. Residential and Commercial Construction
1. Prove that all circles are similar.	A7.0, A10.0			D2.0, D3.0, D5.0, D6.0, D7.0, D8.0
<i>Find arc lengths and areas of sectors of circles</i>				
5. Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.	A7.0	B2.0		D3.0
GEOMETRY G-GMD – Geometric Measurement and Dimensions				
<i>Explain volume formulas and use them to solve problems</i>				
1. Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.	A1.0, A3.0, A5.0, A6.0, A8.0	B7.0	C12.0	D4.0, D5.0, D7.0, D8.0, D10.0, D11.0
<i>Visualize relationships between two-dimensional and three-dimensional objects</i>				
4. Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three dimensional objects generated by rotations of two-dimensional objects.	A1.0, A3.0, A5.0, A6.0, A8.0	B2.0, B7.0	C9.0, C12.0	D4.0, D5.0, D7.0, D8.0, D10.0, D11.0
5. Determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.	A1.0, A3.0, A5.0, A6.0, A8.0	B7.0	C9.0, C12.0	D4.0, D5.0, D7.0, D8.0, D10.0, D11.0
GEOMETRY G-GPE – Expressing Geometric Properties with Equations				
<i>Use coordinates to prove simple geometric theorems algebraically</i>				
4. Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point $(0, 2)$.	A1.0, A3.0, A5.0, A6.0, A8.0			D2.0, D3.0, D11.0
5. Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).	A7.0, A10.0	B2.0		D4.0, D5.0, D6.0, D7.0, D8.0
7. Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.	A6.0, A3.0, A5.0	B7.0	C6.0	D2.0, D3.0, D5.0, D6.0, D7.0, D10.0
GEOMETRY G-MG – Modeling with Geometry				
<i>Apply geometric concepts in modeling situations</i>				
1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).	A1.0	B7.0		
2. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).	A1.0	B4.0, B7.0		
3. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios)	A1.0	B2.0, B4.0, B7.0		
GEOMETRY G-SRT – Similarity, Right Triangles and Trigonometry				

TRANSPORTATION	PATHWAYS		
	A. Operations	B. Structural Repair and Refinishing	C. Systems Diagnostics and Service
ENGLISH LANGUAGE ARTS			
Reading Standards for Literacy in Science and Technical Subjects - RLST (Standard Area, Grade Level, Standard #)			
11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.	A6.0	B1.0, B2.0, B3.0, B4.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C5.0
11-12.10 By the end of grade 12 read and comprehend science/technical texts in the grades 11-12 text complexity band independently and proficiently.	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0, C8.0
Writing Standards - WS (Standard Area, Grade Level, Standard #)			
11-12.1 Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.	A5.0	B5.0	C5.0
11-12.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.	A7.0	B5.0	C5.0
11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	A3.0, A4.0,	B5.0	<u>C4.0</u>
11-12.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.	A1.0, A3.0 A4.0	B2.0, B3.0, B5.0, B6.0, B8.0, B9.0	C6.0, C7.0
11-12.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.	A1.0, A2.0		C8.0
11-12.10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	A1.0	B5.0	C4.0

Reading – High School

CTE Applications

Literacy in Science & Technical Subjects

Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.(11–12.RSTS.3)

CTE Application: Patient Care

B8.0 Demonstrate the principles of body mechanics as they apply to the positioning, transferring, and transporting of patients.

B8.1 Explain the principles of body mechanics.

B8.2 Determine appropriate equipment for transportation and transfer, including the modification of equipment and techniques to accommodate the health status of the patient.

B8.5 Integrate proper body mechanics, ergonomics, safety equipment, and techniques to prevent personal injury to patients and clients.



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Mathematics–High School: CTE Applications

Similarity, Right Triangles and Trigonometry

Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. (HS G–STR 8)

CTE Application: Residential and Commercial Construction

D2.0 Apply the appropriate mathematical calculations used in the construction trades.

D2.2 Apply the Pythagorean Theorem to calculate pipe offsets, roof slope, and check for square.

D4.0 Demonstrate techniques for proper site preparation.

D4.4 Check site layout for square using the diagonal method.



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Life Science–High School: CTE Applications

Heredity: Inheritance and Variation of Traits (LS3)

Inheritance of Traits (LS3.A)

Variation of Traits (LS3.B)

CTE Application: Animal Science

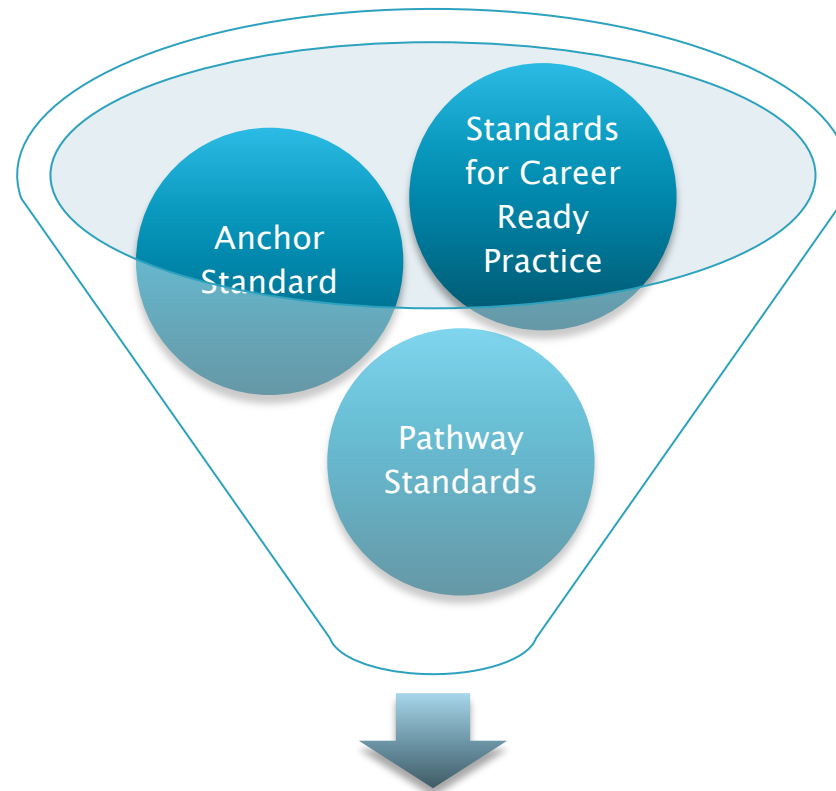
Discuss animal inheritance and selection principles, including the structure and role of DNA (A & NR D5.0)

- 5.1 Evaluate a group of animals for desired qualities and discern among them for breeding selection.
- 5.4 Predict phenotypic and genotypic results of a dominant and recessive gene pair.
- 5.5 Research the role of mutations, both naturally occurring and artificially induced, & hybrids in animal genetics



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Blending it all Together



Career and College Ready



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Business and Finance

Conduct short as well as more sustained research projects to answer a question or solve a problem . . .demonstrating understanding of the subject under investigation (Writing Standards for Science and Technical Subjects 11–12.7)

Business & Finance	Alignment
Anchor Standard	5.0 Problem Solving and Critical Thinking
Pathway: Business Management	A1.0, A2.0, A3.0, A4.0, A5.0, A6.0, A7.0, A8.0, A9.0
Pathway: Financial Services	B1.0, B2.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B9.0, B10.0
Pathway: International Business	C1.0, C2.0, C3.0, C4.0, C5.0, C6.0, C7.0, C8.0



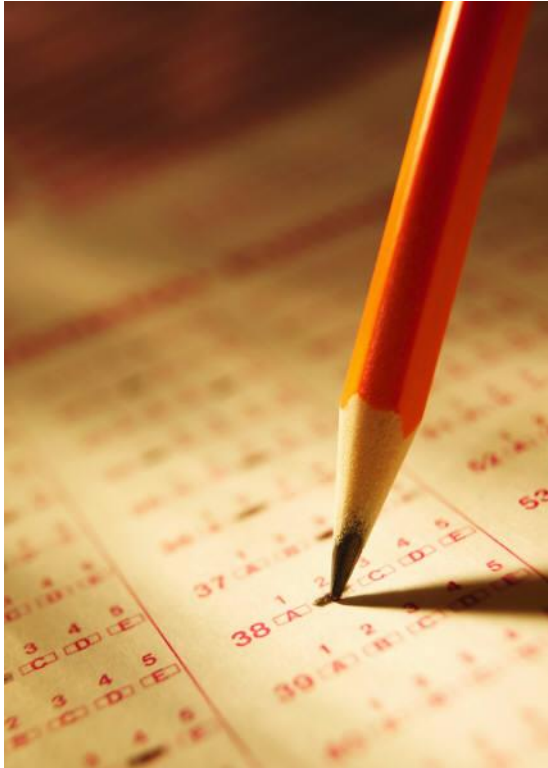
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Business and Finance

Choose a level of accuracy appropriate to limitations on measurement when reporting quantities (Algebra – Reasoning with Equations and Inequalities A–REI3)

Business & Finance	Alignment
Anchor Standard	None
Pathway: Business Management	None
Pathway: Financial Services	B1.0, B3.0, B4.0, B5.0, B6.0, B7.0, B8.0, B10.0
Pathway: International Business	C3.0, C4.0, C6.0, C7.0, C8.0

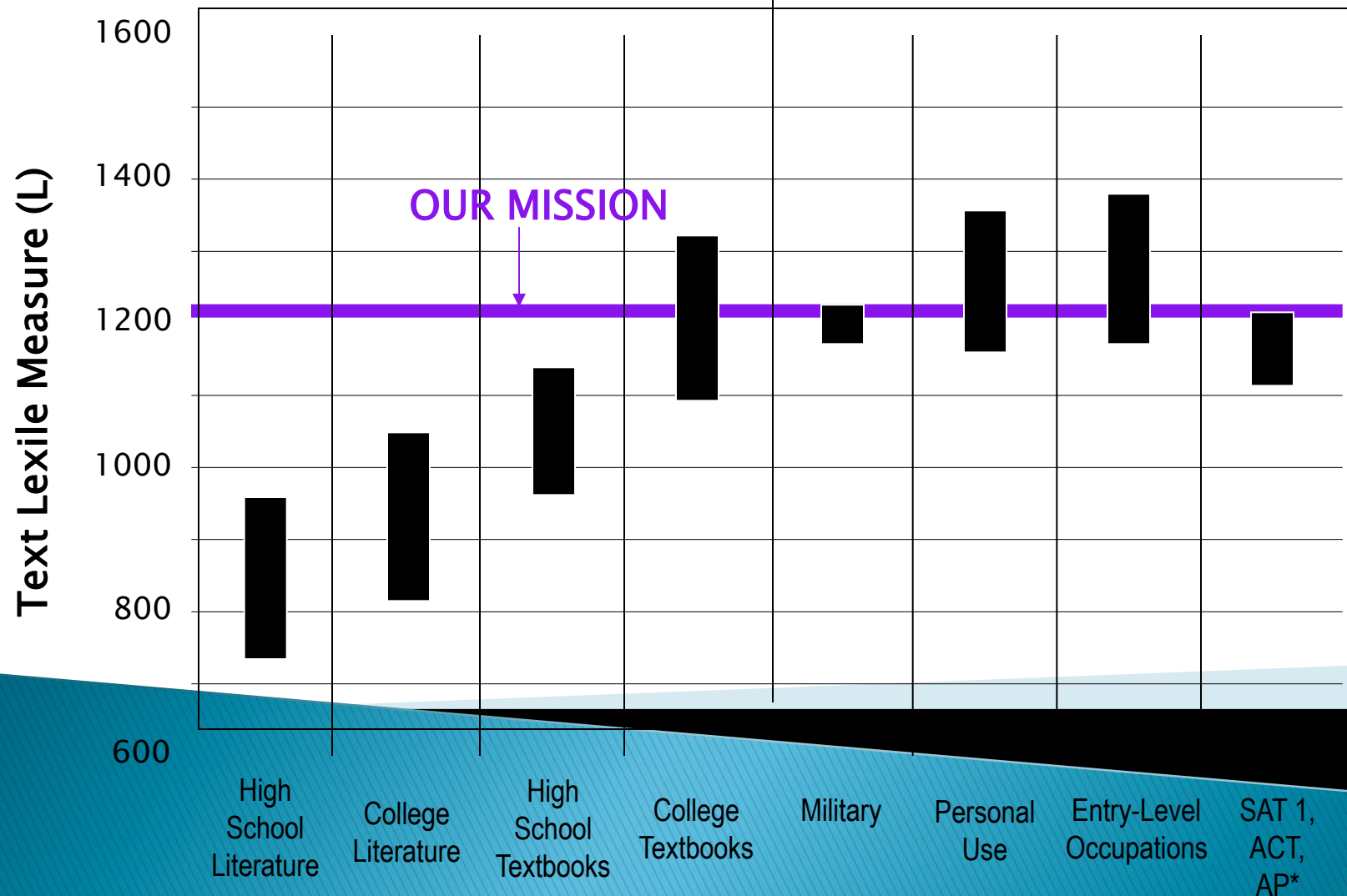




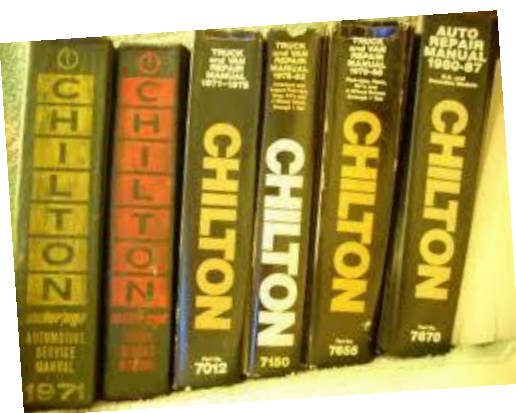
Assessments

Lexile Framework® for Reading Study Summary of Text Lexile Measures

Interquartile Ranges Shown (25% – 75%)



* Source of National Test Data: MetaMetrics



Law and Public Safety

1420 – 1740L

Agriculture/Natural Resource

1270 – 1510L

Education and Training

1320 – 1370L

Transportation, Distribution and Logistics

1170 – 1350L

Architecture/Construction

1210 – 1340L

Business and Administration

1210 – 1310L

Health Science

1260 – 1300L

Hospitality and Tourism

1230 – 1260L

Scientific Research/Engineering

1190 – 1250L

Arts/AV Technology/Communications

1100 – 1190L



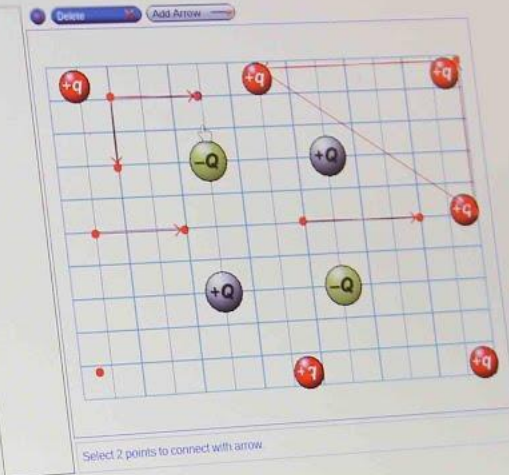
Source: Aligning the Journey with the Destination, by Gary Williamson, 47

43169

A scientist has fastened four charged metal spheres to a laboratory bench. The spheres all have the same amount of charge, Q , but the silver spheres are positively charged while the green spheres are negatively charged.

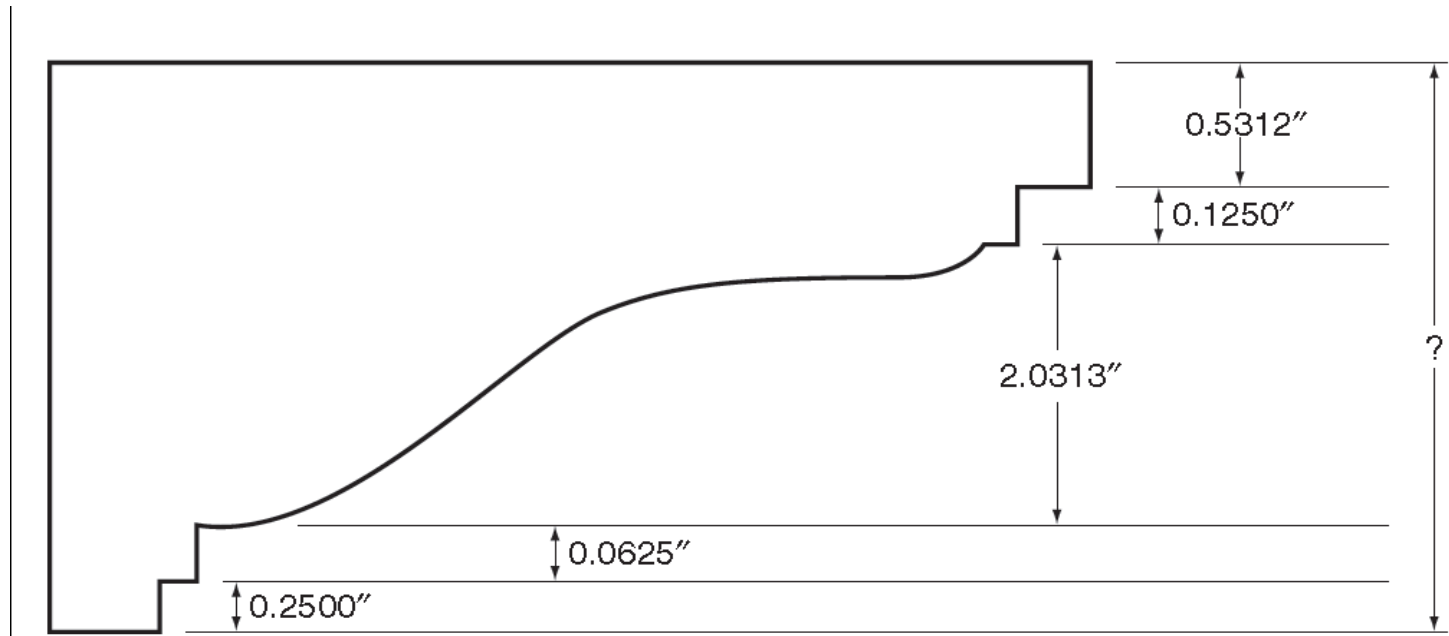


- A. On each sphere, draw an arrow representing the net electric force due to the other three spheres.
- B. Move the red charged sphere to the point on the table where there will be no net force from the other four spheres.

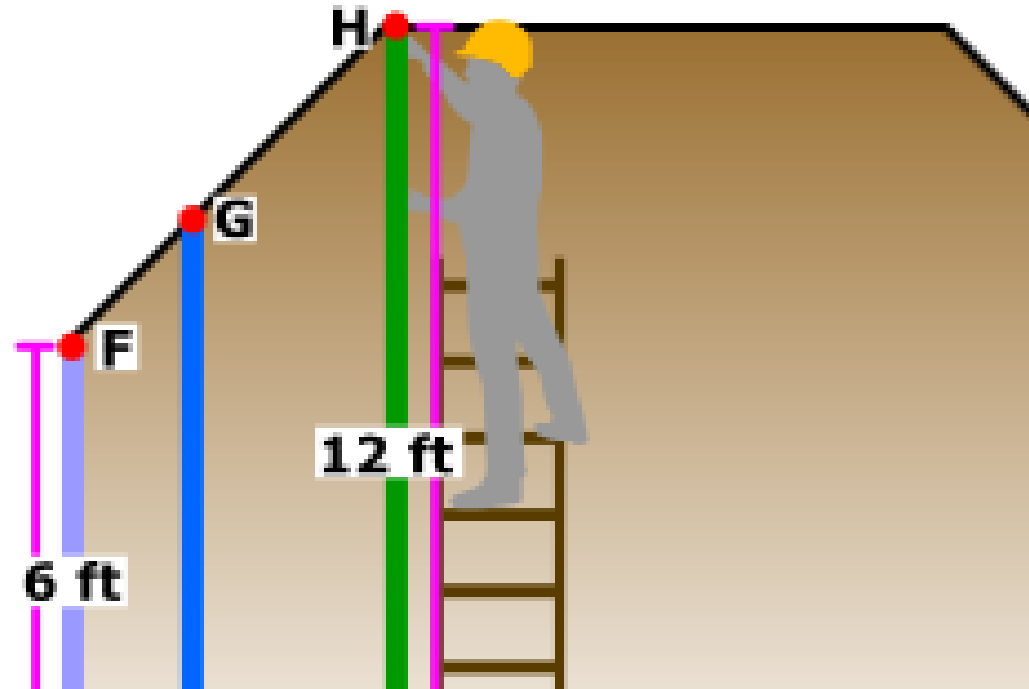


SAMSUNG

A job requires 45 brackets as shown. What is the fewest number of 4 x 8 sheets of plywood required?

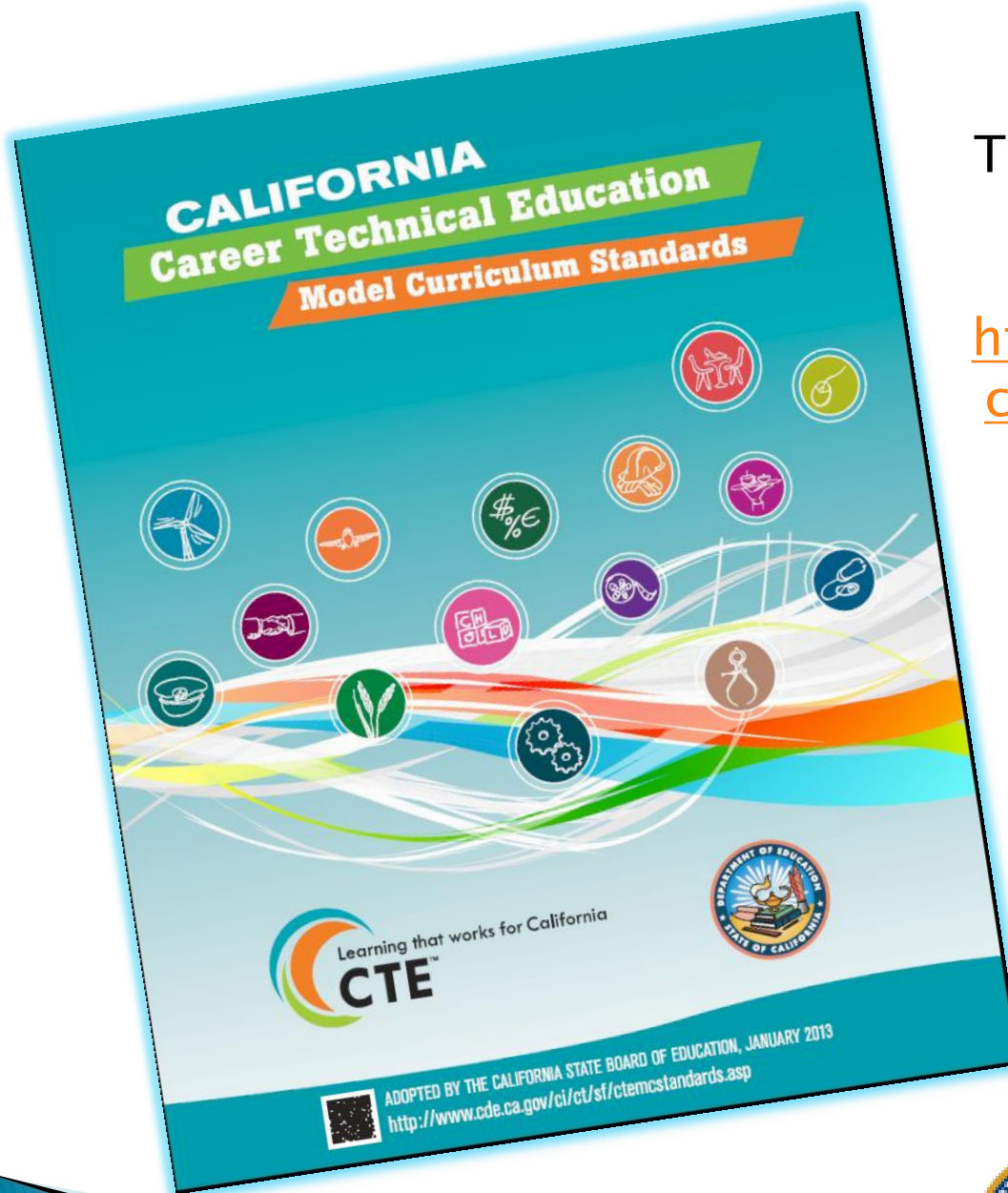


A construction worker is using wooden beams to reinforce the back wall of a room.



Determine the height, in feet, of the beam that ends at point G.
Explain how you found your answer.

- ▶ One of these is an assessment in one of our CTE classes. The other is from the new Smarter Balanced Assessment. Can you tell which is which?
- ▶ How do we shift an entire system away from multiple choice “right answers” to deeper, critical thinking, 21st century skills that employers want?



The new model curriculum standards are available online at:

<http://www.cde.ca.gov/ci/ct/sf/ctemcstandards.asp>



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Resources

- ▶ Career Technical Education Model Curriculum Standards: <http://www.cde.ca.gov/ci/ct/sf/ctemcstandards.asp>
- ▶ Common Career Technical Education Core: <http://www.careertech.org/career-technical-education/cctc/>
- ▶ Information about the common core: <http://www.corestandards.org/>
- ▶ Full text of the Common Core State Standards: <http://www.scoe.net/castandards/index.html>
- ▶ Information about the common core including implementation timelines: <http://www.cde.ca.gov/ci/cc/>
- ▶ SBAC information: <http://www.smarterbalanced.org/>
- ▶ Achieve: <http://www.achieve.org/>
- ▶ Curriculum development and model lessons CTE Online: <http://www.cteonline.org>
- ▶ California Career Resource Network (CalCRN): <http://www.californiacareers.info>



THANK YOU

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