PLTW Standards Connection
Biomedical Innovation

Connections to Standards in Biomedical Science

PLTW curriculum is designed to empower students to thrive in an evolving world. As a part of the design process when developing and updating our curriculum, we focus on connections to a variety of standards. PLTW Biomedical Innovation connects to standards in the following:

Table of Contents

Common Core College and Career Readiness Anchor Standards

Reading

Key Ideas and Details

CCSS.ELA-LITERACY.CCRA.R.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.

- [x] Problem 1 [x] Problem 2 [x] Problem 3 [x] Problem 4
- [x] Problem 5 [ ] Problem 6 [ ] Problem 7 [x] Problem 8

CCSS.ELA-LITERACY.CCRA.R.2

Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

- [x] Problem 1 [x] Problem 2 [x] Problem 3 [x] Problem 4
- [x] Problem 5 [ ] Problem 6 [ ] Problem 7 [x] Problem 8

CCSS.ELA-LITERACY.CCRA.R.3

Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

- [x] Problem 1 [x] Problem 2 [x] Problem 3 [x] Problem 4
- [x] Problem 5 [ ] Problem 6 [x] Problem 7 [x] Problem 8

Craft and Structure

CCSS.ELA-LITERACY.CCRA.R.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.

- [x] Problem 1 [x] Problem 2 [ ] Problem 3 [ ] Problem 4
- [ ] Problem 5 [ ] Problem 6 [ ] Problem 7 [ ] Problem 8

CCSS.ELA-LITERACY.CCRA.R.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.

- [x] Problem 1 [x] Problem 2 [ ] Problem 3 [ ] Problem 4
- [ ] Problem 5 [ ] Problem 6 [ ] Problem 7 [ ] Problem 8

CCSS.ELA-LITERACY.CCRA.R.6

Assess how point of view or purpose shapes the content and style of a text.

- [x] Problem 1 [x] Problem 2 [x] Problem 3 [ ] Problem 4
- [ ] Problem 5 [ ] Problem 6 [ ] Problem 7 [ ] Problem 8

Common Core College and Career Readiness Anchor Standards

Integration of knowledge and Ideas

CCSS.ELA-LITERACY.CCRA.R.7

Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.CCRA.R.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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

CCSS.ELA-LITERACY.CCRA.R.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.

☑ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Range of Reading and Level of Text Complexity

CCSS.ELA-LITERACY.CCRA.R.10

Read and comprehend complex literary and informational texts independently and proficiently.

☑ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Writing

Text Types and Purposes

CCSS.ELA-LITERACY.CCRA.W.1

Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

☑ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

CCSS.ELA-LITERACY.CCRA.W.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.

☑ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Common Core College and Career Readiness Anchor Standards

CCSS.ELA-LITERACY.CCRA.W.3

Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

☑ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Production and distribution of Writing

CCSS.ELA-LITERACY.CCRA.W.4

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

☑ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

CCSS.ELA-LITERACY.CCRA.W.5

Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

☑ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

CCSS.ELA-LITERACY.CCRA.W.6

Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

☑ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Research to Build and Present Knowledge

CCSS.ELA-LITERACY.CCRA.W.7

Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

☑ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.CCRA.W.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.

☑ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

CCSS.ELA-LITERACY.CCRA.W.9

Draw evidence from literary or informational texts to support analysis, reflection, and research.

☑ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Common Core College and Career Readiness Anchor Standards

Range of Writing

CCSS.ELA-LITERACY.CCRA.W.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.

☑ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Speaking and Listening

Comprehension and Collaboration

CCSS.ELA-LITERACY.CCRA.SL.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.

☑ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Foundation Standard 1: Academic Foundation: Understand human anatomy, physiology, common diseases and disorders, and medical math principles.

Human Anatomy and Physiology

1.1.1 a

Identify basic levels of organization of the human body
a. Chemical
b. Cellular
c. Tissue
d. Organs
e. Systems
f. Organism

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☑ Problem 7 ☐ Problem 8

Human Anatomy and Physiology - Identify basic structures and describe functions of human body systems.

1.1.2 a

Skeletal

- Structures of the skeletal system
  - Distinguish between axial and appendicular skeletons
  - Describe long bone anatomy
  - Identify joint types and movement
  - Name and classify all bones (206)
- Functions of the skeletal system
  - Structure and support
  - Muscle attachment and movement
  - Mineral storage
  - Hematopoiesis

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☑ Problem 7 ☐ Problem 8

1.1.2 b

Muscular

- Structures of the muscular system
  - Identify types of muscle tissue
  - Identify major muscle groups of neck, shoulder, chest, abdomen, back, arms, and legs
- Functions of the muscular system
  - Body movement
  - Posture
  - Protection

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☑ Problem 7 ☐ Problem 8

1.1.2 c

Integumentary

- Structures of the integumentary system
  - Identify integumentary components
  - Label the layers of skin
- Functions of the integumentary system
  - Vitamin D production
  - Sensory organ
  - Infection protection
  - Temperature regulation
  - UV light protection

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☑ Problem 7 ☐ Problem 8

1.1.2 d

Cardiovascular

- Structures of the cardiovascular system
  - Identify cardiovascular organs
  - Label the parts of the heart
  - Distinguish blood components
- Functions of the cardiovascular system
  - Blood flow through the heart and body
  - Transports nutrients, waste, antibodies, hormones, and gases
  - Cardiac conduction system

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☑ Problem 7 ☐ Problem 8

1.1.2 e

Lymphatic / Immune

- Structures of the lymphatic system
  - Identify lymphatic organs
- Functions of the lymphatic system
  - Provide protection against disease
  - Movement of lymph fluid

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☑ Problem 7 ☐ Problem 8

1.1.2 f

Respiratory

- Structures of the respiratory system
  - Identify respiratory organs
- Functions of the respiratory system
  - Gas exchange

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☑ Problem 7 ☐ Problem 8

1.1.2 g

Structures of the nervous system

- Identify organs of the nervous system
- Identify structures of the special sense organs

- Functions of the nervous system
  - Sensation
  - Movement
  - Processing

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☑ Problem 7 ☐ Problem 8

1.1.2 h

Endocrine

- Structures of the endocrine system
  - Identify endocrine glands
- Functions of the endocrine system
  - Production of hormones
  - Regulation of body processes
  - Controls metabolism
  - Regulates growth, development, and maturation

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☑ Problem 7 ☐ Problem 8

1.1.2 i

Digestive

- Structures of the digestive system
  - Identify digestive organs in sequence
  - Differentiate between alimentary and accessory organs
- Functions of the digestive system
  - Chemical and mechanical digestion
  - Absorption of nutrients
  - Excretion of waste

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☑ Problem 7 ☐ Problem 8

1.1.2 j

Urinary

- Structures of the urinary system
  - Identify urinary organs
  - Identify gross and microscopic anatomy of the kidney
- Functions of the urinary system
  - Process of urine formation
  - Urine composition
  - Homeostatic balance

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☑ Problem 7 ☐ Problem 8

1.1.2 k

Reproductive

- Structures of the reproductive system
  - Identify female reproductive organs
  - Identify male reproductive organs
- Functions of the reproductive system
  - Formation of gametes
  - Production of hormones

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☑ Problem 7 ☐ Problem 8

National Consortium for Health Science Education

Diseases and Disorders

1.2.2

Describe biomedical therapies as they relate to the prevention, pathology, and treatment of disease.

- Gene testing
- Gene therapy
- Cloning
- Stem cell research

☐ Problem 1 ☐ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

Medical Mathematics - Demonstrate competency using basic math skills and mathematical conversions as they relate to healthcare.

1.3.1

Metric system

- Kilo-
- Centi-
- Deci-
- Milli-
- Micro-

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

1.3.1 b

Mathematical

- Average
- Ratios
- Fractions
- Percentages
- Addition / Subtraction
- Multiplication / Division

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

1.3.1 c

Conversions

- Height (inches/meters)
- Weight/mass (pounds/grams)
- Length (inches/meters)
- Volume (ml/cc)
- Temperature (F/C)
- Household measurements (Tbsp/tsp/cup/oz)

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Medical Mathematics

1.3.2

Demonstrate the ability to analyze diagrams, charts, graphs, and tables to interpret healthcare results.

☑ Problem 1 ☑ Problem 2 ☐ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☑ Problem 7 ☑ Problem 8

Foundation Standard 2: Communications Demonstrate methods of delivering and obtaining information, while communicating effectively.

Concepts of Effective Communication

2.1.1

Model verbal and nonverbal therapeutic communication.

- Active listening
- Silence
- Summarizing
- Reflecting

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Concepts of Effective Communication

2.1.3

Distinguish between subjective and objective information.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

2.1.5

Modify communication to meet the needs of the patient/client and be appropriate to the situation.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Written Communication Skills

2.3.1

Use proper elements of written and electronic communication (spelling, grammar, and formatting).

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

2.3.2

Prepare examples of technical and informative writing.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Foundation Standard 4: Employability Skills Use employability skills to enhance employment opportunities and job satisfaction.

Employability Skills

4.2.1

Apply employability skills in healthcare.
- Chain of command
- Communication Skills
- Decision making
- Flexible
- Organization
- Problem Solving
- Scope of practice
- Time Management
- Work Ethic

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Employability Preparation

4.4.1

Develop components of a personal portfolio.
- Letter of introduction
- Resume
- Sample Projects
- Writing Sample
- Work-based Learning Documentation
- Oral Report
- Community Service / Service Learning
- Credentials
- Technology Skills
- Leadership Examples

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Foundation Standard 7: Safety Practices Identify existing and potential hazards to clients, co-workers, and self. Employ safe work practices and follow health and safety policies and procedures to prevent injury and illness.

Infection Control - Explain principles of infection transmission.

7.1.1 a

Identify classifications of pathogens
• Bacteria
• Fungi
• Parasites
• Protozoa
• Viruses

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

7.1.1 b

Describe characteristics of microorganisms
• Aerobic
• Anaerobic
• Non-pathogenic
• Pathogenic

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

7.1.1 c

Recognize chain of infection

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

7.1.1 d

Describe mode of transmission
• Common vehicle (air, food, water)
• Direct
• Healthcare-associated infections (nosocomial)
• Indirect
• Opportunistic
• Vectors

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

National Consortium for Health Science Education

Infection Control - Differentiate methods of controlling the spread and growth of pathogens.

7.1.2 a

Asepsis
• Sanitization
• Antisepsis
• Disinfection
• Sterile technique
• Sterilization

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4
☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

7.1.2 b

Standard precautions
• Handwashing
• Gloving
• Personal Protective Equipment (PPE)
• Environmental cleaning

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4
☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

7.1.2 c

Isolation precautions
• Transmission-based contact

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4
☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

7.1.2 d

Bloodborne pathogen precautions

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4
☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

7.1.2 e

Vaccinations

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4
☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

Personal Safety

7.2.1

Apply personal safety procedures based on Occupational Safety and Health Administration (OSHA) and Centers for Disease Control (CDC) regulations.

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4
☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

7.2.2

Demonstrate principles of body mechanics during patient care.
• Ambulating
• Lifting
• Positioning

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

7.2.3

Demonstrate and apply the use of personal protective equipment (PPE).

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

7.3.1

Apply safety techniques in the work environment.
• Ergonomics
• Safe operation of equipment
• Patient/client/employee safety measures

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

Common Safety Hazards

7.4.1

Observe all safety standards related to the occupational exposure to hazardous chemicals standard (safety data sheets [SDS]).

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

7.4.2

Comply with safety signs, symbols, and labels.

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

Foundation Standard 8: Teamwork Identify roles and responsibilities of individual members as part of the healthcare team.

Healthcare Teams

8.1.2

Identify characteristics of effective teams.
• Defined roles
• Common purpose
• Effective communication
• Effective leadership
• Measurable processes and outcomes
• Mutual respect
• Shared goals

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Team Member Participation

8.2.1

Recognize methods for building positive team relationships.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Team Member Participation - Analyze attributes and attitudes of an effective leader.

8.2.2 a

Characteristics
• Focused and driven
• Interpersonal skills
• Motivates and inspires
• Organized and balanced

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

8.2.2 b

Types
• Autocratic
• Democratic
• Laissez faire

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

8.2.2 c

Roles
• Communicates vision
• Leads change
• Manages accountability

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Team Member Participation

8.2.3

Apply effective techniques for managing team conflict.
• Communicate assertively
• Set clear expectations
• Gather the facts
• Mediate disputes
• Negotiate resolutions

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Foundation Standard 9: Health Maintenance Practices
Differentiate between wellness and disease. Promote disease prevention and model healthy behaviors.

Healthy Behaviors

9.1.1

Promote behaviors of health and wellness.
• Exercise
• Nutrition
• Relationships
• Sleep habits
• Stress management
• Weight control

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

9.1.3

Describe strategies for prevention of disease.
• Community health education outreach programs
• Immunizations
• Medical, dental, and mental health screenings
• Routine physical exams
• Stress management

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Foundation Standard 10: Technical Skills
Apply and demonstrate technical skills and knowledge common to health career specialties.

Technical Skills

10.1.1

Demonstrate procedures for measuring and recording vital signs including the normal ranges.
• Blood pressure
• Temperature
• Oxygen saturation
• Pain
• Pulse
• Respirations

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Common Core State Standards for Mathematics

Interpreting Functions

Analyze Functions Using Different Representations

CCSS.MATH.CONTENT.HSF.IF.C.7

Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.

☐ Problem 1 ☑ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

CCSS.MATH.CONTENT.HSF.IF.C.7.A

Graph linear and quadratic functions and show intercepts, maxima, and minima.

☐ Problem 1 ☑ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

CCSS.MATH.CONTENT.HSF.IF.C.7.B

Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

CCSS.MATH.CONTENT.HSF.IF.C.8

Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

CCSS.MATH.CONTENT.HSF.IF.C.8.A

Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

CCSS.MATH.CONTENT.HSF.IF.C.9

Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Common Core State Standards for Mathematics

Building Functions

Build a Function That Models a Relationship Between Two Quantities

CCSS.MATH.CONTENT.HSF.BF.A.1

Write a function that describes a relationship between two quantities.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Linear, Quadratic, and Exponential Models

Construct and Compare Linear, Quadratic, and Exponential Models and Solve Problems

CCSS.MATH.CONTENT.HSF.LE.A.2

Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Expressing Geometric Properties with Equations

Use Coordinates to Prove Simple Geometric Theorems Algebraically

CCSS.MATH.CONTENT.HSG.GPE.B.6

Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Modeling with Geometry

Apply Geometric Concepts in Modeling Situations

CCSS.MATH.CONTENT.HSG.MG.A.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).

☐ Problem 1 ☑ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Interpreting Categorical and Quantitative Data

Summarize, Represent, and Interpret Data on a Single Count or Measurement Variable

CCSS.MATH.CONTENT.HSS.ID.A.1

Represent data with plots on the real number line (dot plots, histograms, and box plots).

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Common Core State Standards for Mathematics

CCSS.MATH.CONTENT.HSS.ID.A.2

Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

CCSS.MATH.CONTENT.HSS.ID.A.4

Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.

☑ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

Interpret Linear Models

CCSS.MATH.CONTENT.HSS.ID.C.8

Compute (using technology) and interpret the correlation coefficient of a linear fit.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

CCSS.MATH.CONTENT.HSS.ID.C.9

Distinguish between correlation and causation.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

Making Inferences and Justifying Conclusions

Make inferences and Justify Conclusions From Sample Surveys, Experiments, and Observational Studies

CCSS.MATH.CONTENT.HSS.IC.B.3

Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

CCSS.MATH.CONTENT.HSS.IC.B.6

Evaluate reports based on data.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

Using Probability to Make Decisions

Use Probability to Evaluate Outcomes of Decisions

CCSS.MATH.CONTENT.HSS.MD.B.7

(+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Common Core State Standards for English Language Arts

Reading Literature

Key Ideas and Details

CCSS.ELA-LITERACY.RL.9-10.1

Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.RL.9-10.2

Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Writing

Text Types and Purpose

CCSS.ELA-LITERACY.W.9-10.1

Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.9-10.1.A

Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.9-10.1.B

Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.9-10.1.D

Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Common Core State Standards for English Language Arts

CCSS.ELA-LITERACY.W.9-10.1.E

Provide a concluding statement or section that follows from and supports the argument presented.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.9-10.2

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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.9-10.2.A

Introduce a topic; organize complex ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.9-10.2.B

Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.9-10.2.C

Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.9-10.2.D

Use precise language and domain-specific vocabulary to manage the complexity of the topic.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.9-10.2.E

Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Common Core State Standards for English Language Arts

CCSS.ELA-LITERACY.W.9-10.2.F

Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Production and Distribution of Writing

CCSS.ELA-LITERACY.W.9-10.4

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.9-10.5

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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.9-10.6

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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Research to Build and Present Knowledge

CCSS.ELA-LITERACY.W.9-10.7

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.

☐ Problem 1 ☐ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.9-10.8

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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.9-10.9

Draw evidence from literary or informational texts to support analysis, reflection, and research.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Range of Writing

CCSS.ELA-LITERACY.W.9-10.10

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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Language

Conventions of Standard English

CCSS.ELA-LITERACY.L.9-10.1

Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.L.9-10.1.B

Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to convey specific meanings and add variety and interest to writing or presentations.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.L.9-10.2

Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.L.9-10.2.C

Spell correctly.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Common Core State Standards for English Language Arts

Knowledge of Language

CCSS.ELA-LITERACY.L.9-10.3

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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.L.9-10.3.A

Write and edit work so that it conforms to the guidelines in a style manual (e.g., MLA Handbook, Turabian's Manual for Writers) appropriate for the discipline and writing type.

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Vocabulary Acquisition and Use

CCSS.ELA-LITERACY.L.9-10.4.A

Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.L.9-10.4.D

Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Reading History/Social Studies

Key Ideas and Details

CCSS.ELA-LITERACY.RH.9-10.1

Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.RH.9-10.2

Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Common Core State Standards for English Language Arts

Craft and Structure

CCSS.ELA-LITERACY.RH.9-10.4

Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science.

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Integration of Knowledge and Ideas

CCSS.ELA-LITERACY.RH.9-10.7

Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.RH.9-10.9

Compare and contrast treatments of the same topic in several primary and secondary sources.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Reading Science and Technical

Key Ideas and Details

CCSS.ELA-LITERACY.RST.9-10.1

Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.RST.9-10.2

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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.RST.9-10.3

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.

☐ Problem 1 ☐ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☑ Problem 7 ☐ Problem 8

Common Core State Standards for English Language Arts

Craft and Structure

CCSS.ELA-LITERACY.RST.9-10.4

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.

☐ Problem 1 ☑ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

CCSS.ELA-LITERACY.RST.9-10.5

Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.RST.9-10.6

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.

☐ Problem 1 ☑ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

Integration of Knowledge and Ideas

CCSS.ELA-LITERACY.RST.9-10.7

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.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

CCSS.ELA-LITERACY.RST.9-10.8

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 problem.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.RST.9-10.9

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.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

Common Core State Standards for English Language Arts

Writing History/Social Studies, Science, and Technical

Text Types and Purposes

CCSS.ELA-LITERACY.WHST.9-10.1

Write arguments focused on discipline-specific content.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.9-10.1.A

Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.9-10.1.B

Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.9-10.1.C

Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.9-10.1.D

Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.9-10.1.E

Provide a concluding statement or section that follows from or supports the argument presented.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Common Core State Standards for English Language Arts

CCSS.ELA-LITERACY.WHST.9-10.2

Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.9-10.2.A

Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.9-10.2.B

Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.9-10.2.C

Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.9-10.2.D

Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.9-10.2.E

Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.9-10.2.F

Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Common Core State Standards for English Language Arts

Production and Distribution of Writing

CCSS.ELA-LITERACY.WHST.9-10.4

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.9-10.5

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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.9-10.6

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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Research to Build and Present Knowledge

CCSS.ELA-LITERACY.WHST.9-10.7

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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.9-10.8

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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.9-10.9

Draw evidence from informational texts to support analysis, reflection, and research.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Common Core State Standards for English Language Arts

CCSS.ELA-LITERACY.WHST.9-10.10

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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Reading Informational Text

Key Ideas and Details

CCSS.ELA-LITERACY.RI.11-12.1

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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Integration of Knowledge and Ideas

CCSS.ELA-LITERACY.RI.11-12.7

Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Writing

Text Types and Purpose

CCSS.ELA-LITERACY.W.11-12.1

Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.11-12.1.A

Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Common Core State Standards for English Language Arts

CCSS.ELA-LITERACY.W.11-12.1.B

Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.11-12.1.C

Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.11-12.1.D

Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.11-12.1.E

Provide a concluding statement or section that follows from and supports the argument presented.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.11-12.2.A

Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Common Core State Standards for English Language Arts

CCSS.ELA-LITERACY.W.11-12.2.B

Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.11-12.2.C

Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.W.11-12.2.E

Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Language

Conventions of Standard English

CCSS.ELA-LITERACY.L.11-12.1

Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.L.11-12.2

Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.L.11-12.2.B

Spell correctly.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Common Core State Standards for English Language Arts

Vocabulary Acquisition and Use

CCSS.ELA-LITERACY.L.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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Reading History/Social Studies

Key Ideas and Details

CCSS.ELA-LITERACY.RH.11-12.1

Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.RH.11-12.2

Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Integration of Knowledge and Ideas

CCSS.ELA-LITERACY.RH.11-12.7

Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.RH.11-12.8

Evaluate an author’s premises, claims, and evidence by corroborating or challenging them with other information.

☑ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.RH.11-12.9

Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Common Core State Standards for English Language Arts

Reading Science and Technical

Key Ideas and Details

CCSS.ELA-LITERACY.RST.11-12.1

Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

- [x] Problem 1 [x] Problem 2 [x] Problem 3 [x] Problem 4
- [x] Problem 5 [ ] Problem 6 [ ] Problem 7 [x] Problem 8

CCSS.ELA-LITERACY.RST.11-12.2

Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

- [x] Problem 1 [x] Problem 2 [x] Problem 3 [x] Problem 4
- [x] Problem 5 [ ] Problem 6 [ ] Problem 7 [x] Problem 8

CCSS.ELA-LITERACY.RST.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.

- [x] Problem 1 [x] Problem 2 [x] Problem 3 [x] Problem 4
- [x] Problem 5 [x] Problem 6 [x] Problem 7 [x] Problem 8

Craft and Structure

CCSS.ELA-LITERACY.RST.11-12.4

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.

- [ ] Problem 1 [x] Problem 2 [x] Problem 3 [ ] Problem 4
- [ ] Problem 5 [x] Problem 6 [ ] Problem 7 [x] Problem 8

Integration of Knowledge and Ideas

CCSS.ELA-LITERACY.RST.11-12.7

Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

- [x] Problem 1 [x] Problem 2 [x] Problem 3 [x] Problem 4
- [x] Problem 5 [ ] Problem 6 [ ] Problem 7 [x] Problem 8

CCSS.ELA-LITERACY.RST.11-12.8

Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

- [x] Problem 1 [x] Problem 2 [x] Problem 3 [x] Problem 4
- [x] Problem 5 [x] Problem 6 [x] Problem 7 [x] Problem 8

CCSS.ELA-LITERACY.RST.11-12.9

Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Range of Reading and Level of Text Complexity

CCSS.ELA-LITERACY.RST.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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Writing History/Social Studies, Science, and Technical

Text Types and Purposes

CCSS.ELA-LITERACY.WHST.11-12.1

Write arguments focused on discipline-specific content.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.11-12.1.A

Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.11-12.1.B

Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.11-12.1.C

Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Common Core State Standards for English Language Arts

CCSS.ELA-LITERACY.WHST.11-12.1.D

Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.11-12.1.E

Provide a concluding statement or section that follows from or supports the argument presented.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.11-12.2

Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.11-12.2.A

Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.11-12.2.B

Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.11-12.2.C

Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.11-12.2.E

Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Common Core State Standards for English Language Arts

Production and Distribution of Writing

CCSS.ELA-LITERACY.WHST.11-12.4

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.11-12.5

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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Research to Build and Present Knowledge

CCSS.ELA-LITERACY.WHST.11-12.7

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.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.11-12.8

Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

CCSS.ELA-LITERACY.WHST.11-12.9

Draw evidence from informational texts to support analysis, reflection, and research.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Common Core State Standards for English Language Arts

Range of Writing

CCSS.ELA-LITERACY.WHST.11-12.10

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.

- [x] Problem 1
- [x] Problem 2
- [x] Problem 3
- [x] Problem 4
- [x] Problem 5
- [ ] Problem 6
- [ ] Problem 7
- [x] Problem 8

Next Generation Science Standards

Ecosystems: Interactions, Energy, and Dynamics

HS.LS2.7

Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Biological Evolution: Unity and Diversity

HS.LS4.6

Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Earth and Human Activity

HS.ESS3.1

Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

HS.ESS3.4

Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Engineering Design

HS.ETS1.1

Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

HS.ETS1.2

Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Next Generation Science Standards

HS.ETS1.3

Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Disciplinary core ideas

ETS1.A Engineering Design - Defining and Delimiting Engineering Problems

• Criteria and constraints also include satisfying any requirements set by society, such as taking issues of risk mitigation into account, and they should be quantified to the extent possible and stated in such a way that one can tell if a given design meets them. (secondary to HS-PS2-3)

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

• Humanity faces major global challenges today, such as the need for supplies of clean water and food or for energy sources that minimize pollution, which can be addressed through engineering. These global challenges also may have manifestations in local communities. (HS-ETS1-1)

☐ Problem 1 ☐ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

ETS1.B Engineering Design - Developing Possible Solutions

• When evaluating solutions, it is important to take into account a range of constraints, including cost, safety, reliability, and aesthetics, and to consider social, cultural, and environmental impacts. (HS-ETS1-3)

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

• Criteria may need to be broken down into simpler ones that can be approached systematically, and decisions about the priority of certain criteria over others (trade-offs) may be needed. (secondary to HS-PS1-6)

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

Next Generation Science Standards

LS2.A Ecosystems: Interactions, Energy, and Dynamics - Interdependent Relationships in Ecosystems

• Ecosystems have carrying capacities, which are limits to the numbers of organisms and populations they can support. These limits result from such factors as the availability of living and nonliving resources and from such challenges such as predation, competition, and disease. Organisms would have the capacity to produce populations of great size were it not for the fact that environments and resources are finite. This fundamental tension affects the abundance (number of individuals) of species in any given ecosystem. (HS-LS2-1), (HSLS2-2)

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

LS3.B Heredity: Inheritance and Variation of Traits - Variation of Traits

• Environmental factors also affect expression of traits, and hence affect the probability of occurrences of traits in a population. Thus the variation and distribution of traits observed depends on both genetic and environmental factors. (HS-LS3-2), (HS-LS3-3)

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

LS4.C Biological Evolution: Unity and Diversity - Adaptation

• Changes in the physical environment, whether naturally occurring or human induced, have thus contributed to the expansion of some species, the emergence of new distinct species as populations diverge under different conditions, and the decline–and sometimes the extinction–of some species. (HS-LS4-5), (HS-LS4-6)

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

ESS2.D Earth's Systems - Weather and Climate

• Current models predict that, although future regional climate changes will be complex and varied, average global temperatures will continue to rise. The outcomes predicted by global climate models strongly depend on the amounts of human-generated greenhouse gases added to the atmosphere each year and by the ways in which these gases are absorbed by the ocean and biosphere. (secondary to HSESS3-6)

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Science and Engineering Practice

Practice 1 - Asking questions and defining problems in 9-12 builds on K-8 experiences and progresses to formulating, refining, and evaluating empirically testable questions and design problems using models and simulations.

• Evaluate a question to determine if it is testable and relevant.

☐ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

Next Generation Science Standards

• Ask questions that can be investigated within the scope of the school laboratory, research facilities, or field (e.g., outdoor environment) with available resources and, when appropriate, frame a hypothesis based on a model or theory.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

• Ask and/or evaluate questions that challenge the premise(s) of an argument, the interpretation of a data set, or the suitability of a design.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

• Define a design problem that involves the development of a process or system with interacting components and criteria and constraints that may include social, technical, and/or environmental considerations.

☑ Problem 1 ☐ Problem 2 ☑ Problem 3 ☑ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Practice 2 Developing and Using Models
Modeling in 9-12 builds on K-8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed worlds.

• Evaluate merits and limitations of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that best fits the evidence or design criteria.

☑ Problem 1 ☐ Problem 2 ☑ Problem 3 ☑ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

• Design a test of a model to ascertain its reliability.

☑ Problem 1 ☐ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

• Develop, revise, and/or use a model based on evidence to illustrate and/or predict the relationships between systems or between components of a system.

☑ Problem 1 ☐ Problem 2 ☑ Problem 3 ☑ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

• Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations.

☐ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Next Generation Science Standards

- Develop a complex model that allows for manipulation and testing of a proposed process or system.

☐ Problem 1 ☑ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

- Develop and/or use a model (including mathematical and computational) to generate data to support explanations, predict phenomena, analyze systems, and/or solve problems.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

Practice 3 Planning and Carrying Out Investigations
Planning and carrying out investigations in 9-12 builds on K-8 experiences and progresses to include investigations that provide evidence for and test conceptual, mathematical, physical, and empirical models.

- Plan an investigation or test a design individually and collaboratively to produce data to serve as the basis for evidence as part of building and revising models, supporting explanations for phenomena, or testing solutions to problems. Consider possible confounding variables or effects and evaluate the investigation's design to ensure variables are controlled.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

- Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in the design: decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

- Plan and conduct an investigation or test a design solution in a safe and ethical manner including considerations of environmental, social, and personal impacts.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

- Select appropriate tools to collect, record, analyze, and evaluate data. Make directional hypotheses that specify what happens to a dependent variable when an independent variable is manipulated.

☐ Problem 1 ☑ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Next Generation Science Standards

Practice 4 Analyzing and Interpreting Data
Analyzing data in 9-12 builds on K-8 experiences and progresses to introducing more detailed statistical analysis, the comparison of data sets for consistency, and the use of models to generate and analyze data.

- Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

- Apply concepts of statistics and probability (including determining function fits to data, slope, intercept, and correlation coefficient for linear fits) to scientific and engineering questions and problems, using digital tools when feasible.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

- Consider limitations of data analysis (e.g., measurement error, sample selection) when analyzing and interpreting data.

☐ Problem 1 ☑ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

- Compare and contrast various types of data sets (e.g., self-generated, archival) to examine consistency of measurements and observations.

☐ Problem 1 ☑ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

- Evaluate the impact of new data on a working explanation and/or model of a proposed process or system.

☐ Problem 1 ☑ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

- Analyze data to identify design features or characteristics of the components of a proposed process or system to optimize it relative to criteria for success.

☐ Problem 1 ☑ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Next Generation Science Standards

Practice 5 Using Mathematics and Computational Thinking
Mathematical and computational thinking in 9- 12 builds on K-8 experiences and progresses to using algebraic thinking and analysis, a range of linear and nonlinear functions including trigonometric functions, exponentials and logarithms, and computational tools for statistical analysis to analyze, represent, and model data. Simple computational simulations are created and used based on mathematical models of basic assumptions.

- Use mathematical, computational, and/or algorithmic representations of phenomena or design solutions to describe and/or support claims and/or explanations.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Practice 6 Constructing Explanations and Designing Solutions
Constructing explanations and designing solutions in 9-12 builds on K-8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories.

- Construct and revise an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, peer review) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

- Apply scientific ideas, principles, and/or evidence to provide an explanation of phenomena and solve design problems, taking into account possible unanticipated effects.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

- Design, evaluate, and/or refine a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Practice 7 Engaging in Argument from Evidence

- Compare and evaluate competing arguments or design solutions in light of currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and ethical issues.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

- Evaluate the claims, evidence, and/or reasoning behind currently accepted explanations or solutions to determine the merits of arguments.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Next Generation Science Standards

• Respectfully provide and/or receive critiques on scientific arguments by probing reasoning and evidence, challenging ideas and conclusions, responding thoughtfully to diverse perspectives, and determining additional information required to resolve contradictions.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

• Construct, use, and/or present an oral and written argument or counterarguments based on data and evidence.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

• Make and defend a claim based on evidence about the natural world or the effectiveness of a design solution that reflects scientific knowledge and student-generated evidence.

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

• Evaluate competing design solutions to a real-world problem based on scientific ideas and principles, empirical evidence, and/or logical arguments regarding relevant factors (e.g. economic, societal, environmental, ethical considerations).

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Practice 8 Obtaining, Evaluating, and Communicating Information
Obtaining, evaluating, and communicating information in 9-12 builds on K-8 experiences and progresses to evaluating the validity and reliability of the claims, methods, and designs.

• Critically read scientific literature adapted for classroom use to determine the central ideas or conclusions and/or to obtain scientific and/or technical information to summarize complex evidence, concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

• Compare, integrate and evaluate sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a scientific question or solve a problem.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

• Gather, read, and evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

- Evaluate the validity and reliability of and/or synthesize multiple claims, methods, and/or designs that appear in scientific and technical texts or media reports, verifying the data when possible. Communicate scientific and/or technical information or ideas (e.g., about phenomena and/or the process of development and the design and performance of a proposed process or system) in multiple formats (i.e., orally, graphically, textually, mathematically).

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4
☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Crosscutting Concepts

Patterns

- Patterns of performance of designed systems can be analyzed and interpreted to reengineer and improve the system.

☑ Problem 1 ☐ Problem 2 ☑ Problem 3 ☑ Problem 4
☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

- Mathematical representations are needed to identify some patterns.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4
☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

- Empirical evidence is needed to identify patterns.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☑ Problem 4
☑ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

Cause and Effect: Mechanism and Prediction

- Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4
☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

- Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☑ Problem 4
☑ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

- Cause and effect relationships can be suggested and predicted for complex natural and human designed systems by examining what is known about smaller scale mechanisms within the system.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☑ Problem 4
☑ Problem 5 ☑ Problem 6 ☑ Problem 7 ☑ Problem 8

Next Generation Science Standards

- Systems can be designed to cause a desired effect.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

- Changes in systems may have various causes that may not have equal effects.

☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Scale, Proportion, and Quantity

- In considering phenomena, it is critical to recognize what is relevant at different size, time, and energy scales, and to recognize proportional relationships between different quantities as scales change.

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

- The significance of a phenomenon is dependent on the scale, proportion, and quantity at which it occurs.

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4

☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

- Patterns observable at one scale may not be observable or exist at other scales.

☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

- Using the concept of orders of magnitude allows one to understand how a model at one scale relates to a model at another scale.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

- Algebraic thinking is used to examine scientific data and predict the effect of a change in one variable on another (e.g., linear growth vs. exponential growth).

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Systems and System Models

- A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.

☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Next Generation Science Standards

- Systems can be designed to do specific tasks.

  ☑ Problem 1 ☑ Problem 2 ☑ Problem 3 ☐ Problem 4

  ☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

- When investigating or describing a system, the boundaries and initial conditions of the system need to be defined and their inputs and outputs analyzed and described using models.

  ☑ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

  ☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

- Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions—including energy, matter, and information flows—within and between systems at different scales.

  ☑ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

  ☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

- Models can be used to predict the behavior of a system, but these predictions have limited precision and reliability due to the assumptions and approximations inherent in models.

  ☐ Problem 1 ☑ Problem 2 ☐ Problem 3 ☐ Problem 4

  ☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

Structure and Function

- The way an object is shaped or structured determines many of its properties and functions.

  ☑ Problem 1 ☐ Problem 2 ☑ Problem 3 ☐ Problem 4

  ☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☐ Problem 8

- Investigating or designing new systems or structures requires a detailed examination of the properties of different materials, the structures of different components, and connections of components to reveal its function and/or solve a problem.

  ☑ Problem 1 ☐ Problem 2 ☑ Problem 3 ☐ Problem 4

  ☐ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8

Stability and Change

- For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.

  ☑ Problem 1 ☐ Problem 2 ☑ Problem 3 ☐ Problem 4

  ☐ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

- Much of science deals with constructing explanations of how things change and how they remain stable.

  ☐ Problem 1 ☑ Problem 2 ☑ Problem 3 ☑ Problem 4

  ☑ Problem 5 ☑ Problem 6 ☐ Problem 7 ☑ Problem 8

Next Generation Science Standards

- Change and rates of change can be quantified and modeled over very short or very long periods of time. Some system changes are irreversible.
  - ☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4
  - ☑ Problem 5 ☐ Problem 6 ☐ Problem 7 ☑ Problem 8
- Systems can be designed for greater or lesser stability.
  - ☐ Problem 1 ☐ Problem 2 ☐ Problem 3 ☑ Problem 4
  - ☑ Problem 5 ☑ Problem 6 ☐ Problem 7 ☐ Problem 8

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