



SKELETONS: Museum of Osteology

Forensic Pathology: Human Skulls

Project Lead the Way (PLTW)

Grade Levels: 9th – 12th Grade

English

AS.R.1 - Reading

AS.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.

AS.R.7 - Reading

AS.R.7: Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.

AS.W.1 - Writing

AS.W.1: Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

AS.W.2 - Writing

AS.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.

AS.W.4 - Writing

AS.W.4: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

AS.SL.1 - Speaking and Listening

AS.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.

AS.SL.2 - Speaking and Listening

AS.SL.2: Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

AS.SL.4 - Speaking and Listening

AS.SL.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.

Math

S.IC.6 – Making Inferences and Justifying Conclusions

S.IC.6: Evaluate reports based on data.

Heath Science

1.11 Foundation Standard 1: Academic Foundation

1.11: Understand human anatomy, physiology, common diseases and disorders, and medical math principles. Identify basic levels of organization of the human body

- a. Chemical
- b. Cellular
- c. Tissue
- d. Organs
- e. Systems
- f. Organism

1.13 Foundation Standard 1: Academic Foundation

1.13: Understand human anatomy, physiology, common diseases and disorders, and medical math principles. Analyze basic structures and functions of human body systems (skeletal, muscular, integumentary, cardiovascular, lymphatic, respiratory, nervous, special senses, endocrine, digestive, urinary, and reproductive).

- a. Skeletal (bone anatomy, axial and appendicular skeletal bones, functions of bones, ligaments, types of joints)
- b. Muscular (microscopic anatomy of muscle tissue, types of muscle, locations of skeletal muscles, functions of muscles, tendons, directional movements)
- c. Integumentary (layers, structures and functions of skin)
- d. Cardiovascular (components of blood, structures and functions of blood components, structures and functions of the cardiovascular system, conduction system of the heart, cardiac cycle)
- e. Lymphatic (structures and functions of lymphatic system, movement of lymph fluid)
- f. Respiratory (structures and functions of respiratory system, physiology of respiration)
- g. Nervous (structures and functions of nervous tissue and system, organization of nervous system)
- h. Special senses (structures and functions of eye, ear, nose and tongue; identify senses for sight, hearing, smell, taste, touch)
- i. Endocrine (endocrine versus exocrine, structures and functions of endocrine system, hormones, regulation of hormones)
- j. Digestive (structures and functions of gastrointestinal tract, chemical and mechanical digestion, structures and functions of accessory organs)
- k. Urinary (structures and functions of urinary system, gross and microscopic anatomy, process of urine formation, urine composition, homeostatic balance)
- l. Reproductive (structures and functions of male and female reproductive systems, formation of gametes, hormone production and effects, menstrual cycle, and conception)

1.21 Foundation: Standard 1: Academic Foundation

1.21: Understand human anatomy, physiology, common diseases and disorders, and medical math principles. Describe common diseases and disorders of each body system (such as: cancer, diabetes, dementia, stroke, heart disease, tuberculosis, hepatitis, COPD, kidney disease, arthritis, ulcers).

- a. Etiology
- b. Pathology
- c. Diagnosis
- d. Treatment
- e. Prevention

1.31 Foundation: Standard 1: Academic Foundation

1.31 Understand human anatomy, physiology, common diseases and disorders, and medical math principles. Demonstrate competency in basic math skills and mathematical conversions as they relate to healthcare.

- a. Metric system (such as: centi, milli, kilo)
- b. Mathematical (average, ratios, fractions, percentages, addition, subtraction, multiplication, division)
- c. Conversions (height, weight/mass, length, volume, temperature, household measurements)

1.32 Foundation: Standard 1: Academic Foundation

1.32: Understand human anatomy, physiology, common diseases and disorders, and medical math principles. Demonstrate the ability to analyze diagrams, charts, graphs, and tables to interpret healthcare results.

2.11 Foundation Standard 2: Communications

2.11: Demonstrate methods of delivering and obtaining information, while communicating effectively. Model verbal and non-verbal communication.

2.15 Foundation Standard 2: Communications

2.15: Demonstrate methods of delivering and obtaining information, while communicating effectively. Practice speaking and active listening skills.

Next Generation Science Standards (NGSS)

Science and Engineering Practice - Asking questions and defining problems

Ask questions - that arise from careful observation of phenomena, or unexpected results, to clarify and/or seek additional information. - that arise from examining models or a theory, to clarify and/or seek additional information and relationships. - to determine relationships, including quantitative relationships, between independent and dependent variables. - to clarify and refine a model, an explanation, or an engineering problem.

Science and Engineering Practice - Planning and Carrying Out Investigations

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.

Science and Engineering Practice - Constructing Explanations and Designing Solutions

Apply scientific reasoning, theory, and/or models to link evidence to the claims to assess the extent to which the reasoning and data support the explanation or conclusion.

Science and Engineering Practice - Engaging in Argument from Evidence

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

Science and Engineering Practice - Engaging in Argument from Evidence

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.

DCI - LS1.A - From Molecules to Organisms: Structures and Processes - Structure and Function

DCI-LS1.A: Systems of specialized cells within organisms help them perform the essential functions of life. (HS-LS1-1)

DCI - PS3.A - Energy - Definitions of Energy

DCI-PS3.A: Energy is a quantitative property of a system that depends on the motion and interactions of matter and radiation within that system. That there is a single quantity called energy is due to the fact that a system's total energy is conserved, even as, within the system, energy is continually transferred from one object to another and between its various possible forms. (HSPS3-1), (HS-PS3-2)

DCI - PS3.B - Energy - Conservation of Energy and Energy Transfer

DCI-PS3.B: Energy cannot be created or destroyed, but it can be transported from one place to another and transferred between systems. (HS-PS3-1), (HS-PS3-4)

DCI - PS3.B - Energy - Conservation of Energy and Energy Transfer

DCI-PS3.B: The availability of energy limits that can occur in any system. (HS-PS3-1)

HS.LS3.2 - Heredity: Inheritance and Variation of Traits

HS.LS3.2: Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.