

PENNSYLVANIA ALIGNMENT FOR NIH SUPPLEMENT HUMAN GENETIC VARIATION

HUMAN GENETIC VARIATION

Pennsylvania Academic Standards for Science and Technology – Grades 10 & 12

Activity	Standard	Description
3	3.1.12.E.3	Explain how correlation of variables does not necessarily imply causation.
All activities	3.2.10.C.2	Evaluate the appropriateness of questions.
2	3.3.10.C.5	Explain the relationship among DNA, genes and chromosomes.
1	3.3.10.C.6	Explain different types of inheritance (e.g., multiple allele, sex-influenced traits).
2	3.3.10.C.7	Describe the role of DNA in protein synthesis as it relates to gene expression.
2	3.3.10.D.2	Explain the role of mutations and gene recombination in changing a population of organisms.
2	3.3.10.D.7	Explain why natural selection can act only on inherited traits.
2	3.3.10.D.8	Apply the concept of natural selection to illustrate and account for a species' survival, extinction or change over time.
5	3.3.12.C.3	Describe genetic engineering techniques, applications and impacts
1, 3	3.3.12.D.2	Apply the concept of natural selection as a central concept in illustrating evolution theory.
5	3.8.12.A.2	Evaluate technological developments that have changed the way humans do work and discuss their impacts (e.g., genetically engineered crops).
5	3.8.12.A.3	Evaluate socially proposed limitations of scientific research and technological application.
5	3.8.12.C.2	Analyze scientific and technological solutions through the use of risk/benefit analysis.
5	3.8.12.C.3	Analyze and communicate the positive or negative impacts that a recent technological invention had on society.
5	3.8.12.C.4	Evaluate and describe potential impacts from emerging technologies and the consequences of not keeping abreast of technological advancements (e.g., assessment alternatives, risks, benefits, costs, economic impacts, constraints).

Pennsylvania Academic Standards for Reading, Writing, Speaking, and Listening – Grade 11

Activity	Standard	Description
2, 5	1.1.11.D	Identify, describe, evaluate and synthesize the essential ideas in text. Assess those reading strategies that were most

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		effective in learning from a variety of texts.
2	1.1.11.F	Understand the meaning of and apply key vocabulary across the various subject areas.
2	1.1.11.G.3	Make extensions to related ideas, topics or information.
All activities	1.2.11.A	Read and understand essential content of informational texts and documents in all academic areas.
1, 5	1.5.11.B	Write using well-developed content appropriate for the topic.
5	1.5.11.C.1	Sustain a logical order throughout the piece.
All activities	1.6.11.A	Listen to others.
All activities	1.6.11.D	Contribute to discussions.
3, 5	1.6.11.E.5	Organize and participate in informal debate around a specific topic.
3	1.6.11.F.1	Use various forms of media to elicit information, to make a student presentation and to complete class assignments and projects.
2, 4, 5	1.8.11.B	Locate information using appropriate sources and strategies.
2	1.8.11.C	Organize, summarize and present the main ideas from research.
Pennsylvania Academic Standards for Mathematics – Grade 11		
Activity	Standard	Description
2, 3	2.2.11.A	Develop and use computation concepts, operations and procedures with real numbers in problem-solving situations.
1, 2	2.2.11.B	Use estimation to solve problems for which an exact answer is not needed.
3	2.2.11.A	Develop and use computation concepts, operations and procedures with real numbers in problem-solving situations.
2	2.2.11.D	Describe and explain the amount of error that may exist in a computation using estimates.
3, 4	2.4.11.B	Construct valid arguments from stated facts.
3	2.4.11.C	Determine the validity of an argument.
3	2.5.11.B	Use symbols, mathematical terminology, standard notation, mathematical rules, graphing and other types of mathematical representations to communicate observations, predictions, concepts, procedures, generalizations, ideas and results.

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2, 3	2.5.11.C	Present mathematical procedures and results clearly, systematically, succinctly and correctly.
2, 3, 4	2.5.11.D	Conclude a solution process with a summary of results and evaluate the degree to which the results obtained represent an acceptable response to the initial problem and why the reasoning is valid.
1	2.8.11.Q	Represent functional relationships in tables, charts and graphs.
Pennsylvania Academic Standards for Health, Safety, and Physical Education – Grade 12		
4, 5	10.1.12.A.1, 2, 3	Evaluate factors that impact growth and development during adulthood and late adulthood: acute and chronic illness, communicable and noncommunicable disease, health status.
3, 4	10.1.12.B.2	Evaluate factors that impact the body systems and apply protective/preventive strategies: environment (e.g., pollutants, available health care).
3	10.1.12.B.3	Evaluate factors that impact the body systems and apply protective/preventive strategies: health status (e.g., physical, mental, social).
3, 4, 5	10.1.12.E	Identify and analyze factors that impact/influence the prevention and control of health problems: research, medical advances, and/or technology.
5	10.2.12.A	Evaluate health care products and services that impact adult health practices.
5	10.2.12.B	Assess factors that impact adult health consumer choices.
3, 4, 5	10.2.12.D	Examine and apply a decision-making process to the development of short and long-term health goals.
2, 3, 4, 5	10.2.12.E.2	Analyze the interrelationship between environmental factors and community health: individual choices/maintenance of environment.