

2017-2018  
CPSD SCIENCE  
PACING GUIDE



Introduction to Biology

**Canton Public Schools  
Pacing Guide 2017 – 2018**

Introduction to Biology 1 <sup>st</sup> - 4 <sup>th</sup> 9 Weeks		
Competency 1 - Inquiry		Mastery
1a	Conduct a scientific investigation demonstrating safe procedures and proper care of laboratory equipment. (DOK 2) <ul style="list-style-type: none"> <li>• Safety rules and symbols</li> <li>• Proper use and care of the compound light microscope, slides, chemicals, etc.</li> <li>• Accuracy and precision in using graduated cylinders, balances, beakers, thermometers, and rulers</li> </ul>	1* 2* 3* 4*
1b	Identify questions that can be answered through scientific investigations. (DOK 3)	1* 2* 3* 4*
1c	Identify and apply components of scientific methods in classroom investigations. (DOK 3) <ul style="list-style-type: none"> <li>• Predicting, gathering data, drawing conclusions</li> <li>• Recording outcomes and organizing data from a variety of sources (e.g., scientific articles, magazines, student experiments, etc.)</li> <li>• Critically analyzing current investigations/problems using periodicals and scientific scenarios</li> </ul>	1* 2* 3* 4*
1d	Interpret and generate graphs (e.g., plotting points, labeling x-and y-axis, creating appropriate titles and legends for circle, bar, and line graphs. (DOK 2)	1* 2* 3* 4*
1e	Analyze procedures and data to draw conclusions about the validity of research. (DOK 3)	1* 2* 3* 4*
1f	Formulate and revise scientific explanations and models using logic and evidence (data analysis). (DOK 3)	1* 2* 3* 4*

1g	Communicate effectively to present and explain scientific results, using appropriate terminology and graphics. (DOK 3)	1* 2* 3* 4*
<b>Competency 2 – Physical Science</b>		<b>Mastery</b>
2a	Compare and contrast atoms, ions, elements, molecules, and compounds in terms of the relationship of the bond types (e.g., ionic, covalent, and hydrogen bonds) to chemical activity and explain how this is relevant to biological activity. (DOK 2)	1* 2 3 4
2b	Classify pH solutions (e.g., acids, bases, neutrals) and explain the importance of pH in living systems. (DOK 2)	1 2* 3 4
2c	Compare the composition and primary properties of carbohydrates, proteins, lipids, and nucleic acids and relate these to their functions in living organisms. (DOK 2)	1 2* 3 4
2d	Compare and contrast the basic processes of photosynthesis and cellular respiration. (DOK 2)	1 2 3* 4
<b>Competency 3 – Life Science</b>		<b>Mastery</b>
3a	Describe the criteria that must be present to distinguish between living and nonliving. (DOK 1) <ul style="list-style-type: none"> <li>• Homeostasis, adaptation, and response to stimuli</li> <li>• Growth, development, reproduction, energy use</li> <li>• Levels of organization</li> </ul>	1 2* 3 4
3c	Analyze energy flow through an ecosystem by assessing the roles of carnivores, omnivores, herbivores, producers, and decomposers and determine their effects on an ecosystem. (DOK 2)	1 2* 3 4
3d	Predict the impact of human activities (e.g., recycling, pollution, overpopulation) on the environment.	1 2* 3 4

	(DOK 3)	
<b>Competency 4 - Life Science</b>		<b>Mastery</b>
4a	<p>Compare and contrast cell structures, functions, and methods of reproduction to analyze the similarities and differences among cell types. (DOK 2)</p> <ul style="list-style-type: none"> <li>• Prokaryotic/eukaryotic</li> <li>• Unicellular/multicellular</li> <li>• Plant/animal/bacterial/protist/fungal</li> </ul>	1 2 3* 4
4b	<p>Describe and explain the relationships between structures and functions of major eukaryotic organelles (e.g., cell wall, cell membrane, chromosomes, mitochondrion, nucleus, chloroplast, vacuole, endoplasmic reticulum, ribosomes, centrioles, cytoplasm/cytosol, Golgi apparatus, vesicles, lysosomes, microtubules, microfilaments, cytoskeleton, nucleolus, nuclear membrane.) (DOK 2)</p>	1 2 3* 4
4c	<p>Describe how active, passive, and facilitated transports relate to the maintenance of homeostasis. (DOK 1)</p>	1 2 3* 4
4d	<p>Compare and contrast the processes and results of mitosis and meiosis. (DOK 2)</p>	1 2 3* 4
<b>Competency 5 – Life Science</b>		<b>Mastery</b>
5a	<p>Utilize genetic terminology and principles to solve monohybrid crosses involving dominant and recessive traits. (DOK 2)</p>	1 2 3 4*
5b	<p>Identify inheritance patterns using pedigrees and karyotypes. (DOK 2)</p>	1 2 3 4*
5c	<p>Explain and distinguish among the roles of DNA and RNA in replication, transcription, and translation. (DOK 1)</p>	1 2 3* 4

<b>Competency 6 – Life Science</b>		<b>Mastery</b>
6a	Classify organisms into groups based on their unique characteristics (e.g., cell type, nutrition, reproductive methods, organism examples, etc.) and trace the evolutionary relationships among the groups. (DOK 2)	1 2 3 4*
6b	Describe how natural selection relates to adaptation, survival, and speciation. (DOK 1)	1 2 3 4*

# Canton Public Schools Pacing Guide Overview 2017 – 2018

<b>Introduction to Biology</b>			
<b>1<sup>st</sup> Term</b>	<b>2<sup>nd</sup> Term</b>	<b>3<sup>rd</sup> Term</b>	<b>4<sup>th</sup> Term</b>
1a	2b	4a	5a
1b	2c	4b	5b
1c	3a	4c	6a
1d	3b	2d	6b
1e	3c	4d	
1f	3d	5c	
1g			
2a			