



**Course Name: Marine Science 1 / Honors**

**Course Number: 2002500 / 2002510**

**Total Number of Test Items: 50**

|  |   |  |  |
|--|---|--|--|
| <b>SC.912.L.17.3</b>   |   |  |  |
| <b>Discuss how various oceanic and freshwater processes, such as currents, tides, and waves, affect the abundance of aquatic organisms.</b>        |   |  |  |
| <b>Total Number of Items</b>   | <b>Number of Low Complexity Items</b>   | <b>Number of Moderate Complexity Items</b> | <b>Number of High Complexity Items</b> |
| 2  | 0   | 2  | 0                                      |
| <b>Focus/Benchmark Clarifications</b>  | <ul style="list-style-type: none"> <li>Students will discuss how various oceanic and freshwater processes, such as currents, tides, and waves, affect the abundance of aquatic organisms.</li> </ul>  |  |  |
| <b>Content Limits</b>  | <ul style="list-style-type: none"> <li>Items may assess erosion from waves and the zonation patterns along a beach.</li> <li>Items may assess the intertidal zones.</li> <li>Items may assess how sea surface temperatures and ocean currents affect marine life.</li> <li>Items may not assess tsunamis.</li> <li>Items may assess how tides affect marine life.</li> <li>Items may not assess the causes of currents, tides, and waves.</li> </ul>  |  |  |
| <b>SC.912.L.17.2</b>   |   |  |  |
| <b>Explain the general distribution of life in aquatic systems as a function of chemistry, geography, light, depth, salinity, and temperature.</b> |   |  |  |
| <b>Total Number of Items</b>   | <b>Number of Low Complexity Items</b>   | <b>Number of Moderate Complexity Items</b> | <b>Number of High Complexity Items</b> |
| 4  | 1   | 2  | 1                                      |
| <b>Focus/Benchmark Clarifications</b>  | <ul style="list-style-type: none"> <li>Students will explain the general distribution of life in aquatic systems as a function of chemistry, geography, light, depth, salinity, and temperature.</li> </ul>   |  |  |
| <b>Content Limits</b>  | <ul style="list-style-type: none"> <li>Items may assess how the chemistry of water, light availability, depth, salinity, temperature, and geography affect the distribution of marine life.</li> <li>Items may not assess how to calculate salinity.</li> <li>Items may assess the ocean life zones, such as photic zone, benthic zone, aphotic zone, oceanic zone (epipelagic, mesopelagic, bathypelagic, abyssopelagic), and neritic zone.</li> <li>Items may assess the marine lifestyles, such as plankton, nekton, and benthos.</li> </ul> |  |  |

|   |   |  |  |
|---|---|--|--|
| <b>SC.912.L.17.10</b>   |   |  |  |
| <b>Diagram and explain the biogeochemical cycles of an ecosystem, including the water, carbon, and nitrogen cycle.</b>        |   |  |  |
| <b>Total Number of Items</b>  | <b>Number of Low Complexity Items</b>   | <b>Number of Moderate Complexity Items</b> | <b>Number of High Complexity Items</b> |
| 3   |   | 2  | 1                                      |
| <b>Focus/Benchmark Clarifications</b>   | <ul style="list-style-type: none"> <li>Students will diagram and explain the biogeochemical cycles of an ecosystem, including water, carbon, and nitrogen.</li> </ul>   |  |  |
| <b>Content Limits</b>   | <ul style="list-style-type: none"> <li>Items assessing biogeochemical cycles may be limited to the water cycle or carbon cycle.</li> <li>Items may be limited to the role of the marine ecosystem in the biogeochemical cycle.</li> </ul>                           |  |  |
| <b>SC.912.L.17.7</b>  |   |  |  |
| <b>Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems.</b> |   |  |  |
| <b>Total Number of Items</b>  | <b>Number of Low Complexity Items</b>   | <b>Number of Moderate Complexity Items</b> | <b>Number of High Complexity Items</b> |
| 3   | 1   | 0  | 2                                      |
| <b>Focus/Benchmark Clarifications</b>   | <ul style="list-style-type: none"> <li>Students will characterize the biotic and abiotic components that define freshwater systems, marine systems, and terrestrial systems.</li> </ul>   |  |  |
| <b>Content Limits</b>   | <ul style="list-style-type: none"> <li>Items may not address freshwater or terrestrial systems.</li> <li>Items referring to abiotic factors may be limited to temperature, salinity, pH, amount of sunlight, ocean currents, wave action, and sediments.</li> </ul> |  |  |

| SC.912.L.17.11 Evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests.  |   |                                     |                                 |
|--|---|-------------------------------------|---------------------------------|
| Total Number of Items  | Number of Low Complexity Items  | Number of Moderate Complexity Items | Number of High Complexity Items |
| 2  | 1   | 0                                   | 1                               |
| <b>Focus/Benchmark Clarifications</b>  | <ul style="list-style-type: none"> <li>Students will evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests.</li> </ul>        |                                     |                                 |
| <b>Content Limits</b>  | <ul style="list-style-type: none"> <li>Items assessing renewable and nonrenewable resources may be limited to resources from the oceans or those that directly impact the marine environment.</li> </ul>    |                                     |                                 |
| SC.912.P.10.2 Explore the Law of Conservation of Energy by differentiating among open, closed, and isolated systems and explain that the total energy in an isolated system is a conserved quantity. |   |                                     |                                 |
| Total Number of Items  | Number of Low Complexity Items  | Number of Moderate Complexity Items | Number of High Complexity Items |
| 1  | 0   | 1                                   | 0                               |
| <b>Focus/Benchmark Clarifications</b>  | <ul style="list-style-type: none"> <li>Students will explain the difference between open, closed, and isolated systems as they apply to the Law of Conservation of Energy.</li> </ul>                       |                                     |                                 |
| <b>Content Limits</b>  | <ul style="list-style-type: none"> <li>Items assessing the Law of Conservation of Energy may be limited to identifying different types of open, closed, and isolated systems found in the ocean.</li> </ul> |                                     |                                 |

|  |   |  |  |
|--|---|--|--|
| <b>SC.912.N.1.1 Define a problem based on a specific body of knowledge; for example, biology, chemistry, physics, and Earth/space science.</b>   |   |  |  |
| <b>Total Number of Items</b>   | <b>Number of Low Complexity Items</b>   | <b>Number of Moderate Complexity Items</b> | <b>Number of High Complexity Items</b> |
| 2  | 1   | 0  | 1                                      |
| <b>Focus/Benchmark Clarifications</b>  | <ul style="list-style-type: none"> <li>Students will define a problem based on a specific body of knowledge; for example biology, chemistry, physics, and Earth/space science.</li> </ul>   |  |  |
| <b>Content Limits</b>  | <ul style="list-style-type: none"> <li>Items addressing hypotheses may not assess whether the hypothesis is supported by data.</li> <li>Items may not address or assess replication, repetition, or the difference between replication and repetition.</li> <li>Items may not assess the reason for differences in data across groups that are investigating the same problem.</li> </ul> |  |  |
| <b>SC.912.L.17.16 Discuss the large-scale environmental impacts resulting from human activity, including waste spills, oil spills, runoff, greenhouse gases, ozone depletion, and surface and groundwater pollution.</b> |   |  |  |
| <b>Total Number of Items</b>   | <b>Number of Low Complexity Items</b>   | <b>Number of Moderate Complexity Items</b> | <b>Number of High Complexity Items</b> |
| 4  | 0   | 3  | 1                                      |
| <b>Focus/Benchmark Clarifications</b>  | <ul style="list-style-type: none"> <li>Students will discuss the large-scale environmental impacts resulting from human activity, including waste spills, oil spills, runoff, greenhouse gases, ozone depletion, and surface and groundwater pollution.</li> </ul>  |  |  |
| <b>Content Limits</b>  | <ul style="list-style-type: none"> <li>Items referring to environmental impacts may pertain to the marine environment.</li> <li>Items may concentrate on waste spills, oil spills, and greenhouse gases.</li> </ul>   |  |  |

| <b>SC.912.L.17.4 Describe changes in ecosystems resulting from seasonal variations, climate change, and succession.</b>                              |   |  |  |
|--|---|--|--|
| <b>Total Number of Items</b>   | <b>Number of Low Complexity Items</b>   | <b>Number of Moderate Complexity Items</b> | <b>Number of High Complexity Items</b> |
| 2  | 0   | 1  | 1                                      |
| <b>Focus/Benchmark Clarifications</b>  | <ul style="list-style-type: none"> <li>Students will describe changes in ecosystems resulting from seasonal variations, climate change, and succession.</li> </ul>  |  |  |
| <b>Content Limits</b>  | <ul style="list-style-type: none"> <li>Items may assess the impact of seasonal variations, climate change, and/or succession on marine ecosystems, but will not assess specific knowledge of these.</li> </ul>  |  |  |
| <b>SC.912.L.17.1 Discuss the characteristics of populations, such as number of individuals, age structure, density, and pattern of distribution.</b> |   |  |  |
| <b>Total Number of Items</b>   | <b>Number of Low Complexity Items</b>   | <b>Number of Moderate Complexity Items</b> | <b>Number of High Complexity Items</b> |
| 1  | 0   | 0  | 1                                      |
| <b>Focus/Benchmark Clarifications</b>  | <ul style="list-style-type: none"> <li>Students will discuss the characteristics of populations, such as number of individuals, age structure, density, and pattern of distribution.</li> </ul>   |  |  |
| <b>Content Limits</b>  | <ul style="list-style-type: none"> <li>Items may assess the concept of carrying capacity.</li> <li>Items may assess how population dynamics affect the population and pattern of distribution of marine life.</li> <li>Items may assess the types of population density, such as uniform, clumped, or random distribution.</li> <li>Items may not assess endangered species.</li> </ul> |  |  |

|   |   |  |  |
|---|---|--|--|
| <b>SC.912.L.15.13 Describe the conditions required for natural selection, including overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success.</b>                   |   |  |  |
| <b>Total Number of Items</b>  | <b>Number of Low Complexity Items</b>   | <b>Number of Moderate Complexity Items</b> | <b>Number of High Complexity Items</b> |
| 3   | 1   | 2  | 0                                      |
| <b>Focus/Benchmark Clarifications</b>   | <ul style="list-style-type: none"> <li>Students will describe the conditions required for natural selection, including overproduction of offspring, inherited variation, and the struggle to survive, which results in differential reproductive success.</li> </ul>  |  |  |
| <b>Content Limits</b>   | <ul style="list-style-type: none"> <li>Items may not address descent with modification or common descent.</li> <li>Items may address how mutation and genetic recombination in relation to increasing genetic variation must be assessed in the context of evolution.</li> <li>Items may not assess the Hardy-Weinberg principle or genetic equilibrium.</li> <li>Items may address how meiosis contributes to genetic variation, but may not assess the steps or stages of meiosis.</li> </ul> |  |  |
| <b>SC.912.L.18.12 Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent.</b> |   |  |  |
| <b>Total Number of Items</b>  | <b>Number of Low Complexity Items</b>   | <b>Number of Moderate Complexity Items</b> | <b>Number of High Complexity Items</b> |
| 2   | 1   | 1  | 0                                      |
| <b>Focus/Benchmark Clarifications</b>   | <ul style="list-style-type: none"> <li>Students will discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent.</li> </ul>   |  |  |
| <b>Content Limits</b>   | <ul style="list-style-type: none"> <li>Items may not assess hydrogen bonding, the freezing point of water, or other specific conceptual or numerical values of water.</li> </ul>  |  |  |

| <b>SC.912.L.14.6 Explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspectives of both individual and public health.</b>   |  |  |  |
|--|--|--|--|
| <b>Total Number of Items</b>   | <b>Number of Low Complexity Items</b>  | <b>Number of Moderate Complexity Items</b> | <b>Number of High Complexity Items</b> |
| 2  | 0  | 1  | 1                                      |
| <b>Focus/Benchmark Clarifications</b>  | <ul style="list-style-type: none"> <li>Students will explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspectives of both individual and public health.</li> </ul>  |  |  |
| <b>Content Limits</b>  | <ul style="list-style-type: none"> <li>Items may assess the structure and function of cells, including growth, organization, reproduction, maintenance, and homeostasis.</li> </ul>  |  |  |
| <b>SC.912.L.17.9 Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels.</b> |  |  |  |
| <b>Total Number of Items</b>   | <b>Number of Low Complexity Items</b>  | <b>Number of Moderate Complexity Items</b> | <b>Number of High Complexity Items</b> |
| 3  | 0  | 1  | 2                                      |
| <b>Focus/Benchmark Clarifications</b>  | <ul style="list-style-type: none"> <li>Students will use a food web to identify and distinguish producers, consumers, and decomposers.</li> <li>Students will explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels.</li> </ul> |  |  |
| <b>Content Limits</b>  | <ul style="list-style-type: none"> <li>Items may not require knowledge of specific organisms or their feeding habits.</li> </ul>   |  |  |

| SC.912.L.17.8 Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species. |  |                                     |                                 |
|---|--|-------------------------------------|---------------------------------|
| Total Number of Items   | Number of Low Complexity Items   | Number of Moderate Complexity Items | Number of High Complexity Items |
| 3   | 0  | 2                                   | 1                               |
| <b>Focus/Benchmark Clarifications</b>   | <ul style="list-style-type: none"> <li>Students will recognize the consequences of the losses of biodiversity due to catastrophic events, climate change, human activity, and the introduction of invasive and non-invasive species.</li> </ul>  |                                     |                                 |
| <b>Content Limits</b>   | <ul style="list-style-type: none"> <li>Items may include examples of catastrophic events, climate changes, human activity, or the introduction of invasive species, but will focus on their effect on biodiversity, not assessing specific knowledge of these.</li> </ul>  |                                     |                                 |
| SC.912.E.7.9 Cite evidence that the ocean has had a significant influence on climate change by absorbing, storing, and moving heat, carbon, and water.                                    |  |                                     |                                 |
| Total Number of Items   | Number of Low Complexity Items   | Number of Moderate Complexity Items | Number of High Complexity Items |
| 3   | 0  | 0                                   | 3                               |
| <b>Focus/Benchmark Clarifications</b>   | <ul style="list-style-type: none"> <li>Students will cite evidence that the ocean has had a significant influence on climate change by absorbing, storing, and moving heat, carbon, and water.</li> </ul>  |                                     |                                 |
| <b>Content Limits</b>   | <ul style="list-style-type: none"> <li>Items may assess the concept of heat capacity.</li> <li>Items may not assess how to measure heat capacity.</li> <li>Items may not assess the heat capacity of substances other than water.</li> <li>Items may not assess the hydrological cycle and the carbon cycle.</li> <li>Items may not assess how climate change is measured.-</li> <li>Items may not assess the effects of climate change.</li> <li>Items may assess surface currents, deep ocean circulation, and the ocean conveyor belt.</li> </ul> |                                     |                                 |



SC.912.L.17.6

Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism.

| Total Number of Items                 | Number of Low Complexity Items  | Number of Moderate Complexity Items | Number of High Complexity Items |
|---------------------------------------|---|-------------------------------------|---------------------------------|
| 2                                     | 0   | 0                                   | 2                               |
| <b>Focus/Benchmark Clarifications</b> | <ul style="list-style-type: none"><li>• Students will compare and contrast the relationship among organisms, including predation, parasitism, competition, commensalism, and mutualism.</li></ul>   |                                     |                                 |
| <b>Content Limits</b>                 | <ul style="list-style-type: none"><li>• Items may assess the relationships among organisms, which include predation, parasitism, competition, commensalism, and mutualism.</li><li>• Items may not assess interspecific and intraspecific relationships.</li><li>• Items may not assess the food web.</li><li>• Items may not assess coevolution.</li></ul> |                                     |                                 |