

The following pages include the answer key for all machine-scored items. Refer to the separate documents for all hand-scored items as indicated in the answer key.

**Section 1**

<b>Item Number</b>	<b>Answer Key</b>	<b>Performance Expectation</b>
1.	A	MS-LS1-4
2.	<p>The two specialized structures that support the claim that turtle grass plants are successful at reproducing sexually are:</p> <ol style="list-style-type: none"> <li>1) Flower</li> <li>2) Stamen</li> </ol>	MS-LS1-4
3.	<p>The order of events that describe the relationship between increased runoff from heavy rains and the effect on turtle grass populations is:</p> <ul style="list-style-type: none"> <li>• Large amount of runoff in ocean at the study area</li> <li>• Decrease in amount of sunlight reaching ocean sandy bottom</li> <li>• Decrease in the ability of turtle grass to make food</li> <li>• Decrease in turtle grass growth</li> </ul>	MS-LS1-5

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## Section 1, continued

Item Number	Answer Key	Performance Expectation
4.	<p>The sentences should read: Based on the evidence, an increase in the erosion of the ocean’s sandy bottom would <u>most directly</u> affect the [dry mass] of the turtle grass. This may lead to possible measurements of [100 grams per square meter] and [a decrease] in the growth of turtle grass.</p>	MS-LS1-5
5.	<p>The factors that have a positive effect on turtle grass growth are:</p> <ol style="list-style-type: none"> <li>1) Less runoff</li> <li>2) Large number of sunny days</li> </ol> <p>The factors that have a negative effect on turtle grass growth are:</p> <ol style="list-style-type: none"> <li>1) Increase in water depth</li> <li>2) Storm that produces large waves</li> </ol> <p>Answers can be in any order in the boxes.</p>	MS-LS1-5
6.	Refer to Maryland Integrated Science Assessment Rubrics	MS-LS1-4
7.	B	MS-ESS3-5
8.	A, E	MS-ESS3-5

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## Section 1, continued

Item Number	Answer Key	Performance Expectation
9.	The sentence should read: Fossil Types [2 and 4] are the oldest fossil types, because they were found in the [deepest layers] of the outcrop.	MS-ESS1-4
10.	C	MS-ESS1-4
11.	B	MS-ESS1-4
12.	Refer to Maryland Integrated Science Assessment Rubrics	MS-ESS3-5

## Section 2

Item Number	Answer Key	Performance Expectation
1.	C	MS-ETS1-1
2.	D	MS-ETS1-1
3.	B, C	MS-ETS1-1
4.	The sentences should read: A major advantage of using gasoline generators is their [initial cost]. A major advantage of using solar generators is their [environmental effect].	MS-ETS1-1
5.	C	MS-PS4-2
6.	Refer to Maryland Integrated Science Assessment Rubrics	MS-PS4-2
7.	B	MS-LS3-2
8.	<p>“Number of Chromosomes in Each Parent” is: 28</p> <p>“Number of Chromosomes Provided by Parent 1” is: 14</p> <p>“Number of Chromosomes Provided by Parent 2” is: 14</p> <p>“Number of Chromosomes in Each Offspring” is: 28</p>	MS-LS3-2

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## Section 2, continued

Item Number	Answer Key	Performance Expectation
9.	The sentences should read: When different colonies of corals reproduce with one another, the method of reproduction used is [sexual]. This method of reproduction will <u>most likely</u> cause [an increase in genetic variation] for the coral offspring.	MS-LS4-4
10.	<p><b>Part A:</b> D</p> <p><b>Part B:</b> The sentences should read: The students' research indicated that if ocean temperatures continue to increase, corals will <u>most likely</u> have [a decrease] in genetic variation due to the population [decreasing in size]. This will cause coral populations to experience [a decreased likelihood] of survival.</p>	MS-LS4-4
11.	A	MS-LS4-4
12.	Refer to Maryland Integrated Science Assessment Rubrics	MS-LS3-2

### Section 3

Item Number	Answer Key	Performance Expectation
1.	C	MS-ESS1-2
2.	C, D	MS-ESS1-1
3.	The sentence should read: When Earth is in Location 1 on the Diagram of Seasons, the season in Maryland would be [winter] because the Northern Hemisphere is tilted [away from] the sun.	MS-ESS1-1
4.	D	MS-ESS1-2
5.	C	MS-ESS1-3
6.	Refer to Maryland Integrated Science Assessment Rubrics	MS-ESS1-3
7.	The sentences should read: After researching the orbits of asteroids in the solar system, students explained that in order for asteroids in the asteroid belt to remain in orbit, [the sun] must exert a strong gravitational force. The direction of the force is [toward] the center of the solar system.	MS-PS2-4
8.	B	MS-PS2-1

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### Section 3, continued

Item Number	Answer Key	Performance Expectation
9.	The order of asteroids from “Weakest Gravitational Attraction” to “Strongest Gravitational Attraction” is: Otawara, Gaspra, Mathilde, Eugenia, Juno.	MS-PS2-4
10.	<b>Part A:</b> The asteroid that would <u>most likely</u> be orbited by other asteroids is: Vesta <b>Part B:</b> A	MS-PS2-4
11.	The point in Golevka’s orbit that the Yarkovsky effect is the weakest is: 1	MS-PS2-4
12.	Refer to Maryland Integrated Science Assessment Rubrics	MS-PS2-4

## Section 4

Item Number	Answer Key	Performance Expectation
1.	B	MS-PS1-3
2.	D	MS-PS1-3
3.	B	MS-PS1-3
4.	The number of different types of reactant molecules used in the chemical reaction to make soap is: 2	MS-PS1-5
5.	B	MS-PS1-5
6.	Refer to Maryland Integrated Science Assessment Rubrics	MS-PS1-5
7.	The “Producer” box includes: 1) big bluestem grass The “Consumer” box includes: 1) American bison 2) black-tailed prairie dog 3) golden eagle Answers can be in any order in the “Consumer” box.	MS-LS2-3
8.	D	MS-LS2-3

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## Section 4, continued

Item Number	Answer Key	Performance Expectation
9.	B	MS-LS2-3
10.	D	MS-LS2-1
11.	The sentence should read: The prairie dog and the grasshopper interact in a [competitive] way because the prairie dog [consumes the same resources as] the grasshopper.	MS-LS2-2
12.	Refer to Maryland Integrated Science Assessment Rubrics	MS-LS2-1