

The following pages include the answer key for all machine-scored items.

### Unit 1

Item Number	Answer Key	Performance Expectations
1	B	
2	A,C	
3	The student plots the following points: (0,0), (10,25), (20,50), (40,100), (50,125), (70,175).	
4	Many factors can affect the outcome of an investigation. A <b>controlled</b> variable is a factor that could change but is kept constant on purpose to make the investigation fair. For example, the students used the same car every time. They also made sure <b>the same</b> student released the car for every trial. One student was designated as the timekeeper and used <b>the same</b> stopwatch every time. The only variable in the investigation that the students changed was the <b>height of the ramp</b> .	3-PS2-1 3-PS2-2
5	Will test the hypothesis: Test the same car with pennies glued to the top of the car; Test a different car that has a mass of less than 31 grams.	
6	See Rubric	
7	A,E	
8	C	
9	The student drags "reproduction" to where mating occurs, "birth" to where eggs hatch, and "molting" to the youth to adult growth/metamorphosis stage.	
10	When they examined the insects closely, the students discovered that each insect they captured had 6 legs, 2 antennae, wing pairs of the same size, and that they held their wings in-line together across their backs. The students concluded that all of the captured insects were <b>damsel flies</b> . The students predicted that if they allowed these insects to mate and produce offspring, that the adult offspring would have large eyes that <b>have a gap between them</b>	3-LS1-1 3-LS3-1
11	The evidence supports a connection between the amount of food available and <b>wing traits</b> . This may be because water striders that live in places with <b>less food</b> need to <b>migrate</b> .	
12	See Rubric	
13	A	5-PS2-1
14	C	
15	The distance from the Earth to the Sun is <b>greater than</b> the distance	5-ESS1-1

	from the Earth to the Moon. The distance from the Earth to the Sun is <b>less than</b> the distance from the Earth to the other stars.
16	Brightest star = closest/left box. Medium star = middle box. Dimmest star = farthest/right box.
17	Evidence: the shape of Earth's shadow on the Moon during a lunar eclipse; looking back at Earth's surface from a satellite; different stars visible in the Northern and Southern Hemispheres on the same night.
18	See Rubric

## Unit 2

Item Number	Answer Key	Performance Expectations
1	D	
2	A	
3	Student drags "sunlight" into the bottom box because the source of energy in this system is the Sun. Student drags "oak tree" into the next box above because the oak tree gets energy from the sunlight. Student drags "acorn" into the next box above because acorns get energy from the oak tree on which they grow. Student drags "squirrel" into the top box because the squirrel gets energy from the acorns, which it eats.	5-LS1-1 5-PS3-1
4	Supports the claim: plant gained mass; soil did not lose mass; plant was provided water daily.	
5	In the growing seasons that produced the mast of 2014, there was likely <b>increased</b> amounts of sunlight. In the growing seasons that produced the mast of 2015, there was likely <b>decreased</b> amounts of sunlight.	
6	See Rubric	
7	C	
8	B	
9	The total <b>volume</b> of the substances in the bottle and balloon after the baking soda and vinegar are combined is <b>greater than</b> the total <b>volume</b> of the substances in the bottle and balloon before the baking soda and vinegar were combined.	5-PS1-3
10	Vinegar: liquid, has mass, has volume. Baking soda: solid, has mass, has volume	5-PS1-4
11	A balloon rocket made with baking soda and water <b>will not</b> travel higher than the balloon rocket made with baking soda and vinegar. The observations from Table 1 <b>do not support</b> the claim that a new substance formed when baking soda and water combine.	
12	See Rubric	
13	B	5-ESS2-1
14	C	
15	Most of the water evaporates from <b>salt water in the ocean.</b>	5-ESS2-2

	A small amount of water evaporates from <b>fresh water from the spring</b> . No water evaporates from <b>fresh water in the aquifer</b> .
16	Shows the relationship between hydrosphere and geosphere: rivers carrying sediment and depositing it into the ocean; porous rocks filtering the groundwater as it passes through.
17	Warmer air temperatures can cause the amount of fresh water ice in the mountains to <b>decrease</b> . If water from the mountains enters the ocean, then the percentage of salt water in the area will <b>increase</b> . If water from the mountains enters the underground aquifer, then the percentage of fresh water in the area will <b>increase</b> .
18	See Rubric

### Unit 3

Item Number	Answer Key	Performance Expectations
1	A,E	
2	A	
3	Whistles are often used by animal trainers. For whistles to be effective, the animal being trained must be able to hear the whistle from far away. The data show that the whistle with the <b>greatest</b> wave height is best for training animals. This is because that whistle created the <b>loudest sound</b> .	
4	1. The teacher chooses a whistle and stands in the center of the playground. 2. The student stands, with eyes closed, 10 meters from the teacher. 3. <b>The teacher blows the whistle.</b> 4. If the student can hear the whistle, the student raises a hand. 5. <b>The teacher records if the student has a hand up.</b> 6. <b>The student moves 10 meters farther away from the teacher and then stands with eyes closed.</b> 7. Steps 3-6 are repeated until the student can no longer hear the whistle. 8. <b>The teacher chooses a different whistle and the student returns to a position 10 meters from the teacher</b>	4-PS4-1 4-PS4-3 3-5-ETS1-1
5	Cell phone: transfers sound by digital signals, transfers sound over very long distances, transfers sound through a code. Plastic cup phone: transfers sound by movement.	
6	See Rubric	
7	C	
8	B	5-ESS1-1
9	First image: lowest figure Second image: middle figure Third image: uppermost figure	5-ESS1-2

10	Increase: the distance between the Earth and the Sun; the size of the Sun Decrease: the size of the human figure	
11	Observations that could support the claim: airplane lights on the ground / airplane lights in the sky; a flashlight beam that is far away / a flashlight beam that is close.	
12	See Rubric	
13	B,D	
14	A,D	
15	Plants: Filter water and return it to the environment Fish: Produce carbon dioxide gas Bacteria and Worms: Recycle dead matter and waste	5-LS2-1
16	Fish: Water would contain fewer nutrients. Bacteria and Worms: Water would contain more waste and dead matter. Plants: Water would contain less oxygen.	5-LS1-1
17	This experiment provides evidence that <b>soil</b> does not contribute much to the mass of a plant. Instead, the mass of a plant must come from <b>water and air</b> .	
18	See Rubric	

## Unit 4

Item Number	Answer Key	Performance Expectations
1	B	
2	D	
3	Student selects 60 grams on both bar graphs. The total mass of the matter does not change since none was added or taken away.	
4	Student enters "10." Matter cannot be created or destroyed, and all 10 grams of salt are left behind when the water evaporates.	5-PS1-1 5-PS1-2
5	Before Combining with Water: mass equals 10 grams; white-colored; shaped like crystals. When Combined with Water: mass equals 10 grams	
6	See Rubric	
7	D	
8	B	
9	Category 3: Gracie Category 4: Hugo, Hazel, approaching	
10	Student drags Hugo to 225, Gracie to 200, Hazel to 225, and Approaching Hurricane to 235	3-ESS2-1 3-ESS3-1
11	At first, the winds speeds <b>increase</b> as the hurricane gets closer to the coast. Once the hurricane is within 300 kilometers of the coast, the outer parts of the hurricane are hitting the coast. After this time, the wind speeds <b>decrease</b> .	
12	See Rubric	
13	D,E,B	4-LS1-1

14	C
15	Student places C on the Raccoon side, A, B, and D in the overlap, and E on the human side.
16	The raccoon paw has <b>longer</b> toes that make it <b>easier</b> to hold objects when searching for <b>food</b> .  This trait makes it <b>easier</b> for the raccoon survive in its environment.
17	Student puts the statements in the correct order: 1) The raccoon rolls the fruit in its paws under the water. 2) <b>Whisker-like hairs on the paws send sensory signals to the raccoon's brain.</b> 3) <b>The raccoon's brain processes sensory signals.</b> 4) <b>The raccoon remembers what it learned about the fruit it has already eaten.</b> 5) <b>The raccoon knows the fruit is safe to eat and takes a bite.</b>
18	See Rubric

4-LS1-2