MCAS Grade 5 Science and Technology/Engineering (STE)
Computer-Based Practice Test Answer Key

The practice test is approximately equal to the number of questions students experience in a single session of the MCAS Grade 5 STE test. Information about the test design is posted on the DESE website. This practice test has a larger percentage of technology-enhanced questions compared to the operational MCAS test. The following pages include the reporting category, alignment to standards from the Curriculum Frameworks, and practice (if applicable) for each question on the practice test. Answers are provided for selected-response items, and rubrics and sample student responses are included for constructed-response items.

CBT Item No.	Reporting Category	Standard	Science and Engineering Practice Category	Item Type*	Max Points	Correct Answer**
1	*Life Science*	3.LS.3.2	No Practice	SR	1	B
2	*Earth and Space Science*	5.ESS.1.2	C. Evidence, Reasoning, and Modeling	SR	1	C
3	*Life Science*	5.PS.3.1	C. Evidence, Reasoning, and Modeling	SR	1	*see page 3*
4	*Physical Science*	3.PS.2.4	C. Evidence, Reasoning, and Modeling	SR	1	*see page 3*
5	*Physical Science*	5.PS.1.3	No Practice	SR	1	C
6	*Earth and Space Science*	5.ESS.2.1	C. Evidence, Reasoning, and Modeling	SR	1	*see page 3*
7	*Earth and Space Science*	5.ESS.2.1	No Practice	SR	1	A
8	*Physical Science*	5.PS.1.1	C. Evidence, Reasoning, and Modeling	SR	1	*see page 3*
9	*Earth and Space Science*	3.ESS.2.2	B. Mathematics and Data	CR	3	*see page 6*
10	*Technology/ Engineering*	4.ETS.1.3	A. Investigations and Questioning	SR	1	*see page 4*
11	*Physical Science*	5.PS.1.2	B. Mathematics and Data	SR	1	*see page 4*
12	*Life Science*	5.LS.2.2	C. Evidence, Reasoning, and Modeling	CR	3	*see page 7*
13	*Physical Science*	4.PS.3.2	C. Evidence, Reasoning, and Modeling	CR	2	*see page 8*
14	*Earth and Space Science*	4.ESS.1.1	C. Evidence, Reasoning, and Modeling	SR	1	*see page 4*
15	*Life Science*	3.LS.3.2	No Practice	SR	2	*see page 4*
16	*Technology/ Engineering*	4.ETS.1.5	A. Investigations and Questioning	SR	1	C
17	*Life Science*	4.LS.1.1	C. Evidence, Reasoning, and Modeling	SR	2	Part A: *see page 4* Part B: C
18	*Earth and Space Science*	4.ESS.2.1	No Practice	SR	1	C,E
19	*Life Science*	5.LS.2.1	C. Evidence, Reasoning, and Modeling	SR	1	*see page 5*

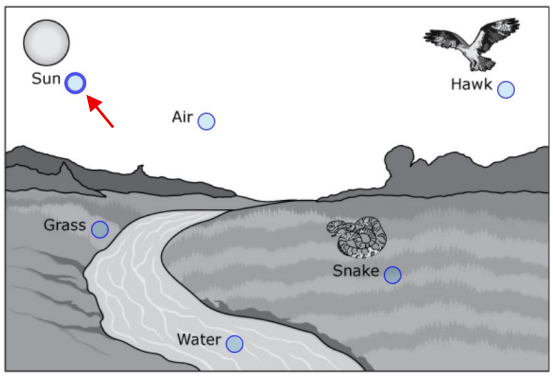
20	*Earth and Space Science*	4.ESS.2.2	C. Evidence, Reasoning, and Modeling	SR	1	*see page 5*
21	*Technology/ Engineering*	3.ETS.1.4	No Practice	SR	1	A
22	*Physical Science*	3.PS.2.1	C. Evidence, Reasoning, and Modeling	SR	1	*see page 5*
23	*Life Science*	3.LS.1.1	C. Evidence, Reasoning, and Modeling	SR	1	*see page 5*

* Science item types are selected-response (SR) and constructed-response (CR).

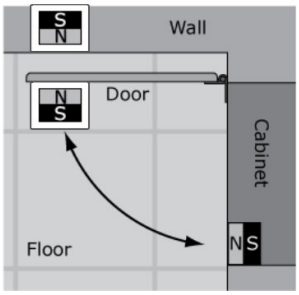
**Pages 3–5 of this document provide correct answers for technology-enhanced items and pages 6–8 provide sample student responses to constructed-response items.

Technology-Enhanced Item Keys

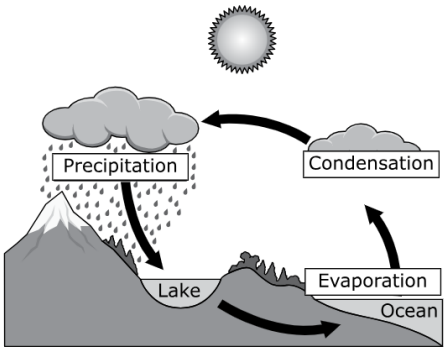
Correct Answer for CBT Item #3



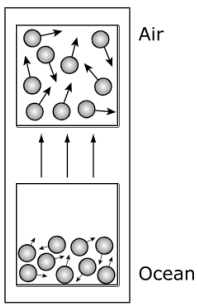
Correct Answer for CBT Item #4



Correct Answer for CBT Item #6



Correct Answer for CBT Item #8



Correct Answer for CBT Item #10

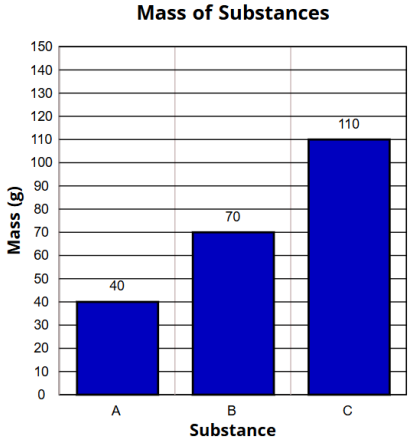
1. Drop the sandbag.

2. Measure how high the ball reaches.

3. Adjust the energy of the sandbag by holding it at a different height.

4. Repeat all steps until the ball reaches exactly one meter.

Correct Answer for CBT Item #11



Correct Answer for CBT Item #14

Correct Answer for CBT Item #15

Part A

The height of a tree in a forest is the result of both the environment and inheritance.

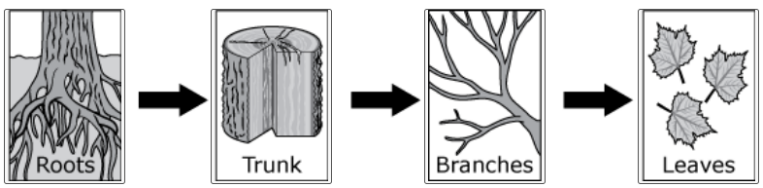
A burn mark on a tree in a forest is a result of the environment.

Part B

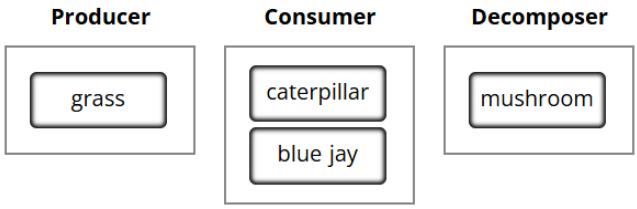
Inherited characteristics of trees come from parent trees.

Correct Answer for CBT Item #17

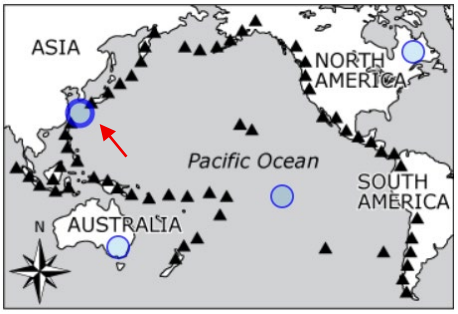
Part A



Correct Answer for CBT Item #19

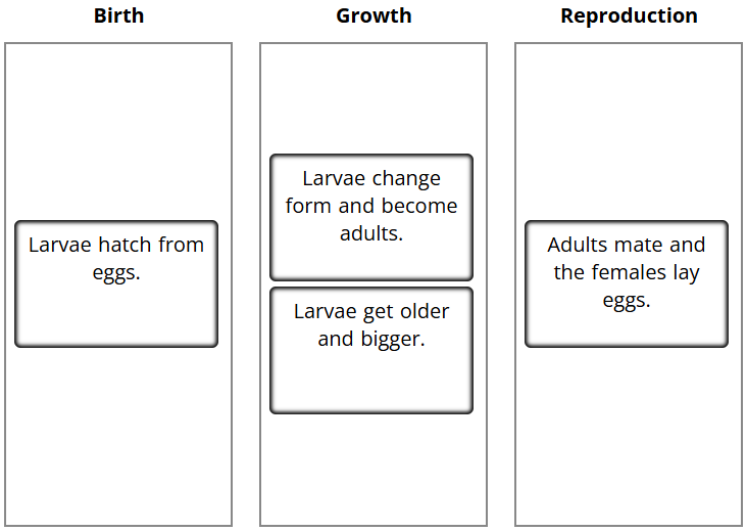


Correct Answer for CBT Item #20



Correct Answer for CBT Item #22

Correct Answer for CBT Item #23



Sample Student Responses for Constructed-Response Items

Item 9 Sample Student Work and Scoring Guide

Scoring Guide

Score	Description
3	The response demonstrates a thorough understanding of using the cycling of water through a watershed. The response correctly identifies the season when the least amount of water becomes groundwater, clearly explains why this season has the least amount of groundwater, and uses data from the table to support why it is that season. The response correctly identifies the season when the greatest amount of water moves from Earth's surface into the atmosphere, clearly explains why this season has the greatest amount of water moving into the atmosphere, and uses data from the table to support why it is that season.
2	The response demonstrates a partial understanding of using the cycling of water through a watershed.
1	The response demonstrates a minimal understanding of using the cycling of water through a watershed.
0	The response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.

Score Point 3

Part	Student Response
A	Winter has the least amount to groundwater beacause it doesn't have a lot of precipitation in the winter so the groundwater is very little beacuse only 10.5 inches of precipitation fall usually every year in the winter.
B	Summer is beacuse it has just 0.4 more inches of rain and it has the hottest tempatures so evaporation is going to happen a lot. Heat energy is going to make the 12.1 inches of precipitation evaporate.

Score Point 2

Part	Student Response
A	Winter has the least amount of water that becomed ground water because the temperatures get so low tat the water will just freeze into a solid and you would have to burry all the ice to make it go into the ground. *(Note: Student did not provide data to support answer.)*
B	Summer has the greatest amount of water that moves into the atmosphere because the temperatures will get high enough to make the water evaporate and go into the atmosphere as part of the water cycle.

Score Point 1

Part	Student Response
A	A season that has the least amount of water is winter because in the winter its very cold and it snows a lot. So because it is so cold the snow doesn't melt at all. And also there wont be as much water in the winter as the other seasons.
B	The season with the greatest amount of water is fall beacuse in fall it rains a ton! Fall is just the begening of the cold weather so instead of snowing it rains.

Score Point 0

Part	Student Response
A	Summer because it is humid hot and dry but in winter it is snowy and a lot of ice and cold but in the spring it all ways rainy but in fall it is just rainy and cold so summer is it.
B	Spring because it always is rainy and it is very wet.

Item 12 Sample Student Work and Scoring Guide

Scoring Guide

Score	Description
3	The response demonstrates a thorough understanding of composter designs and their functions. The response clearly describes the purpose of a composter and correctly identifies two conditions that make a composter work well. The response also correctly identifies a composter design that will work best and clearly explains the answer.
2	The response demonstrates a partial understanding of the function of composter designs and their functions.
1	The response demonstrates a minimal understanding of the function of composter designs and their functions.
0	The response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.

Score Point 3

Part	Student Response
A	The purpose of a composter is to recycle food scraps and some other things that you would normally throwaway, sending them back into the Earth or a good fertilizer producer if you have a garden.
B	Two conditions that make a composter work are, lot's of oxygen and also lot's of decomposers like worms and other bugs.
C	I think that Composter X will work the best. It has giant spaces for small things to get in and it provides lost's of oxygen. I don't think the others will work as well because Composter W won't get enough oxygen in and out and Composer Y doesn't get enogh oxygen in and out as well, but it has the holes for some small things to get in.

Score Point 2

Part	Student Response
A	A composter makes compost. Compost is a fertilizer that helps plants grow.
B	All composters need air, that is why they have holes or openings. They also need worms to transform the compost.
C	I think composter Y would work the best. It has air holes, a door to place worms, and a door to place other ingredients.

Score Point 1

Part	Student Response
A	To make compost which can be used to fertilize the soil.
B	spinning and turning
C	y, it can spin

Score Point 0

Part	Student Response
A	I think the purpose of a composter is to hold stuff, for example food, hay, animals, cement, or anything that can fit inside of it.
B	One condition is how it can hold a lot, another is its plastic and its not that easy to break.
C	I think the wide plastic container is the best because you can carry a lot of stuff, and its easy to carry around when your traveling to places.

Item 13 Sample Student Work and Scoring Guide

Scoring Guide

Score	Description
2	The response demonstrates a thorough understanding of energy being transferred from place to place by light, heat, and electric currents. The response clearly describes two ways in which energy is transferred in the setup and includes the types of energy that are transferred.
1	The response demonstrates a partial understanding of energy being transferred from place to place by light, heat, and electric currents.
0	The response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.

Score Point 2 Student Response

One way energy is tranferd in this setup is that the Solar energy from the sun is collected by the solar panel and then turned into electrical energy. Another way that the energy is transferd is that the electrical energy in the wires turns into heat and light energy in the lightbulbs.

Score Point 1 Student Response

The energy from the sun is collected by the solar collector, and the energy the solar collector transfers energy to the bulbs. The light and heat energy from the sun get turned into electrical energy.

Score Point 0 Student Response

The solar collecter transfers thermal energy from the sun to the wires, which will make light energy which will turn on the light bulbs.