Ohio Achievement Test
Grade 8 Science

Spring 2009

Answer Key
and
Scoring Guidelines

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Answer Key
Spring 2009

Item No.	Type	Content Standard	Content Standard Benchmark	Key
1	Multiple Choice	Life Sciences	C	A
2	Multiple Choice	Scientific Inquiry	B	C
3	Multiple Choice	Physical Sciences	B	C
4	Multiple Choice	Scientific Inquiry	A	Not for Public Release
5	Multiple Choice	Science and Technology	A	D
6	Short Answer	Life Sciences	B	2 pt rubric
7	Multiple Choice	Scientific Inquiry	A	C
8	Multiple Choice	Earth and Space Sciences	B	B
9	Multiple Choice	Scientific Inquiry	A	B
10	Multiple Choice	Scientific Inquiry	B	C
11	Extended Response	Physical Sciences	B	4 pt rubric
12	Multiple Choice	Life Sciences	B	Not for Public Release
13	Multiple Choice	Life Sciences	D	Not for Public Release
14	Multiple Choice	Life Sciences	C	Not for Public Release
15	Multiple Choice	Physical Sciences	C	D
16	Short Answer	Earth and Space Sciences	D	Not for Public Release
17 – 22	**Field Test Items Not Used in Student Score**			
23	Multiple Choice	Life Sciences	D	A
24	Multiple Choice	Physical Sciences	A	Not for Public Release
25	Multiple Choice	Earth and Space Sciences	C	Not for Public Release
26	Multiple Choice	Physical Sciences	D	B
27	Short Answer	Scientific Inquiry	A	2 pt rubric
28	Multiple Choice	Physical Sciences	A	Not for Public Release
29	Multiple Choice	Physical Sciences	A	B
30	Extended Response	Scientific Ways of Knowing	C	Not for Public Release
31	Multiple Choice	Earth and Space Sciences	C	Not for Public Release
32	Multiple Choice	Earth and Space Sciences	E	B
33	Multiple Choice	Earth and Space Sciences	E	A
34	Multiple Choice	Life Sciences	A	D
35	Short Answer	Science and Technology	A	Not for Public Release
36	Multiple Choice	Physical Sciences	C	C
37	Multiple Choice	Earth and Space Sciences	B	Not for Public Release
38	Multiple Choice	Physical Sciences	D	Not for Public Release
39	Multiple Choice	Life Sciences	D	Not for Public Release
40	Multiple Choice	Earth and Space Sciences	A	Not for Public Release
41	Multiple Choice	Earth and Space Sciences	A	Not for Public Release
42	Multiple Choice	Life Sciences	A	Not for Public Release
43	Multiple Choice	Earth and Space Sciences	E	Not for Public Release
44	Multiple Choice	Earth and Space Sciences	E	Not for Public Release

Limited = 0-12; Basic = 13-23; Proficient = 24-31; Accelerated = 32-36; Advanced = 37-48
Multiple Choice = 1 point; Short Answer = 2 points; Extended Response = 4 points

6. In your **Answer Document**, describe how the new plant compares genetically with the parent plant. (**2 points**)

Describe one advantage that asexual reproduction might offer the strawberry plant.

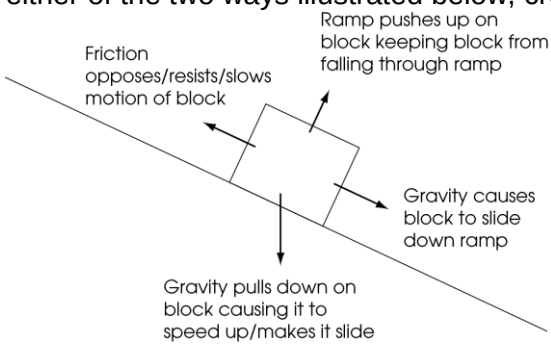
Scoring Guidelines

Points	Student Response
2 point	The response correctly explains that the new strawberry plant will have the same genetic make-up as the parent **AND** correctly identifies one advantage of asexual reproduction. **NOTE**: Credit is not awarded for a response that states the offspring and parent plant will "look the same." "Looks the same" is not sufficient to demonstrate an understanding that the parent and offspring are genetically identical. **Exemplar:** The new plant is genetically identical to the parent. One advantage of asexual reproduction is that new harmful traits are not likely to be introduced since the offspring has the same genetic make-up. Acceptable descriptions of how the new plant compares genetically with the parent plant: • genetically identical • the same • same DNA • same genes Possible advantages of asexual reproduction include: • requires less energy • limits spread of harmful traits (detrimental characteristics) • provides genetic continuity • continues beneficial traits • limits occurrence of diseases • if the parent was genetically well adapted to its environment, its genetically identical offspring will be similarly well adapted to that environment • only one organism is needed as a parent, fertilization is not necessary for reproduction • because every individual is able to produce offspring, the reproductive capacity is greatly increased compared to sexually reproducing species • when conditions are suitable, large number of offspring can be produced more quickly by asexual reproduction than by seeds
1 point	The response correctly explains that the new strawberry plant will have the same genetic make-up as the parent **OR** correctly identifies one advantage of asexual reproduction. **Sample response:** Asexual reproduction lets the parent pass on its genes unchanged.
0 point	The response indicates no understanding of the nature of asexual reproduction by failing to describe how the new plant compares to the parent and by failing to provide an advantage of asexual reproduction. The response does not meet the criteria required to earn one point. The response indicates inadequate or no understanding of the task and/or the idea or concept needed to answer the item. It may only repeat information given in the test item. The response may provide an incorrect solution/response and the provided supportive information may be totally irrelevant to the item, or possibly, no other information is shown. The student may have written on a different topic or written, "I don't know". **Sample response:** The new plant is produced by asexual reproduction from the parent.

11. In your **Answer Document**, name two forces that acted on the blocks as they slid down the ramps. (**4 points**)

Describe or show how each force you listed affected the motion of the block.

Scoring Guidelines

Points	Student Response
4 point	The response names two correct forces **AND** describes or shows the correct effect for each force. Acceptable answers demonstrate a general understanding of the forces affecting the blocks. Some students may provide more sophisticated answers which are also acceptable. **Sample Response**: (2 of the following are sufficient for full credit): • Gravity pulls the block straight down toward the ground (a component of gravity is pulling the block down the ramp) and makes the block speed up as it pulls the block down the ramp. • Surface friction acts on the block in the opposite direction to the block's motion (parallel to the ramp) and reduces the acceleration of the block. • The surface of the ramp pushes upward on the block keeping the block from falling straight down (balances the component of gravity that acts perpendicular to the ramp) • Air resistance acts on the block in the opposite direction to the block's motion (parallel to the ramp) and reduces the acceleration of the block. [**NOTE**: Gravity is an attractive force that pulls on objects. No credit is given if the response states that gravity pushes on the block. Weight due to gravity may be described as pushing. Weight may be used interchangeably with gravity, but credit is not given for both weight and gravity.] [**NOTE**: Students may include a diagram showing the forces and their direction. If they include a diagram in their response, they must still indicate both the name of two correct forces and demonstrate understanding of the effect of those forces for full credit. If arrows are used in the diagram, students are not penalized for magnitude or relative magnitude shown by arrows, but the direction of arrows relative to each other and the diagram is critical.] **Exemplar:** Force 1: Gravity makes the block speed up as it pulls the block down the ramp. Force 2: Friction makes the block go slower down the ramp than it would if there were no friction. Other Correct Responses: The ramp is pushing up on the blocks and keeps them from falling straight down – gravity pulls the blocks down the ramp and makes them speed up. A correct graphical response (only two forces need to be shown – gravity may be shown either of the two ways illustrated below, credit is given only once): 

3 point	The response names, describes or shows two correct forces and one correct effect **OR** one correct force and two correct effects. **Sample response:** Friction and gravity. Gravity pulls the blocks down the ramp and makes them speed up.
2 point	The response names, describes or shows one correct force and one correct effect **OR** two correct forces **OR** two correct effects. **Sample response:** Friction makes the blocks go slower than they would without friction.
1 point	The response names, describes or shows one correct force **OR** one correct effect. **Sample response:** Gravity acts on the block
0 point	The response fails to demonstrate any understanding of the forces that act on the sliding blocks. The response does not meet the criteria required to earn one point. The response indicates inadequate or no understanding of the task and/or the idea or concept needed to answer the item. It may only repeat information given in the test item. The response may provide an incorrect solution/response and the provided supportive information may be totally irrelevant to the item, or possibly, no other information is shown. The student may have written on a different topic or written, “I don't know”. **Sample response:** The blocks slid down the ramp.

27. The instructions for an experiment direct the students to put a liquid into a beaker and use a hot plate to heat the liquid to 50°C.

In your **Answer Document**, describe two safety precautions the students need to take while heating the liquid. (**2 points**)

Scoring Guidelines

Points	Student Response
2 point	The response provides two appropriate safety precautions (refer to list in possible correct responses). **Exemplar**: The students should wear goggles to protect their eyes. The students should not touch the beaker with their hands once the heating has begun. They should use a heat-proof glove or holder. Possible precautions include: • wearing safety equipment such as goggles, aprons • avoid touching the beaker or liquid with their hands • do not cover the beaker unless directed to do so • avoid placing any body part (e.g., face) directly above the beaker • use a holder for the thermometer • long hair should be tied back, loose sleeves should be rolled up, closed-toed shoes should be worn • follow experiment instructions/teacher's directions • follow safe procedures for using electrical equipment • do not heat above 50°C • place hot plate away from other objects
1 point	The response provides one appropriate safety precaution (refer to list in possible correct responses). **Sample response:** The students should wear goggles to protect their eyes.
0 point	The response indicates inadequate or no understanding of safety precautions and demonstrates no understanding of the task and/or the idea or concept needed to answer the item. The response does not meet the criteria required to earn one point. It may only repeat information given in the test item. The response may provide an incorrect solution/response and the provided supportive information may be totally irrelevant to the item, or possibly, no other information is shown. The student may have written on a different topic or written, “I don't know”. **Sample response:** The student should heat the liquid to 50°C with a hot plate.