

**10th Science Ohio Graduation Test  
Physical Sciences Standard**

**Benchmark A**

Question 1	Spring 2009		D
Question 37	Spring 2009		B
Question 31	March 2008		A
Question 35	Spring 2005		A
Question 12	9 <sup>th</sup> Practice	<p align="center"><b>Scoring Guidelines for Question 12</b></p> <p>Score point    Description</p> <p>2 points        The student explains in terms of protons and electrons what will happen if an atom loses an electron and indicates how this affects charge.</p> <p>1 point         The student explains in terms of protons and electrons what will happen if an atom loses an electron.</p> <p align="center">OR</p> <p>                    The student indicates how losing an electron will affect the charge.</p> <p>0 points        The student response demonstrates no understanding of the task or concept. The response may provide an incorrect solution and supporting information may be totally irrelevant to the task. The student may repeat information from the passage or prompt or may have written "I don't know."</p>	
Question 23	9 <sup>th</sup> Practice		C
Question 27	Spring 2006		C

**Benchmark B**

Question 1	March 2008		A
Question 16	March 2008		D
Question 27	Spring 2005		C
Question 26	9 <sup>th</sup> Practice		C

Question 7	March 2007	<p>2 points    The student response describes the difference between the covalent bond in Cl<sub>2</sub> and the ionic bond in NaCl in terms of electrons. OR The student response may provide two correctly labeled drawings (e.g., Lewis Dot diagrams, Bohr model, etc.) OR The student response may provide one correctly labeled drawing (e.g., Lewis Dot diagrams, Bohr model, etc.) of the covalent bond in Cl<sub>2</sub> or the ionic bond in NaCl and a description of the bond not illustrated in the drawing.</p> <p>1 point    The student response describes the covalent bond in Cl<sub>2</sub> OR the ionic bond in NaCl. OR The student response may provide one correctly labeled drawing of either the covalent bond in Cl<sub>2</sub> OR the ionic bond in NaCl in terms or electrons. OR The student response may provide two partially correct drawings, but they may contain errors (e.g., some labels may be missing).</p> <p>0 points    The student response indicates inadequate or no understanding of the task. The response may provide incorrect or irrelevant information.</p>	
Question 20	March 2007		D

### Benchmark C

Question 22	Spring 2009		B
Question 42	Spring 2009		C
Question 17	March 2008		A
Question 36	March 2008		D
Question 26	Spring 2006		B
Question 28	Spring 2005		A
Question 37	9 <sup>th</sup> Practice		A
Question 1	March 2007		A
Question 8	March 2007		B
Question 9	March 2007		A
Question 10	March 2007		C
Question 22	March 2007		C

### Benchmark D

Question 14	Spring 2009		A
Question 7	March 2008		C
Question 29	March 2008	<p>2 points    The student response demonstrates a complete understanding of the task by describing two opposing forces acting on the boat and explaining how the forces affect the boat's motion.</p>	

		<p>1 point      The student response demonstrates a partial understanding of the task by describing two opposing forces acting on the boat.</p> <p>OR</p> <p>The student describes one force acting on the boat and explains how that force affects the boat's motion.</p> <p>0 points      The student response demonstrates no understanding of the task. The response may provide incorrect information or be irrelevant to the task. The student may only repeat information from the passage or prompt without any supporting information responsive to the task. The student may have written "I don't know."</p>								
Question 5	Spring 2006	A								
Question 28	9 <sup>th</sup> Practice	A								
Question 5	Spring 2005	D								
Question 6	Spring 2005	<p><b>Scoring Guidelines for Item 6:</b></p> <table border="0"> <thead> <tr> <th style="text-align: left;">Score point</th> <th style="text-align: left;">Description</th> </tr> </thead> <tbody> <tr> <td>2 points</td> <td>The response correctly predicts the effect that friction would have on the acceleration of the box and explains the cause of this effect.</td> </tr> <tr> <td>1 point</td> <td>The response correctly predicts the effect that friction would have on the acceleration of the box. OR The response indicates that friction would oppose the force of gravity but does not explain the cause of this effect.</td> </tr> <tr> <td>0 points</td> <td>The response demonstrates no understanding of the task. The response may provide incorrect information or be irrelevant to the task. The response may repeat information from the passage or prompt, or state "I don't know."</td> </tr> </tbody> </table>	Score point	Description	2 points	The response correctly predicts the effect that friction would have on the acceleration of the box and explains the cause of this effect.	1 point	The response correctly predicts the effect that friction would have on the acceleration of the box. OR The response indicates that friction would oppose the force of gravity but does not explain the cause of this effect.	0 points	The response demonstrates no understanding of the task. The response may provide incorrect information or be irrelevant to the task. The response may repeat information from the passage or prompt, or state "I don't know."
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Question 21	Spring 2005	D								
Question 41	Spring 2006	D								

Question 43	Spring 2006	<p><b>Scoring Guidelines for Item 43:</b></p> <table border="1"> <thead> <tr> <th>Score Point</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>2 points</td> <td>The student response demonstrates a complete understanding of the task by describing one thing the snowboarder could do to increase his speed on</td> </tr> <tr> <td>1 point</td> <td> <p>the slope and explains why this would increase his speed.</p> <p>The student response demonstrates a partial understanding of the task by describing one thing the snowboarder could do to increase his speed on the slope.</p> <p>OR</p> <p>The response explains that this action reduces friction but does not describe the action that (reducing friction) increases speed.</p> <p>OR</p> <p>The student explains that the snowboarder needs to increase the net force or acceleration by reducing friction during the ride but fails to indicate how.</p> </td> </tr> <tr> <td>0 points</td> <td>The student response demonstrates no understanding of the task. The response may provide incorrect information or be irrelevant to the task.</td> </tr> </tbody> </table>	Score Point	Description	2 points	The student response demonstrates a complete understanding of the task by describing one thing the snowboarder could do to increase his speed on	1 point	<p>the slope and explains why this would increase his speed.</p> <p>The student response demonstrates a partial understanding of the task by describing one thing the snowboarder could do to increase his speed on the slope.</p> <p>OR</p> <p>The response explains that this action reduces friction but does not describe the action that (reducing friction) increases speed.</p> <p>OR</p> <p>The student explains that the snowboarder needs to increase the net force or acceleration by reducing friction during the ride but fails to indicate how.</p>	0 points	The student response demonstrates no understanding of the task. The response may provide incorrect information or be irrelevant to the task.
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Question 44	Spring 2006	B								
Question 23	March 2007	C								
Question 36	March 2007	C								

### Benchmark E

Question 26	Spring 2009	B
Question 42	March 2008	C
Question 2	Spring 2005	D
Question 4	Spring 2005	B
Question 25	Spring 2005	A
Question 32	Spring 2006	C

### Benchmark F

Question 4	Spring 2009	A
Question 16	Spring 2009	C
Question 44	March 2008	A
Question 4	9 <sup>th</sup> Practice	C
Question 5	9 <sup>th</sup> Practice	A
Question 7	9 <sup>th</sup> Practice	A
Question 12	Spring 2006	C
Question 16	9 <sup>th</sup> Practice	D
Question 22	Spring 2006	C
Question 35	9 <sup>th</sup> Practice	C
Question 3	Spring 2005	A
Question 21	March 2007	B

### Benchmark G

Question 32	Spring 2009	C								
Question 24	Spring 2009	<table border="1"> <thead> <tr> <th>Score Point</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>2 points</td> <td>The student response demonstrates a complete understanding of the task by predicting an increase in the temperature readings and explaining in terms of light absorption (thus more thermal energy transfer).</td> </tr> <tr> <td>1 point</td> <td>The student response demonstrates a partial understanding of the task by predicting an increase in the temperature readings. OR The student explains that black color absorbs more light (thus more thermal energy transfer) but fails to indicate how this would affect the temperature readings.</td> </tr> <tr> <td>0 points</td> <td>The student response demonstrates no understanding of the task. The response may provide incorrect information or be irrelevant to the task. The student may only repeat information from the passage or prompt without any supporting information responsive to the task. The student may have written "I don't know."</td> </tr> </tbody> </table>	Score Point	Description	2 points	The student response demonstrates a complete understanding of the task by predicting an increase in the temperature readings and explaining in terms of light absorption (thus more thermal energy transfer).	1 point	The student response demonstrates a partial understanding of the task by predicting an increase in the temperature readings. OR The student explains that black color absorbs more light (thus more thermal energy transfer) but fails to indicate how this would affect the temperature readings.	0 points	The student response demonstrates no understanding of the task. The response may provide incorrect information or be irrelevant to the task. The student may only repeat information from the passage or prompt without any supporting information responsive to the task. The student may have written "I don't know."
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Question 21	March 2008	C								
Question 7	Spring 2005	B								

Question 21	9 <sup>th</sup> Practice		A
Question 33	Spring 2006		C
Question 41	March 2007		D

**Benchmark H**

Question 28	Spring 2009		C
Question 42	Spring 2006		A