

**10th Science Ohio Graduation Test  
Scientific Ways of Knowing**

**Benchmark A**

Question 27	Spring 2009	D
Question 10	Spring 2006	C

Question 36	9 <sup>th</sup> Practice	<p><b>Sample Response for Question 36 (Short Answer):</b></p> <ul style="list-style-type: none"> <li>• <u>Wind power benefits</u> – renewable, does not pollute the air or water, use less fossil fuels</li> <li>• <u>Wind power disadvantages</u> – localized, wind doesn't blow all the time, windmills (wind farms) take up lots of space, cost of building/maintaining equipment, doesn't produce enough energy to run the entire country, interferes with migratory birds.</li> <li>• <u>Nuclear power benefits</u> – does not pollute the air, fuel readily available, power plants can be located throughout the U.S. to ease reliance on natural resources, use less fossil fuels, useable by-products (medical), costs reduced.</li> <li>• <u>Nuclear power disadvantages</u> – disposal of radioactive wastes is a major environmental challenge, accidents at power plants can be catastrophic for the environment, public fear ("not in my backyard"), transportation of waste, thermal pollution</li> <li>• <u>Biomass benefits</u> – reduces landfill mass when garbage is burned, naturally occurring fuel from decomposing organic waste matter can be an energy source, is renewable, economic benefit to farmers, use of gasohol reduces dependency on fossil fuels</li> <li>• <u>Biomass disadvantages</u> – clearing of land if crops are grown specifically for biomass fuel generation, can cost more than fossil fuels, destruction of forests produces foul odors (air pollution), particulate matter from burning produces air pollution</li> <li>• <u>Geothermal energy benefits</u> – renewable, reasonably plentiful, use less fossil fuels</li> <li>• <u>Geothermal energy disadvantages</u> – localized, can bring up pollutants that get into ground or surface water, expensive startup costs, extensive underground landuse</li> </ul>
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		<p>Score point Description</p> <p>2 points The student chooses an alternative energy source and explains one benefit and one disadvantage of increasing its use.</p> <p>1 point The student chooses an alternate energy source and explains one benefit OR one disadvantage of increasing its use.</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>
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### Benchmark B

Question 39	March 2008	D

### Benchmark C

Question 2	March 2008	C
Question 18	March 2008	<p>Score Point Description</p> <p>2 points The response demonstrates a complete understanding of the task by describing one potential benefit AND one potential hazard of speeding up the development cycle for new drugs.</p> <p>1 point The response demonstrates a partial understanding of the task by describing one potential benefit OR one potential hazard of speeding up the development cycle for new drugs.</p> <p>0 points The response demonstrates no understanding of the task. The response may provide incorrect information or be irrelevant to the task.</p>
Question 1	9 <sup>th</sup> Practice	D

Question 7	Spring 2006	<p><b>Sample Response for Item 7 (Short Answer):</b></p> <p>No, the researchers did not act ethically. (1 pt. each)</p> <ul style="list-style-type: none"> <li>• If the owl's cataracts are congenital and she produces offspring, the trait may be passed on resulting in more owls that are "unfit".</li> <li>• Once released into her natural habitat, it will be difficult to closely monitor Minerva for infection or complications that might result from the surgery. This could result in increased suffering and eventually death.</li> <li>• In saving Minerva, researchers interfered with the natural selection process. The blindness prevented Minerva from competing for food with other owls in an ecosystem where she normally would have been selected against by natural selection.</li> <li>• It's not natural for animals to be kept in an enclosed area.</li> </ul> <p>Yes, the researchers acted ethically. (1 pt. each)</p> <ul style="list-style-type: none"> <li>• The researchers reduced the suffering of an animal that would have otherwise died painfully had they not intervened.</li> <li>• The owl may be able to be returned to the ecosystem and help to maintain the natural balance.</li> </ul>
Question 17	March 2007	D

**Benchmark C**

Question 18	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 providing two acceptable reasons for assessing new drugs in varying doses.</td> </tr> <tr> <td>1 point</td> <td>The student response demonstrates a partial understanding of the task by providing one acceptable reason for assessing new drugs in varying doses.</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 providing two acceptable reasons for assessing new drugs in varying doses.	1 point	The student response demonstrates a partial understanding of the task by providing one acceptable reason for assessing new drugs in varying doses.	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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## Benchmark D

Question 3	Spring 2009		B												
Question 10	Spring 2005		C												
Question 36	Spring 2005	<p><b>Sample response for Item 36 (extended response):</b></p> <p>The vaccination causes the body to produce antibodies for the specific pathogen because you can see the graph increasing up to week two.</p> <p>OR</p> <p>The vaccination causes the body to produce antibodies for the specific pathogen. The primary response takes about fourteen days to reach maximum concentration of antibodies in the bloodstream.</p> <p>After the vaccination, some antibodies are retained in the bloodstream to recognize the harmful form of the pathogen in subsequent exposures; you can see the graph increase rapidly at the beginning of week six, after the second exposure.</p> <p>In the event of a second exposure, the body is able to mount a rapid and significant defense that destroys the pathogen before any harm is caused. The secondary response requires only a couple of days to produce twice as great a concentration of antibodies as in the primary response.</p> <p><b>Scoring Guidelines for Item 36:</b></p> <table border="1"> <thead> <tr> <th>Score point</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>4 points</td> <td>The response describes two benefits of receiving a vaccination and provides supporting data from the graph for each benefit.</td> </tr> <tr> <td>3 points</td> <td>The response describes two benefits of receiving a vaccination and provides supporting data from the graph for one of these benefits.</td> </tr> <tr> <td>2 points</td> <td>The response describes two benefits of receiving a vaccination but fails to provide appropriate supporting data from the graph. OR The response describes one benefit of receiving a vaccination and provides data from the graph for that benefit.</td> </tr> <tr> <td>1 point</td> <td>The response describes one benefit of receiving a vaccination. The response provides unrelated or unclear information.</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	4 points	The response describes two benefits of receiving a vaccination and provides supporting data from the graph for each benefit.	3 points	The response describes two benefits of receiving a vaccination and provides supporting data from the graph for one of these benefits.	2 points	The response describes two benefits of receiving a vaccination but fails to provide appropriate supporting data from the graph. OR The response describes one benefit of receiving a vaccination and provides data from the graph for that benefit.	1 point	The response describes one benefit of receiving a vaccination. The response provides unrelated or unclear information.	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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