

### Sample Constructed Response questions from the 2006 Science OGT

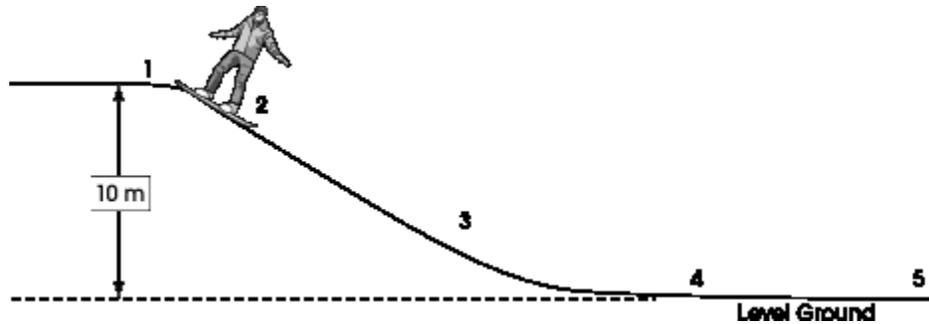
1. Identify two savings that result from recycling aluminum cans and explain one ecological benefit of each. Respond in the space provided below. (4 points)

2. A group of students designs an experiment to test how an herbicide affects pepper plants and weeds. Eight plots are tested, each of which holds 25 pepper plants and a variety of weeds. Plots 1 and 2 are not treated; plots 3 - 8 are treated with varying amounts of weed-killing herbicide. The weeds are counted in each plot during week 1. The herbicide is applied during week 2, and the weeds are counted again in week 3. The data are shown in the table below.

Plot	% of recommended herbicide dose	Pepper plants that die before producing fruit	Weeds in week 1	Weeds in week 3
1	0%	3	30	33
2	0%	5	35	40
3	50%	3	42	24
4	50%	3	43	14
5	100%	4	47	7
6	100%	6	42	3
7	150%	12	43	2
8	150%	15	45	5

Based on the results of this experiment, a farmer has decided to use a 150% application of the herbicide to kill weeds in his fields. Describe one advantage and one disadvantage of using the 150% dose of herbicide. Respond in the space provided in your Answer Document. (2 points)

3. A snowboarder begins his run from rest (point 1) on top of a hill. He moves straight down the slope until he reaches the bottom of the hill (point 4) and the ground levels off. The snowboarder continues to move horizontally across the level ground and eventually comes to a stop (point 5).



Using the same board, the snowboarder decides to make another run down the hill to see if he can increase his speed. Describe one thing the snowboarder could do to increase his speed on the slope. Explain why this would cause his speed to increase. Respond in the space provided in your Answer Document. (2 points)

### **Constructed Response tips:**

- Take note of how many points the question is worth. You will need to state one idea for each point.
- Either divide your answer space into 2 or 4 blocks, or draw 2 or 4 bullet points before you even start writing your answers. This will help you keep your ideas organized.
- If there are words you don't know and you're allowed to use a dictionary, mark them (underline, circle, etc.) and look them up before answering.
- Carefully read the question to determine what you are supposed to do.
- Make sure that your answers are *specific* and do more than restate information from the question.

### **1. Aluminum can recycling.**

This question requires you to identify two savings (1 pt each) and explain an ecological benefit of each (1 pt each).

*Energy* is saved in many places, and you could pick any one of them. Some examples:

- energy used by aluminum mines to get ore from the ground
- energy used to transport aluminum ore from mines
- energy used to process aluminum ore into usable aluminum

There are two main ecological benefits to saving energy, and you could pick either of them:

- nonrenewable fossil fuels are conserved
- pollution is reduced because less fossil fuel is burned

*Raw materials* (mainly aluminum ore) are also saved. The ecological benefit to saving materials is less mining, which can disturb ecosystems and cause pollution.

*Water* used in mining and processing the aluminum ore would be saved. The ecological benefit to saving water is that we won't use up our ground water as quickly.

*Space* is saved because less room is needed for garbage dumps and landfills when fewer cans are thrown in the trash. There are two major ecological benefits to reduced landfill:

- less disturbance to local ecosystems
- fewer pollutants leaching out of landfills into water supplies

## 2. Herbicide dosage

In this question, describe one advantage (1 pt) and one disadvantage (1 pt) of using 150% of the recommended herbicide dosage.

The most obvious advantage is that nearly all the weeds are killed.

Some disadvantages:

- some pepper plants were killed by the herbicide as well
- the farmer will have to buy larger amounts of herbicide
- the extra herbicide may disturb other plants and animals
- the weeds which survive may reproduce and start a line of poison-resistant weeds

## 3. Snowboarder

This question asks you to describe one thing the snowboarder can do to increase his speed (1 pt). You also have to explain why it would cause his speed to increase (1 pt).

Here are some ideas:

<b>What he can do:</b>	<b>Why it would help:</b>
Crouch lower on the board.	This reduces the air resistance to his movement.
Wax the bottom of the board.	This reduces the friction between his board and the snow.
Wet down the slope to make it icy.	This reduces the friction between his board and the snow.
Push off with his foot when he starts.	This gives him a faster starting speed, so he will be faster at the bottom too.
Get a running start before getting on the board.	This gives him a faster starting speed, so he will be faster at the bottom too.

Note: The question asks for something that *he can do*. He has no way of making the hill steeper or higher.