

## **ISTEP+ Science Item Sampler Grade 10**

**Updated December 2015**

### **Purpose:**

The purpose of the item sampler is to provide teachers and students with examples of the different types of questions that will appear on the ISTEP+ Part 1 science assessment. The types of questions include constructed-response and extended-response items. Teachers are encouraged to use this information as a resource to help create other assessments.

### **Constructed-Response (CR) and Extended-Response (ER) Items:**

Constructed-response (CR) and extended-response (ER) items require a higher level of thinking, and the extended-response items may be slightly more complex. Extended-response items, in general, will also take students longer to respond. Both constructed-response and extended-response items may require students to provide an explanation or justification within the item.

### **Scoring Rubrics:**

The scoring rubrics used for the CR and ER items are developed in such a way as to score items more analytically and to report students' scores more accurately. For each CR and ER item, students will receive a score for the content being assessed.

## Grade 10 Sample Items

1. A student is measuring the boiling point of an unknown liquid at different elevations above sea level. What would be the BEST way for the student to display the data she collects about how the different elevations relate to the different boiling points? Be sure to include the type of display the student should use and to describe how each important part of the display would be labeled.

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Standard: B.9.3: Clearly communicate their ideas and results of investigations verbally and in written form using tables, graphs, diagrams and photographs.

DOK: 2

### 2-point Constructed-Response (CR) Rubric

Key elements:

- \* Any response indicating that a line graph would be used AND that the title of the line graph relates boiling point temperatures to elevation above sea level;
- \* Any response indicating that the x-axis would be labeled "Elevation" with a reasonable metric unit of distance included such as meters or kilometers;

AND

- \* Any response indicating that the y-axis would be labeled "Boiling Point Temperatures in degrees Celsius."

**2 points: Response contains all three key elements**

**1 point: Response contains two of the three key elements**

**0 point: Response contains one or fewer key elements**

2. A student is researching the effects of electronic waste (e-waste) on the environment. E-waste is disposing of electronics, such as cell phones, laptop computers, and other electronic products, in landfills or by burning. E-waste often contains substances, such as metals and glass, that could be used to make other products. However, e-waste also contains toxic substances that when burned or placed in a landfill can seep out into the surrounding environment and sometimes into groundwater. The amount of e-waste is expected to grow from 48.9 million metric tons in 2012 to 65.4 million metric tons in 2017.

Describe ONE way to fix the e-waste problem that will help the environment and still allow people to use electronics as much as they would like to do so.

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Explain TWO ways the method you described will benefit the environment.

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Describe ONE way companies that sell electronics could make reducing e-waste attractive to their customers.

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Standard B.9.11 Explain how scientific knowledge can be used to guide decisions on environmental and social issues.

DOK: 3

#### **4-point Constructed-Response (CR) Rubric**

Key elements:

##### First part of the question

- \* Any response indicating that out-of-date electronics should be recycled.

##### Second part of the question

- \* Any response indicating that this will reduce the amount of e-waste created.

AND

- \* Any response indicating that this will reduce the cost of mining/producing the materials needed for electronics by allowing the metals and glass to be re-used instead of being mined or created.

##### Third part of the question

- \* Any response indicating that electronics companies could offer a discount to customers who bring in old electronics to turn in when purchasing new electronics.

**4 points: Response contains all four key elements**

**3 points: Response contains three of four key elements**

**2 points: Response contains two of four key elements**

**1 point: Response contains one of four key elements**

**0 point: Response contains no key elements**