Earth Science Cornerstone Assessment Administration, Scoring, and Reporting Procedures

Assessment Directions for Teachers:

The following plan outlines suggested assessment administration procedures.

1. **Assessment Administration Procedures**
   This assessment is comprised of two sections. Part A focuses on scientific investigation and contains seven constructed response questions. Part B measures data analysis and interpretation as well as scientific reasoning and has four questions. Students should complete Part A prior to receiving Part B.

2. **Time Length**
   The assessment is not timed but should be completed within one class period. Part A may be administered in one period and Part B in another.

3. **Assessment Materials**
   Students will not need any materials other than the assessment and a writing utensil, preferably a pencil. Students will write directly on the assessment.

4. **Test Scoring and Reporting Procedures**
   Use the rubric provided to score student responses on the assessment. Record student results by each critical element on the rubric. The scoring rubric and a data collection sheet are included in this packet.

5. **Testing Timelines and Directions**
   The baseline, midyear, and end of year cornerstone assessments should be administered during specific times during the school year**.** This following chart shows the recommended time periods.

Assessment	Month
Baseline	September
Midyear	November-December
End of Year	May-June

6. **Data Use**
   Results from student performance on cornerstone assessments can be aggregated for individual classes or students. These data should not be used in any way to identify individual teachers or students and their performance on the cornerstone assessments if used as a global measure.

Assessment Scoring and Reporting Procedures

The following pages provide tools to use in scoring and recording student responses. The appropriate answer key (baseline, midyear, or end of year) with exemplar responses by which to compare your student responses should be used in conjunction with the scoring rubric.

1. Scoring Rubric – The scoring rubric is provided which details the question numbers that align to the critical element on the rubric. Provide a rating on each critical element for each student.
2. Data Collection Sheet – Use this tool to record your ratings on student responses. (Needed only if you are scoring the assessments yourself by hand and not using the Excel Data Collection Sheet.)

Secondary Sciences Cornerstone Assessments Scoring Rubric: Earth Science

Directions: Use the key provided and the scoring rubric to score each student's response. Provide a score for each student according to the critical element.

Critical Element	Not Attempted (0)	Novice (1)	Practitioner (2)	Expert (3)
Experimental Design Skills				
Stating or evaluating a hypothesis with justification ***Part A.3a and 3b***	Left blank or response is completely inaccurate	Stating: Shows some cause and effect but errors exist Evaluating: Shows some evidence of accurately evaluating a hypothesis but errors exist	Stating: Shows a clear cause and effect Evaluating: Accurately evaluates the hypothesis	Stating: Shows and supports a clear cause and effect with sufficient reasoning Evaluating: Accurately evaluates the hypothesis and provides sufficient reasoning for support
Stating IV and DV with justification ***Part A.1a, 1b, 2a, 2b***	Left blank or response is completely inaccurate	Some error in stating the IV and DV	Identifies both the IV and DV correctly but support may lack sufficient reasoning	Identifies the IV and DV correctly and provides sufficient reasoning for support
Identifying appropriate features of the experimental design with justification • Control • Constants ***Part A.4a, 4b***	Left blank or response is completely inaccurate	Begins to identify appropriate variables but errors exist	Identifies appropriate variables	Identifies appropriate variables and provides sufficient reasoning for support
Develop aligned procedures that test a hypothesis • Steps • Materials ***Part A. 5 and 6***	Left blank or response is completely inaccurate	Develops incorrect or incomplete procedures	Develops an appropriate but lacks sufficient detail to be replicable	Develops a reproducible procedure to test a hypothesis
Data Interpretation and Analysis				
Creating a graph, map, or table from given data ***Part A. 7***	Left blank or response is completely inaccurate	Creates a graph, map, or table that contains significant omissions and/or accuracies	Presents elements of graph, map, or table accurately with minor omissions	Presents all elements of graph, map, or table accurately

Teacher Name:_____ **Class/Block:**_____

Critical Element	Not Attempted (0)	Novice (1)	Practitioner (2)	Expert (3)
Interpreting data from a graph, map, or table ***Part B.2 and 3***	Left blank or response is completely inaccurate	Interprets data but interpretation contains errors	Interprets most of the data from graph, map, or table accurately	Interprets all parts of the data table, map or graph correctly and provides sufficient reasoning for support
Making predictions using scientific data ***Part B. 1***	Left blank or response is completely inaccurate	Begins to make predictions but predictions contain errors	Makes logical predictions based on scientific data	Makes logical predictions based on scientific data and provides sufficient reasoning for support
Drawing and supporting conclusions based on scientific dat**a** ***Part B. 4***	Left blank or response is completely inaccurate	Begins to draw conclusions based on scientific data but conclusions contain errors	Draws logical conclusions based on scientific data	Draws logical conclusions based on scientific data and provides sufficient reasoning for support
Scientific Reasoning				
Reasoning through a multi-step process with justification ***Part B. 2***	Left blank or response is completely inaccurate	Begins to reason through a multi-step process but errors in reasoning exist	Reasons through most of a multi-step process	Reasons through all steps of a multi-step process and provides sufficient support
Selecting and using appropriate mathematics procedures, where appropriate (This part of the rubric may not apply across all content areas.) **Part B. On the graph**	Left blank or response is completely inaccurate Selects inappropriate mathematical procedures	Selects and applies uses appropriate mathematical procedures but response may contain mathematical errors	Selects and uses appropriate mathematical procedures and arrives at an accurate response	Selects and uses appropriate mathematical procedures and arrives at and communicates response using proper syntax

Data Collection Sheet

Directions: Using the key and the scoring rubric provided, score each student's responses and provide a rating for each of the critical elements listed on the rubric. Indicate the rating using a 3 (Expert), 2 (Practitioner), 1 (Novice), or 0 (Not Attempted). Please provide data separately for each class that took the assessment. Make additional copies of the data collection sheets as needed.

Earth Science Baseline Cornerstone Assessment Results for:

Teacher:_____ Phase (Baseline, Midyear, End of Year): _____

Class/Block:_____

Student Number	Student Name	hypothesis with justification **Part A.3a and 3b**	IV and DV with justification **Part A.1a, 1b, 2a, 2b**	features of the experimental design with justification ***Part A.4a, 4b***	aligned procedures that test a hypothesis ***Part A.5 and 6***	Creating a graph, map, or table ***Part A. 7***	Interpreting data **Part B.2 and 3**	Making predictions **Part B. 1**	Drawing and supporting conclusions ***Part B. 4***	Reasoning through a multi-step process with justification. ***Part B. 2***	Selecting and using appropriate mathematics procedures, where appropriate. **Part B. On the graph**
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6											
7											
8											

Student Number	Student Name	hypothesis with justification **Part A.3a and 3b**	IV and DV with justification **Part A.1a, 1b, 2a, 2b**	features of the experimental design with justification ***Part A.4a, 4b***	aligned procedures that test a hypothesis ***Part A.5 and 6***	Creating a graph, map, or table ***Part A. 7***	Interpreting data **Part B.2 and 3**	Making predictions **Part B. 1**	Drawing and supporting conclusions ***Part B. 4***	Reasoning through a multi-step process with justification. ***Part B. 2***	Selecting and using appropriate mathematics procedures, where appropriate. **Part B. On the graph**
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Student Number	Student Name	hypothesis with justification **Part A.3a and 3b**	IV and DV with justification **Part A.1a, 1b, 2a, 2b**	features of the experimental design with justification ***Part A.4a, 4b***	aligned procedures that test a hypothesis ***Part A.5 and 6***	Creating a graph, map, or table ***Part A. 7***	Interpreting data **Part B.2 and 3**	Making predictions **Part B. 1**	Drawing and supporting conclusions ***Part B. 4***	Reasoning through a multi-step process with justification. ***Part B. 2***	Selecting and using appropriate mathematics procedures, where appropriate. **Part B. On the graph**
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