Teacher Support Materials

Intended Use

These item sets are designed to assess all three dimensions of the performance expectation (PE) when used as written. They are also designed to work with any NGSS-aligned curriculum. In some instances, minor modifications may be necessary based on how the disciplinary core ideas were taught. For example, an item may use the term “particle,” but the term “molecule” may have been used in class. In instances such as this, a simple word-for-word replacement is appropriate. Where possible, the developers have noted these suggestions below, or accompanying the specific exemplar responses or scoring guides.

With very few exceptions, each item set is intended to assess only one PE. Exceptions, if any, are noted in the Specific PE Notes below. Depending on the PEs that you have bundled together in a unit, you may wish to select items from two or more PEs for an assessment. Keep in mind as you do so the amount of time students will need to respond to each item.

Performance Expectation (PE)

This item set assesses MS-ESS2-3: Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.

NGSS Assessment Boundaries

Paleomagnetic anomalies in oceanic and continental crust are not assessed.

Use Notes

Depending on the terminology used in your curriculum, you may wish to define some of the terms used in this item set (e.g. mutualism) or delete specific material from the item set prior to use.

Scoring and Scoring Guides

The scoring guides focus on students’ conceptual understanding of the three dimensions of the PE. Therefore, the scoring of a response should focus on the aspects described in the scoring guide rather than length of response, spelling and/or grammar, or other features.

Most scoring guides have three columns. The first column specifies 5 levels of performance, from 0 to 4. The second column provides a general description of what should be included in a response at that level. This description is the same across all items that use a particular science and engineering practice (SEP). The third column provides an item-specific description that applies to the three dimensions associated with the PE being assessed by that item.

There are two exceptions to this general approach to scoring guides. One exception occurs when two-dimensional items are included in an item set to elicit student understanding of specific aspects of disciplinary core ideas (DCIs). Another exception occurs for assessments associated with the practices of *Using Mathematics and Computational Thinking*, *Asking Questions*, and *Designing Solutions*, because the student responses for these are so tightly linked to the content or a specific element of the practice that a general description for the levels of the scoring guide across the practice is not appropriate. In these cases, the scoring guides have two columns: one for the five levels of performance and one for the item-specific description.

Student responses will sometimes fall between scoring levels. For example, responses that exceed scoring level 2, but do not fully meet scoring level 3, are fairly common. In these cases, it is up to the teacher to decide whether to give an intermediate score (2.5) or use a 2+ or 3- system. Most important is to use the scoring guide to provide students with feedback on how to improve their responses.

Scoring Guide - Item 1		
Level	**General Description**	**Item-Specific Description**
4 Complete and Correct	Student analyzes the data with appropriate tools, techniques, and reasoning, AND students identifies and describes patterns in the data and interprets them completely and correctly to identify and describe relationships. When appropriate, student • makes distinctions between causation and correlation, • states how biases and errors may affect interpretation of the data.	Student identifies evidence and provides reasoning for all three of the following: • student identifies the shape of the continents as evidence and reasons that it is evidence because continents that look like they fit together could have fit together in the past. • student identifies matching rock layers as evidence and reasons that when rock layers are the same, it is evidence that the formed as one formation in the same place so could have been together in the past • student identifies matching fossils as evidence and reasons that when fossils are the same, it is evidence that they formed together at the same time and in the same place so could have been together in the past.
3 Almost There	Student analyzes the data with appropriate tools, techniques, and reasoning, AND students identifies and describes patterns in the data BUT incorrectly and/or incompletely interprets them to identify and describe relationships.	Student identifies evidence and provides reasoning for two of the following: • student identifies the shape of the continents as evidence and reasons that it is evidence because continents that look like they fit together could have fit together in the past. • student identifies matching rock layers as evidence and reasons that when rock layers are the same, it is evidence that the formed as one formation in the same place so could have been together in the past • student identifies matching fossils as evidence and reasons that when fossils are the same, it is evidence that they formed together at the same time and in the same place so could have been together in the past.

2 On the Way	Student analyzes the data with appropriate tools, techniques, and reasoning, AND students identifies and describes, BUT does not interpret patterns and relationships	Student identifies evidence and provides reasoning for one of the following and may provide incorrect reasoning for others: • student identifies the shape of the continents as evidence and reasons that it is evidence because continents that look like they fit together could have fit together in the past. • student identifies matching rock layers as evidence and reasons that when rock layers are the same, it is evidence that the formed as one formation in the same place so could have been together in the past • student identifies matching fossils as evidence and reasons that when fossils are the same, it is evidence that they formed together at the same time and in the same place so could have been together in the past.
1 Getting Started	Student attempts to analyze the data BUT does not use appropriate tools, techniques, and/ or reasoning to identify and describe patterns and relationships.	Student identifies some of the following evidence but does not explain why it is evidence or provides incorrect reasoning: • student identifies the shape of the continents as evidence. • student identifies matching rock layers as evidence. • students identifies matching fossils as evidence
0	Student's response is missing, illegible, or irrelevant to the goal of the investigation.	
X	Student had no opportunity to respond.	

Scoring Guide - Item 2		
Level	**General Description**	**Item-Specific Description**
4 Complete and Correct	Student analyzes the data with appropriate tools, techniques, and reasoning, AND students identifies and describes patterns in the data and interprets them completely and correctly to identify and describe relationships. When appropriate, student • makes distinctions between causation and correlation, • states how biases and errors may affect interpretation of the data.	Student chooses Continent B and supports their claim with the following evidence and reasoning: • student identifies the shape of the continents as evidence and reasons that it is evidence because continents that look like they fit together could have fit together in the past. • student identifies matching rock as evidence and reasons that when rock is the same, it is evidence that it formed as one formation in the same place so could have been together in the past. • student identifies matching fossils as evidence and reasons that when fossils are the same, it is evidence that they formed together at the same time and in the same place so could have been together in the past.
3 Almost There	Student analyzes the data with appropriate tools, techniques, and reasoning, AND students identifies and describes patterns in the data BUT incorrectly and/or incompletely interprets them to identify and describe relationships.	Student chooses Continent B and supports their claim with the following evidence and some of the reasoning: • student identifies the shape of the continents as evidence and reasons that it is evidence because continents that look like they fit together could have fit together in the past. • student identifies matching rock as evidence and reasons that when rock is the same, it is evidence that it formed as one formation in the same place so could have been together in the past. • student identifies matching fossils as evidence and reasons that when fossils are the same, it is evidence that they formed together at the same time and in the same place so could have been together in the past.

2 On the Way	Student analyzes the data with appropriate tools, techniques, and reasoning, AND students identifies and describes, BUT does not interpret patterns and relationships	Student chooses Continent B and supports their claim with some of the following evidence and reasoning: • student identifies the shape of the continents as evidence and reasons that it is evidence because continents that look like they fit together could have fit together in the past. • student identifies matching rock as evidence and reasons that when rock is the same, it is evidence that it formed as one formation in the same place so could have been together in the past. • student identifies matching fossils as evidence and reasons that when fossils are the same, it is evidence that they formed together at the same time and in the same place so could have been together in the past.
1 Getting Started	Student attempts to analyze the data BUT does not use appropriate tools, techniques, and/ or reasoning to identify and describe patterns and relationships.	Student chooses Continent B and supports their claim with some of the following evidence BUT no explanation for why that evidence is supportive: • student identifies the shape of the continents as evidence. • student identifies matching rock as evidence. • student identifies matching fossils as evidence.
0	Student's response is missing, illegible, or irrelevant to the goal of the investigation.	
X	Student had no opportunity to respond.	

Scoring Guide - Item 3		
Level	**General Description**	**Item-Specific Description**
4 Complete and Correct	Student analyzes the data with appropriate tools, techniques, and reasoning, AND students identifies and describes patterns in the data and interprets them completely and correctly to identify and describe relationships. When appropriate, student • makes distinctions between causation and correlation, • states how biases and errors may affect interpretation of the data.	Student chooses the claim that the continents used to be farther apart in the past and supports their claim with the following evidence and reasoning: • student identifies the trench/plate boundary as evidence and reasons that at trenches, sea floor sinks underneath another plate and is destroyed, so continents on either side of the trench move toward each other.
3 Almost There	Student analyzes the data with appropriate tools, techniques, and reasoning, AND students identifies and describes patterns in the data BUT incorrectly and/or incompletely interprets them to identify and describe relationships.	Student chooses the claim that the continents used to be farther apart in the past and supports their claim with the following evidence but doesn't explain why that evidence supports the claim: • student identifies the trench/plate boundary as evidence
2 On the Way	Student analyzes the data with appropriate tools, techniques, and reasoning, AND students identifies and describes, BUT does not interpret patterns and relationships	Student chooses the correct claim that the continents used to be farther apart in the past BUT supports their claim with inaccurate evidence and/or reasoning.
1 Getting Started	Student attempts to analyze the data BUT does not use appropriate tools, techniques, and/ or reasoning to identify and describe patterns and relationships.	Student chooses the correct claim that the continents used to be farther apart in the past but doesn't support their claim
0	Student's response is missing, illegible, or irrelevant to the goal of the investigation.	
X	Student had no opportunity to respond.	