



**NEW ENGLAND  
COMMON ASSESSMENT PROGRAM**

**Released Items  
Support Materials  
2016**

**Grade 8  
Science**

**NECAP 2016 RELEASED ITEMS  
GRADE 8 SCIENCE**

**Grade 8 Science Released Item Information**

Item Number	Big Idea <sup>1</sup>	Assessment Target	Depth of Knowledge Code	Item Type <sup>2</sup>	Answer Key	Total Possible Points
1	INQ	PS 1-1	2	MC	B	1
2	MAS	PS 1-5	1	MC	D	1
3	POC	PS 2-7	2	MC	B	1
4	SAE	PS 1-4	2	CR4		4
5	POC	ESS 1-1	2	MC	B	1
6	POC	ESS 1-3	2	MC	B	1
7	POC	ESS 2-8	2	MC	D	1
8	SAE	LS 2-6	2	MC	D	1
9	SAE	LS 2-7	2	MC	D	1
10	POC	LS 4-11	2	MC	D	1

**Grade 8 Science Released Inquiry Task Information**

Item Number	Big Idea <sup>1</sup>	Inquiry Construct	Depth of Knowledge Code	Item Type <sup>2</sup>	Total Possible Points
1	INQ	1-3	2	SA	2
2	INQ	3-8	2	CR3	3
3	INQ	3-10	2	SA	2
4	INQ	1-2	2	SA	2
5	INQ	4-11	2	SA	2
6	INQ	2-4	2	SA	2
7	INQ	4-13	3	SA	2
8	INQ	4-12	3	CR3	3

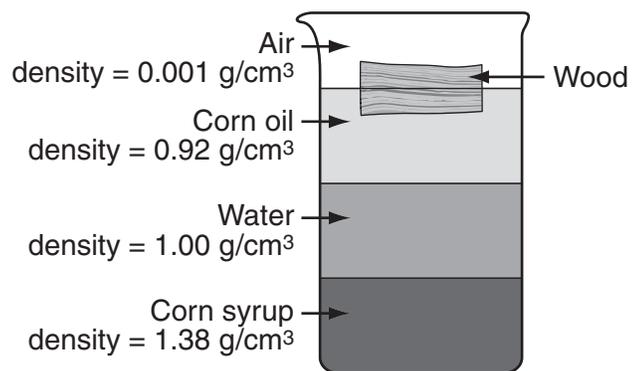
<sup>1</sup>Big Idea: NOS = Nature of Science, SAE = Systems and Energy, MAS = Models and Scale, POC = Patterns of Change, FAF = Form and Function, INQ = Scientific Inquiry

<sup>2</sup>Item Type: MC = Multiple Choice, CR = Constructed Response, SA = Short Answer

NECAP 2016 RELEASED ITEMS  
GRADE 8 SCIENCE

PS1 (5-8) INQ-1 Investigate the relationships among mass, volume, and density.

- 1 The air, wood, and liquids in the container below have different densities.



What is **most likely** the density of the wood?

- A.  $0.001 \text{ g/cm}^3$
- B.  $0.70 \text{ g/cm}^3$
- C.  $0.95 \text{ g/cm}^3$
- D.  $1.10 \text{ g/cm}^3$

**NECAP 2016 RELEASED ITEMS  
GRADE 8 SCIENCE**

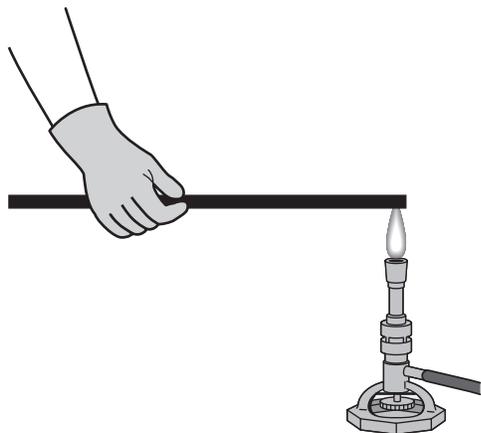
**PS1 (5-8) MAS-5** Given graphic or written information, classify matter as atom/molecule or element/compound (not the structure of an atom).

- 2 The point of a pencil contains graphite, which consists entirely of the element carbon. Which statement describes graphite?
- A. Graphite is made of different kinds of compounds.
  - B. Graphite is made of one kind of compound.
  - C. Graphite is made of different kinds of atoms.
  - D. Graphite is made of one kind of atom.

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PS2 (5-8) POC-7 Use data to draw conclusions about how heat can be transferred (convection, conduction, radiation).

- 3 In the figure below, a gloved hand holds a copper rod directly above a flame.



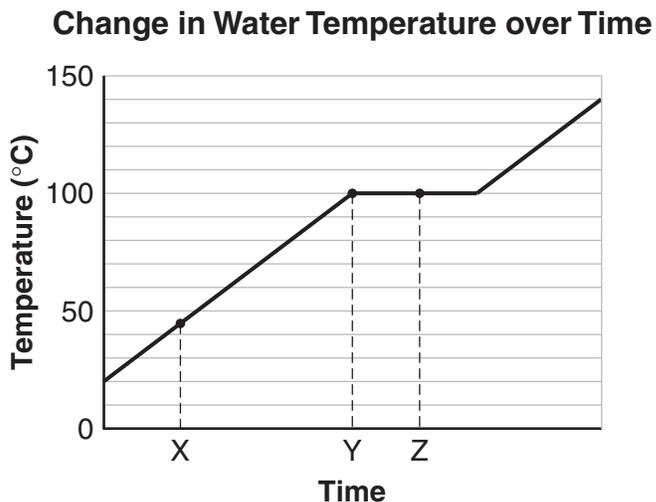
Which statement **best** describes what will happen after the rod is held above the flame for several minutes?

- A. Both the glove and rod will be cool.
- B. Both the glove and rod will be warm.
- C. The glove will be warm and the rod will be cool.
- D. The glove will be cool and the rod will be warm.

NECAP 2016 RELEASED ITEMS  
GRADE 8 SCIENCE

**PS1 (5-8) SAE-4** Represent or explain the relationship between or among energy, molecular motion, temperature, and states of matter.

- 4 The graph below shows how the temperature of water changes over time as it is heated from 20°C to 140°C.



- Explain what happens to the water in terms of energy, molecules, and state of matter from Time X to Time Y.
- Explain what happens to the water in terms of energy, molecules, and state of matter from Time Y to Time Z.

**NECAP 2016 RELEASED ITEMS  
GRADE 8 SCIENCE**

**Scoring Guide**

<b>Score</b>	<b>Description</b>
<b>4</b>	The response demonstrates a thorough understanding of the relationship between energy, molecular motion, and states of matter. The student explains what happens to the water in terms of energy, molecules, and state of matter from Time X to Time Y and from Time Y to Time Z.
<b>3</b>	The response demonstrates a general understanding of the relationship between energy, molecular motion, and states of matter. The overall response is general.
<b>2</b>	The response demonstrates a limited understanding of the relationship between energy and states of matter. The overall response is limited.
<b>1</b>	The response demonstrates a minimal understanding of the relationship between energy and states of matter. The overall response is minimal.
<b>0</b>	The response is incorrect or irrelevant to the skill or concept being measured.
<b>Blank</b>	No response

a. A thorough understanding can be exemplified by the following sample responses:

- Energy is increasing (energy is constantly added over time) or the water absorbs energy.
- The molecules move more quickly or the molecular motion is increasing.
- The state of matter stays the same.
- Liquid water is heated to its boiling point.

**Note:** Students only receive credit for referring to increasing temperature if they explain why the temperature is increasing.

b. A thorough understanding can be exemplified by the following sample responses:

Energy is increasing [h]. The molecular motion is constant. The phase of matter is changing from a liquid to a gas.

- 4
- (A) From time X to time Y, the energy of the water is increasing, the molecules are moving faster and the state of matter is a liquid.
- (B) From time Y to time Z, the energy of the water is being used to change states of matter, the molecules aren't moving any faster, and the state of matter is between a liquid and gas.

The response demonstrates a thorough understanding of the relationship between energy, molecular motion, and states of matter. The student correctly explains the energy, molecular motion, and states of matter for both time frames with no errors or omissions.

SCORE POINT 3

- 4
- a. Between time X and time Y, the water is getting hotter. The molecules are moving faster, and energy is increasing. The water heats about  $50^{\circ}\text{C}$  from time X to time Y. By time Y, the water should be boiling.
- b. Between time Y and time Z, the water has reached a constant boiling point. The molecules are moving very quickly. Bubbles should be forming in the water, as well as the water starting to evaporate. The water stays at a constant temperature between time Y and time Z.

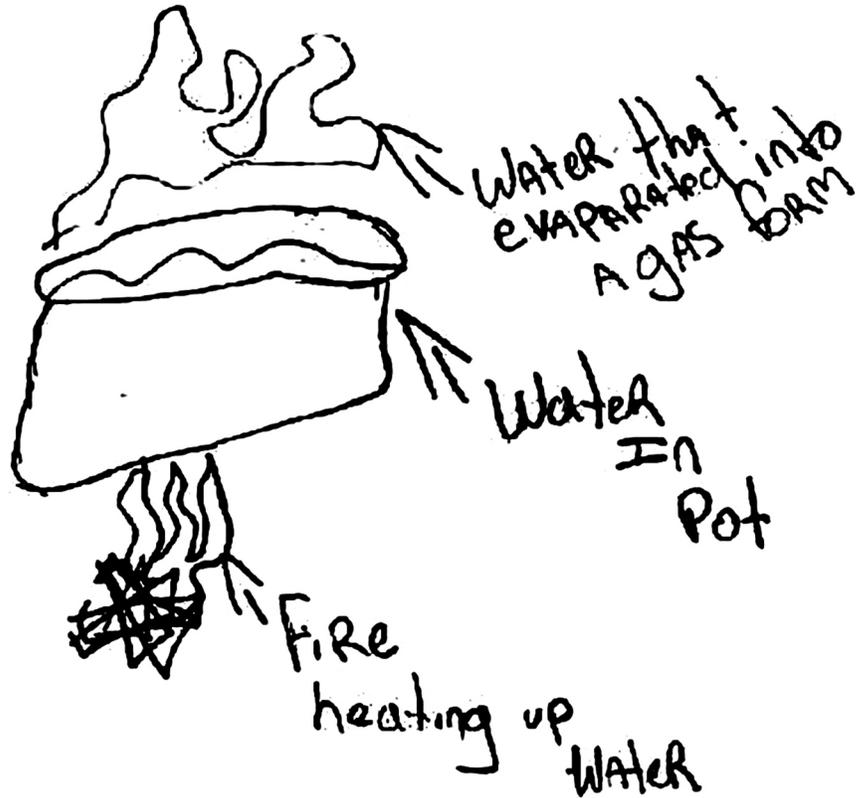
The response demonstrates a general understanding of the relationship between energy, molecular motion, and states of matter. The response gives the correct energy and molecular motion in part (a) but doesn't clearly address the state of matter. In part (b), the energy and molecular motion discussion is mostly accurate, although evaporation is not the correct process. Overall, the main points are generally discussed with a few minor omissions and inaccuracies.

4 a.) From time X to time Y the water heats up, the molecules get moving faster and faster, and the water is getting ready to turn into a gas.

b.) The temperature is at 100 which is its boiling point and the water is turning into a gas. The molecules are racing and the water has a lot of energy.

The response demonstrates a limited understanding of the relationship between energy and states of matter. The response to part (a) addresses molecular motion and vaguely energy (heats up) but doesn't state that the water is in liquid form. In part (b), the states of matter are correctly addressed, but the molecules "racing" and the water having "a lot of energy" are unclear. While some of the concepts are correct, the response has imprecise and limited explanations in both parts.

4  
What that does its (changing  
Pyisical propites) to a liquid to A gas



The response demonstrates a minimal understanding of the relationship between energy and states of matter. The statement about liquid changing into a gas is sufficient to demonstrate minimal understanding.

SCORE POINT 0

4 a. the time x is going to 49 of the temperature.

From the time y is going to the 100 of the temperature.

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b. From the time y to time z the water is going to increase and then stay in one place.

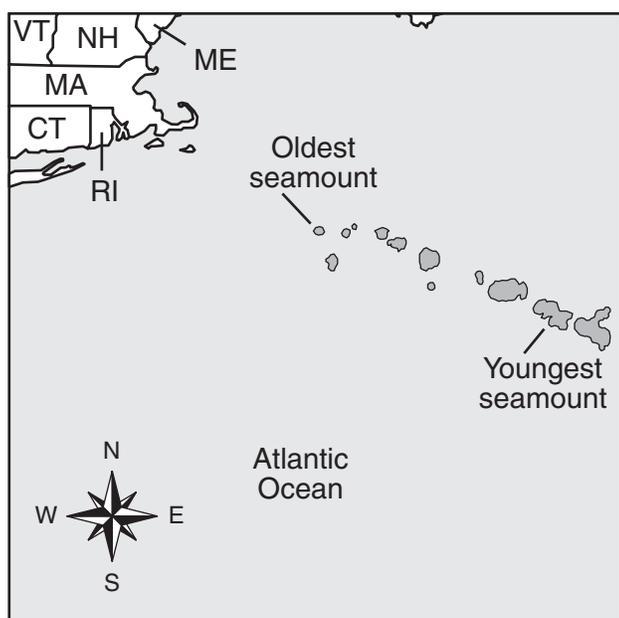
The response is incorrect or irrelevant to the skill or concept being measured. No understanding of the relationship between energy and states of matter is demonstrated.

NECAP 2016 RELEASED ITEMS  
GRADE 8 SCIENCE

**ESS1 (5-8) POC-1** Use geological evidence provided to support the idea that the Earth's crust/lithosphere is composed of plates that move.

*Please use the Plate Movements diagram on the reference sheet to answer the question.*

- 5 The map below shows the positions and relative ages of the seamounts in the New England seamount chain, which is located on the North American Plate.



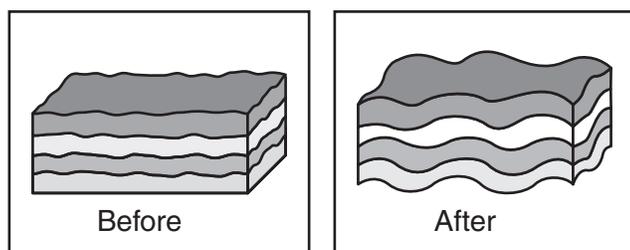
Which conclusion about the movement of the North American Plate does the map **best** support?

- A. The plate moved in a southeast direction over a hot spot.
- B. The plate moved in a northwest direction over a hot spot.
- C. The plate subducted beneath the New England states.
- D. The plate moved away from the New England states.

NECAP 2016 RELEASED ITEMS  
GRADE 8 SCIENCE

ESS1 (5-8) POC-3 Explain how Earth events (abruptly and over time) can bring about changes in Earth's surface: landforms, ocean floor, rock features, or climate.

- 6 The diagram below shows rock layers that were changed.



Which type of event **most likely** caused the rock layers to change?

- A. earthquakes cracking the rock layers
- B. pressure pushing on opposite sides of the rock layers
- C. heat from volcanic eruptions melting the rock layers
- D. weight from sediments pushing on the rock layers

**NECAP 2016 RELEASED ITEMS  
GRADE 8 SCIENCE**

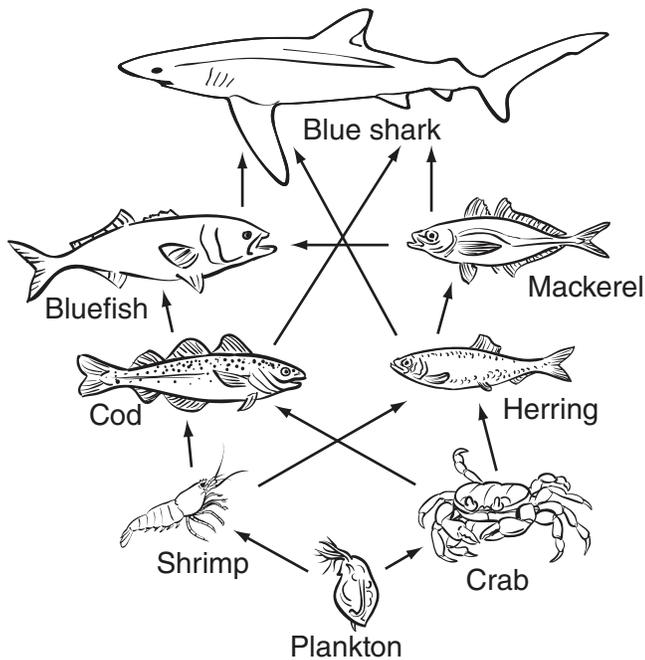
**ESS2 (5-8) POC-8** Explain temporal or positional relationships between or among the Earth, Sun, and Moon (e.g., night/day, seasons, year, tides) OR how gravitational force affects objects in the solar system (e.g., moons, tides, orbits, satellites).

- 7 Which statement **best** explains why an object weighs less on Mercury than it does on Earth?
- A. Mercury is less dense than Earth.
  - B. Mercury is more dense than Earth.
  - C. Mercury has a stronger gravitational pull than Earth does.
  - D. Mercury has a weaker gravitational pull than Earth does.

NECAP 2016 RELEASED ITEMS  
GRADE 8 SCIENCE

**LS2 (5-8) SAE-6** Given a scenario, trace the flow of energy through an ecosystem, beginning with the sun, through organisms in the food web, and into the environment (includes photosynthesis and respiration).

- 8 The diagram below shows a partial North Atlantic food web.



Overfishing and climate change threaten the cod population. Based on the diagram, how will bluefish change their feeding behavior if the cod population decreases?

- A. Bluefish will eat more crabs.
- B. Bluefish will eat more blue sharks.
- C. Bluefish will eat more plankton.
- D. Bluefish will eat more mackerel.

**NECAP 2016 RELEASED ITEMS  
GRADE 8 SCIENCE**

**LS2 (5-8) SAE-7** Given an ecosystem, trace how matter cycles among and between organisms and the physical environment (includes water, oxygen, food web, decomposition, recycling but not carbon cycle or nitrogen cycle).

- 9 An ecosystem contains hawks, mice, grasses, and fungi. Removing which of these populations would **directly** result in fewer nutrients being returned to the ecosystem?
- A. hawks, because the population of mice would become too large to find enough food
  - B. mice, because the population of grasses would become too large for the available space
  - C. grasses, because there would be no other organisms producing food
  - D. fungi, because there would be fewer organisms breaking down wastes

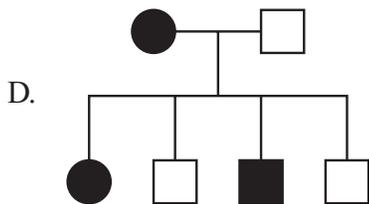
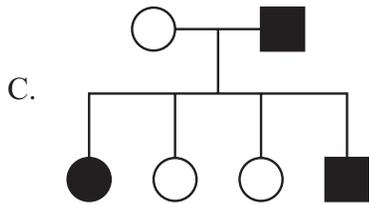
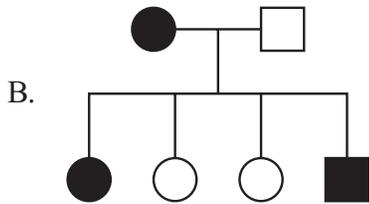
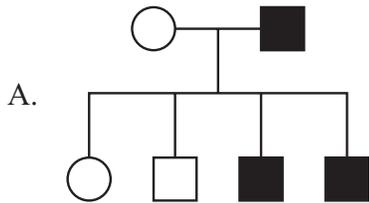
**NECAP 2016 RELEASED ITEMS  
GRADE 8 SCIENCE**

**LS4 (5-8) POC-11** Using data provided, select evidence that supports the concept that genetic information is passed on from both parents to offspring.

- 10** A researcher studies blindness in cats. The researcher breeds a cat that is blind with a cat that is not blind. Four kittens are produced. One male and one female kitten are blind. The other two male kittens are not blind. The researcher uses the key below to make the pedigree for the family of cats.

<b>Key</b>		
	Not blind	Blind
Male	□	■
Female	○	●

Which diagram shows the pedigree for this family of cats?



**NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE**

<b>Broad Area of Inquiry:</b> <b>Inquiry Construct 3:</b>	<b>Formulating Questions &amp; Hypothesizing</b> Make and describe observations in order to ask questions, hypothesize, make predictions related to topic.
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- ❶ Describe **two** observations Sarah could use from Maps 1 and 2 to show the relationship between the depth of an earthquake and the type of plate boundary nearby. Use evidence from Maps 1 and 2 on the **Map Reference Sheet** to support your answer.

**Scoring Guide**

<b>Score</b>	<b>Description</b>
<b>2</b>	The response demonstrates a general understanding of how to make and describe observations in order to make predictions. The response uses evidence to describe two observations that could be used from the maps to show the relationship between the depth of an earthquake and the type of plate boundary nearby.
<b>1</b>	The response demonstrates a limited understanding of how to make and describe observations in order to make predictions. The overall response is limited.
<b>0</b>	The response is incorrect or irrelevant to the skill or concept being measured.
<b>Blank</b>	No response

A general understanding can be exemplified by any two of the following sample responses:

- There are shallow earthquakes on the divergent boundaries such as the Mid-Atlantic Ridge.
- There are shallow earthquakes on the transform plate boundaries between the North American and Pacific Plates.
- There are deep earthquakes on the convergent boundaries between the South American and Nazca Plates.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 2

- 1 Describe **two** observations Sarah could use from Maps 1 and 2 to show the relationship between the depth of an earthquake and the type of plate boundary nearby. Use evidence from Maps 1 and 2 on the **Map Reference Sheet** to support your answer.

One observation that Sarah could use from Maps 1 and 2 is that most earthquakes deeper than 250 km occur on or very close to convergent plate boundaries. Another observation she could make is that most earthquakes shallower than 50 km occur on or very close to divergent plate boundaries.

The response demonstrates a general understanding of how to make and describe observations in order to make predictions. The response describes that Maps 1 and 2 show that deeper earthquakes occur on convergent plate boundaries, and shallower earthquakes tend to occur on divergent boundaries.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 1

- 1 Describe **two** observations Sarah could use from Maps 1 and 2 to show the relationship between the depth of an earthquake and the type of plate boundary nearby. Use evidence from Maps 1 and 2 on the **Map Reference Sheet** to support your answer.

All the earthquakes happen on different types of plate boundaries.

Most earthquakes that are deeper than 250km. happen on convergent boundaries.

The response demonstrates a limited understanding of how to make and describe observations in order to make predictions. The response describes that Maps 1 and 2 show that deeper earthquakes occur on convergent plate boundaries, but the first observation is insufficient for credit.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 0

- 1 Describe **two** observations Sarah could use from Maps 1 and 2 to show the relationship between the depth of an earthquake and the type of plate boundary nearby. Use evidence from Maps 1 and 2 on the **Map Reference Sheet** to support your answer.

:-the edges of the continents are usually deeper and they are where the plates were separated

- Convergent plate boundaries cause more earthquakes than the other two.

The response is incorrect or irrelevant to the skill or concept being measured. Neither observation is supported by the evidence provided in Maps 1 and 2. There does not appear to be a pattern connecting earthquake depth and continental boundaries. The second observation is not clearly supported by the maps and does not relate the plate boundary type to depth.

**NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE**

<b>Broad Area of Inquiry:</b>	<b>Conducting Investigations</b>
<b>Inquiry Construct 8:</b>	Use accepted methods for organizing, representing, and manipulating data.

- 2 Use the data from Data Table 1 to create a line graph that shows the age of the seafloor rocks along the transect from South America to Africa.

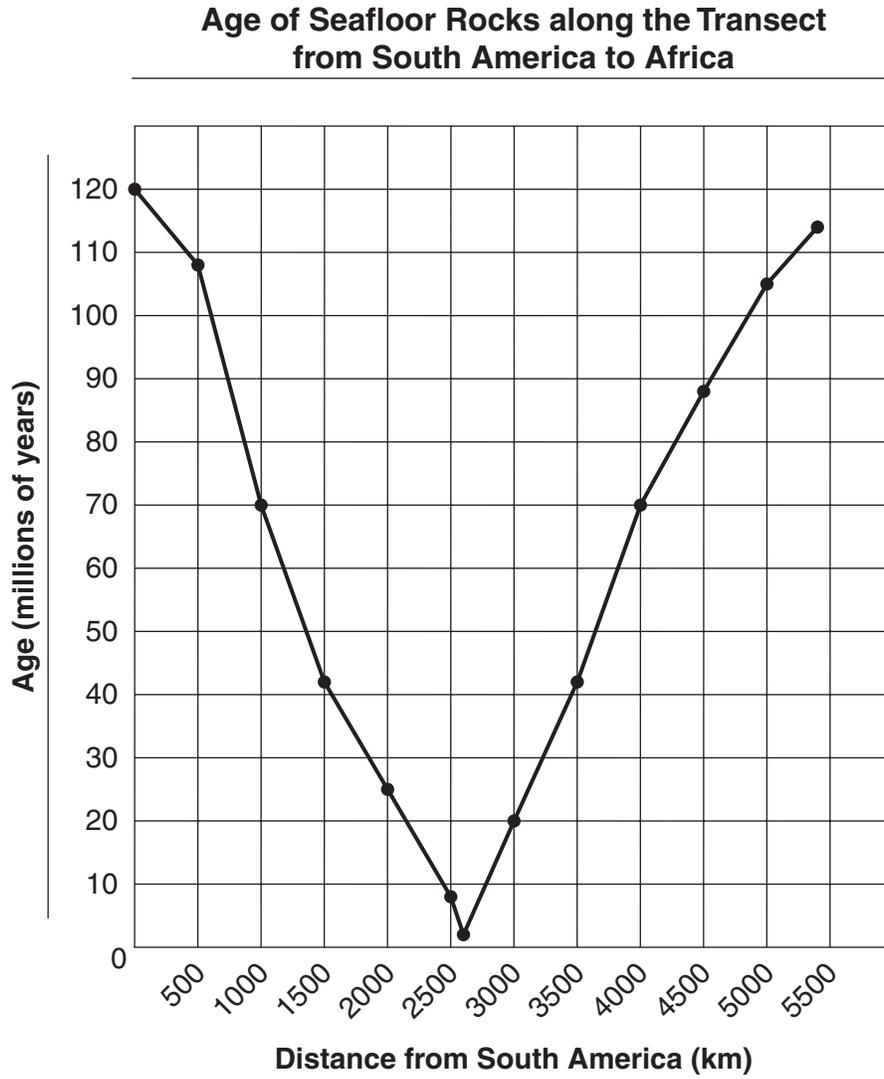
**Scoring Guide**

<b>Score</b>	<b>Description</b>
<b>3</b>	The response demonstrates a thorough understanding of how to use accepted methods for organizing, representing, and manipulating data. The response uses the data from Data Table 1 to create a line graph that shows the age of the seafloor rocks along the transect from South America to Africa.
<b>2</b>	The response demonstrates a general understanding of how to use accepted methods for organizing, representing, and manipulating data. The overall response is general.
<b>1</b>	The response demonstrates a limited understanding of how to use accepted methods for organizing, representing, and manipulating data. The overall response is limited.
<b>0</b>	The response is incorrect or irrelevant to the skill or concept being measured.
<b>Blank</b>	No response

**NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE**

A thorough understanding can be exemplified by the following sample response:

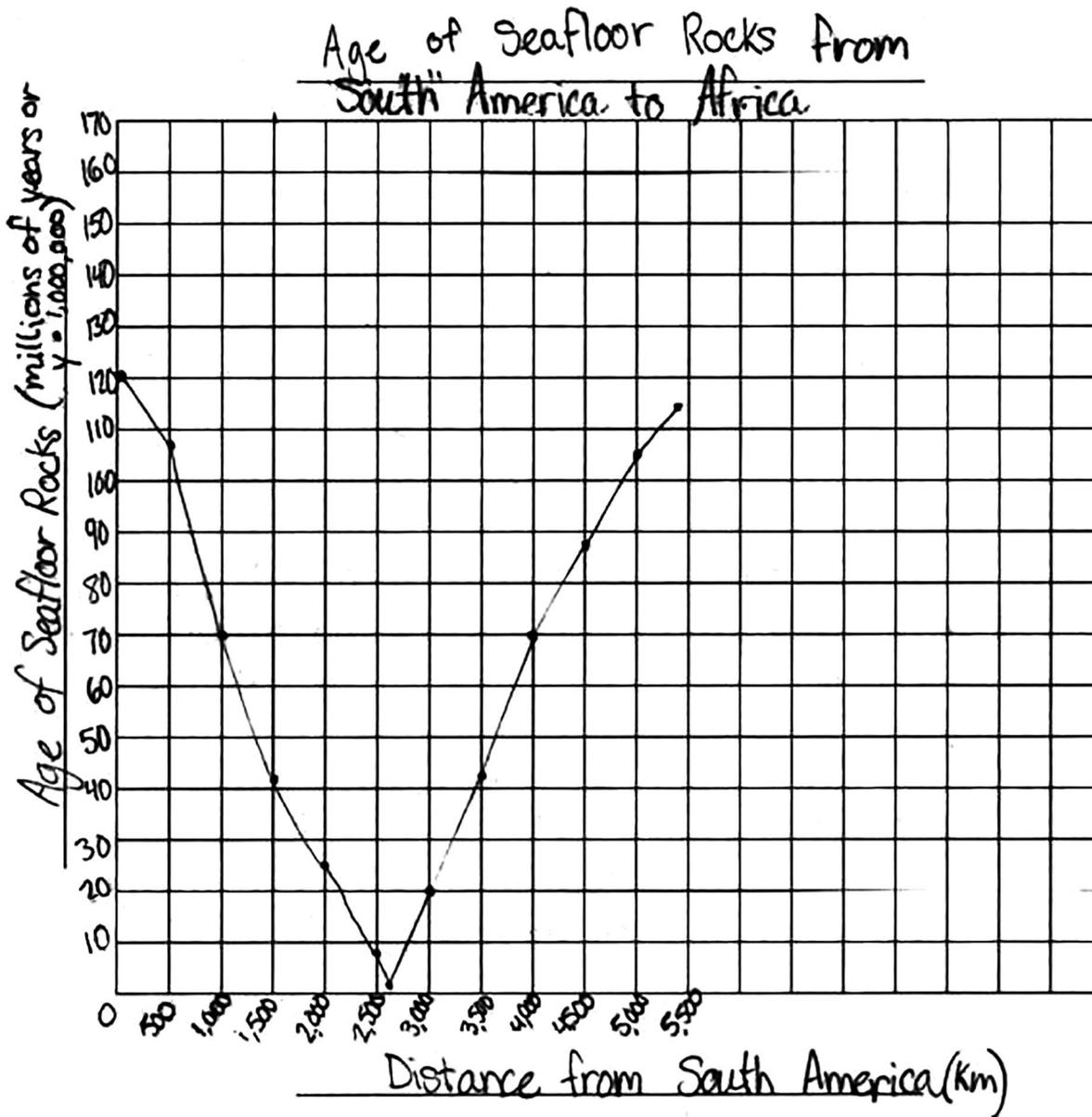
- includes titles, labels, keys, or symbols as needed
- includes a scale appropriate for the range of data to be plotted



NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 3

- 2 Use the data from Data Table 1 to create a line graph that shows the age of the seafloor rocks along the transect from South America to Africa.

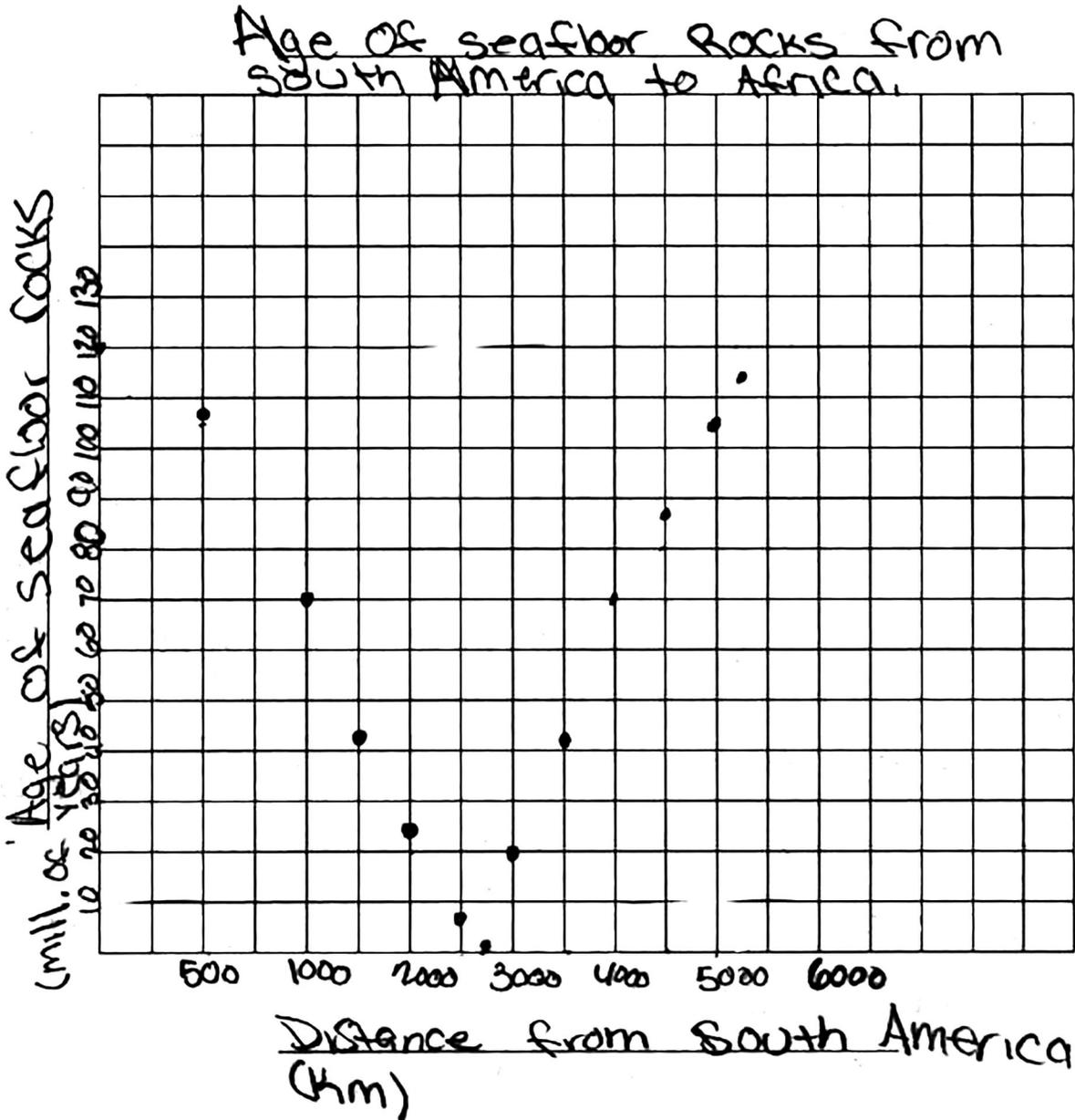


The response demonstrates a thorough understanding of how to use accepted methods for organizing, representing, and manipulating data. The response uses the data from Data Table 1 to create a line graph that shows the age of the seafloor rocks along the transect from South America to Africa. The graph contains a title, axes labels with units, appropriate scales, and correctly plotted data points.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 2

- 2 Use the data from Data Table 1 to create a line graph that shows the age of the seafloor rocks along the transect from South America to Africa.



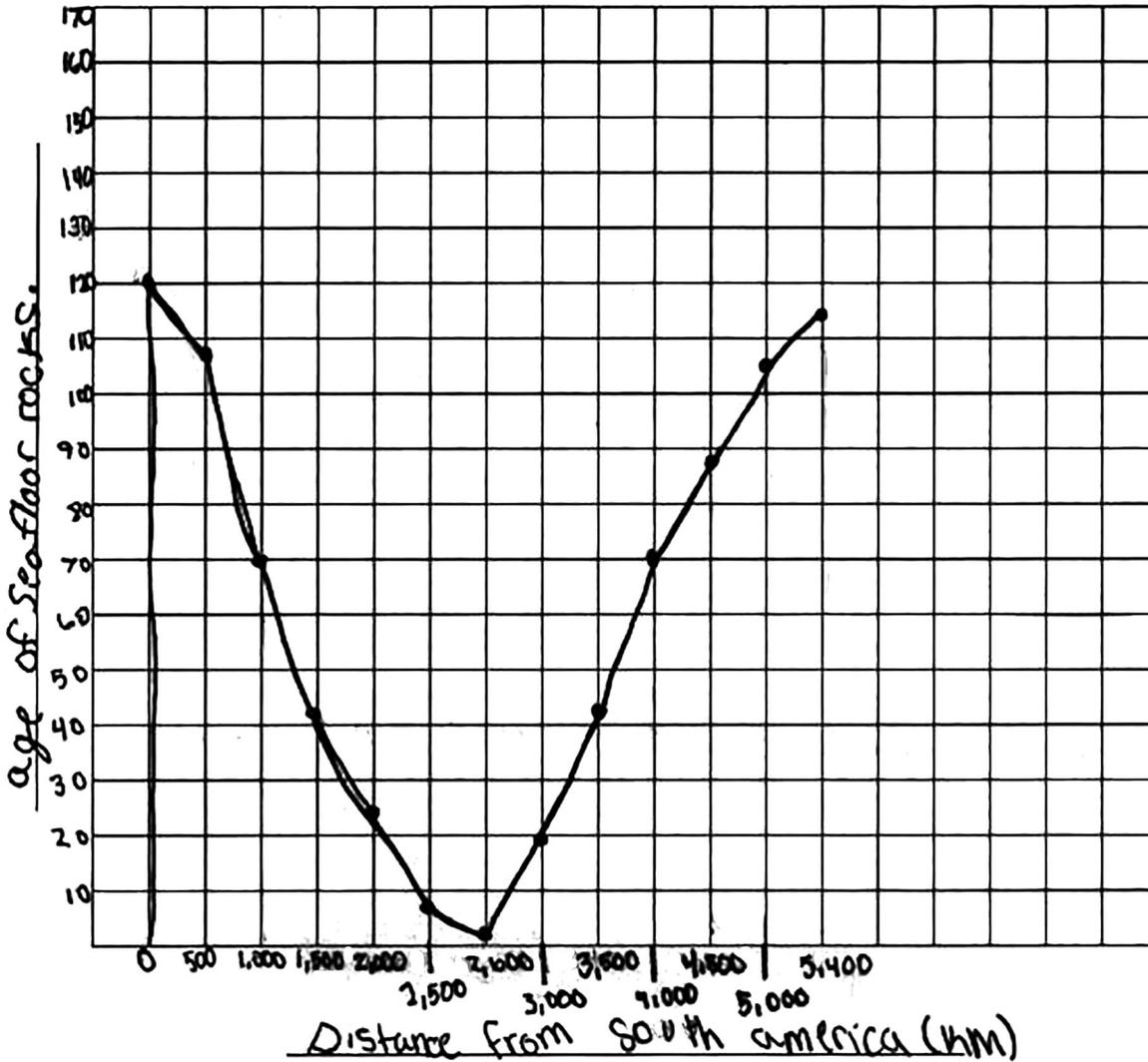
The response demonstrates a general understanding of how to use accepted methods for organizing, representing, and manipulating data. The graph contains a title, axes labels with units, mostly appropriate scales, and correctly plotted data points. However, there is no origin, the x-axis scale is inconsistent (switching from 500 km to 1000 km every two grid lines), and there is no line drawn to connect the data points.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 1

- 2 Use the data from Data Table 1 to create a line graph that shows the age of the seafloor rocks along the transect from South America to Africa.

Age of Seafloor rocks from  
South America to Africa



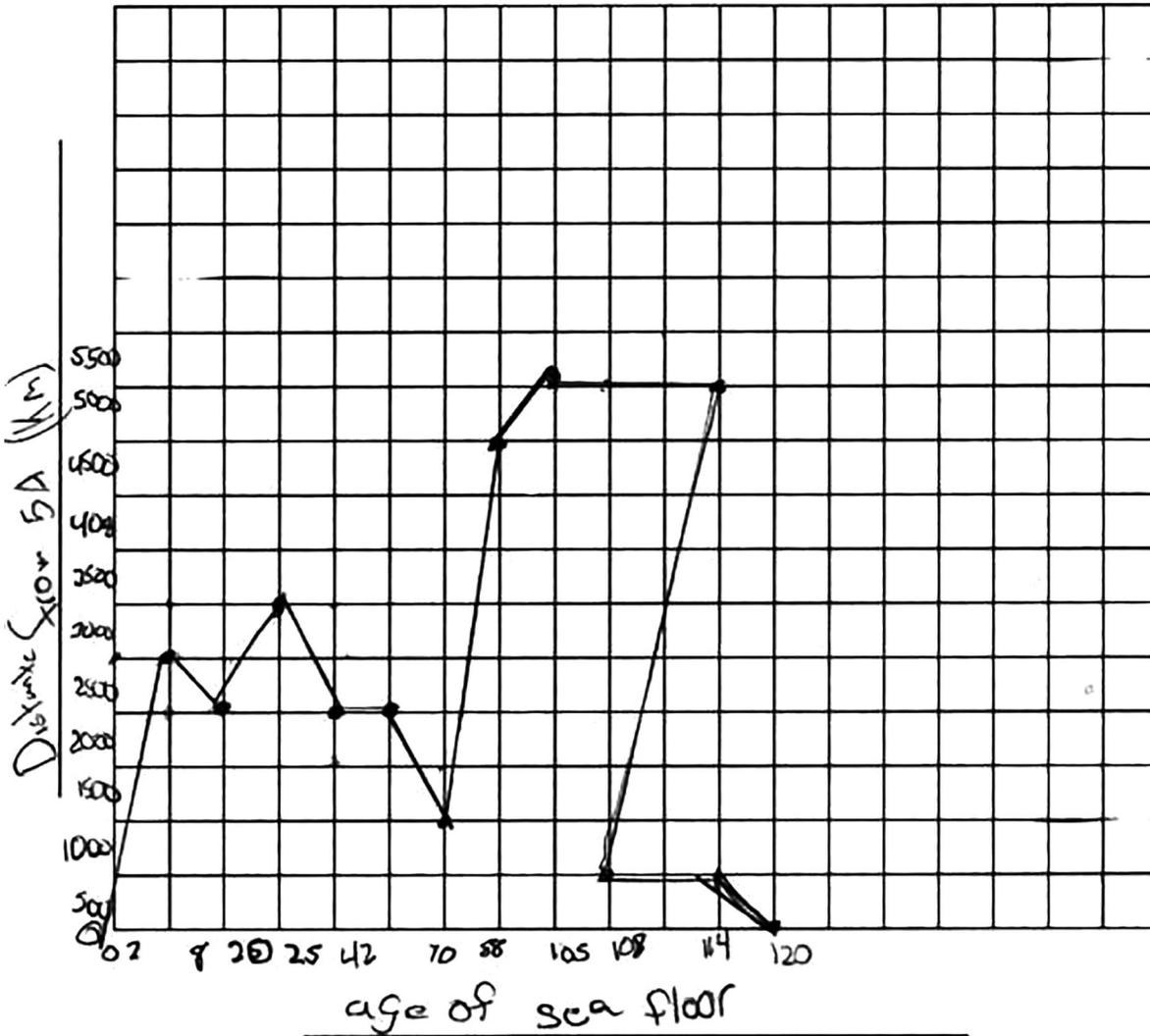
The response demonstrates a limited understanding of how to use accepted methods for organizing, representing, and manipulating data. The graph contains a title, axes labels, and correctly plotted data points. However, the x-axis does not start at zero and uses the data points to label the grid instead of creating a scale, the y-axis is missing units, and there is an extraneous line at the zero x-axis point.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 0

- 2 Use the data from Data Table 1 to create a line graph that shows the age of the seafloor rocks along the transect from South America to Africa.

The age of the sea floor



The response is incorrect or irrelevant to the skill or concept being measured. The axes are reversed, the scaling is off on both axes, there are data points missing, there are no units for age of seafloor, and the title is incomplete. The line and overall shape of the graph do not represent the data set and signify a lack of understanding.

**NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE**

<b>Broad Area of Inquiry:</b> <b>Inquiry Construct 10:</b>	<b>Conducting Investigations</b> Summarize results based on data.
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- 3 Explain how the evidence from either your graph or Data Table 1 supports Sarah’s conclusion that the plate boundary at the Mid-Atlantic Ridge is a divergent plate boundary.

**Scoring Guide**

<b>Score</b>	<b>Description</b>
<b>2</b>	The response demonstrates a general understanding of how to summarize results based on data. The response explains how the evidence from either the graph or Data Table 1 supports the conclusion that the plate boundary at the Mid-Atlantic Ridge is a divergent plate boundary.
<b>1</b>	The response demonstrates a limited understanding of how to summarize results based on data. The overall response is limited.
<b>0</b>	The response is incorrect or irrelevant to the skill or concept being measured.
<b>Blank</b>	No response

A general understanding can be exemplified by the following sample response:

The evidence supports Sarah’s conclusion. As the African Plate and the North American and South American Plates move apart, new seafloor is formed, so the areas closest to the Mid-Atlantic Ridge have the youngest rocks. For example, around 2600 kilometers from South America, the rocks are two million years old. The areas farther away from the ridge have older rocks. For example, at 5400 kilometers from South America the rocks are 114 million years old.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 2

- 3 Explain how the evidence from either your graph or Data Table 1 supports Sarah's conclusion that the plate boundary at the Mid-Atlantic Ridge is a divergent plate boundary.

The data table helps support Sarah's conclusion that the plate boundary at Mid-Atlantic Ridge is a divergent plate boundary because the plates have moved apart and caused new crust to push out the old crust. From the data table it showed that every 500 km the age of the seafloor rocks had consistently gone down until 3000 km when it went from 2 million years to 20 million years and continued to increase. This is because the new crust was pushing out the old crust which pushed out some of the seafloor rocks.

The response demonstrates a general understanding of how to summarize results based on data. The response explains how the evidence from the graph and Data Table 1 support the conclusion that the plate boundary at the Mid-Atlantic Ridge is a divergent plate boundary. Although stating that new crust is "pushing out" the old crust is not the most precise terminology, it is acceptable at the general understanding level.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 1

- 3 Explain how the evidence from either your graph or Data Table 1 supports Sarah's conclusion that the plate boundary at the Mid-Atlantic Ridge is a divergent plate boundary.

Evidence from the graph and data table 1 supports Sarah conclusion because the graph and table are showing the new rock that is being created and the old rock that the new rock is just pushing aside.

The response demonstrates a limited understanding of how to summarize results based on data. While the conclusion is correct and summarizes the data appropriately, the statement is not supported with evidence from the graph or data table.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 0

- 3 Explain how the evidence from either your graph or Data Table 1 supports Sarah's conclusion that the plate boundary at the Mid-Atlantic Ridge is a divergent plate boundary.

The graph demonstrates Sarah's conclusion of the Mid-Atlantic Ridge being divergent because as the distance increases in the graph it shows it getting narrower showing that the old rock is getting covered by new rock.

The response is incorrect or irrelevant to the skill or concept being measured. The interpretation of the evidence is incorrect which, as a result, does not support Sarah's conclusion.

**NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE**

<b>Broad Area of Inquiry:</b> <b>Inquiry Construct 2:</b>	<b>Formulating Questions &amp; Hypothesizing</b> Construct coherent arguments in support of a question, hypothesis, prediction.
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- 4 Describe **two** pieces of evidence from Maps 1 and 3 on the **Map Reference Sheet** that support Luke’s idea that most of the volcanoes are located on convergent boundaries.

**Scoring Guide**

<b>Score</b>	<b>Description</b>
<b>2</b>	The response demonstrates a general understanding of constructing a coherent argument in support of a question, hypothesis, or prediction. The response describes two pieces of evidence from Maps 1 and 3 that support Luke’s idea that most of the volcanoes are located on convergent boundaries.
<b>1</b>	The response demonstrates a limited understanding of constructing a coherent argument in support of a question, hypothesis, or prediction. The overall response is limited.
<b>0</b>	The response is incorrect or irrelevant to the skill or concept being measured.
<b>Blank</b>	No response

A general understanding can be exemplified by one of the following sample responses (or other plausible responses):

- There are many volcanoes located along trenches such as the Aleutian and Mariana Trenches.
- There are many volcanoes on the convergent boundary between the South American and Nazca Plates.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 2

- 4 Describe **two** pieces of evidence from Maps 1 and 3 on the **Map Reference Sheet** that support Luke's idea that most of the volcanoes are located on convergent boundaries.

The two pieces of evidence includes:

- The Aleutian Trench were many volcanos occur.
- The Tonga Trench were also many volcanos occur.

Trenchs occur on convergent boundaries, and these were the two trenches with the most volcanic activity

The response demonstrates a general understanding of constructing a coherent argument in support of a question, hypothesis, or prediction. The response describes two pieces of evidence from Maps 1 and 3, many volcanoes on the Tonga Trench and on the Aleutian Trench, that support Luke's idea that most of the volcanoes are located on convergent boundaries.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 1

- 4 Describe **two** pieces of evidence from Maps 1 and 3 on the **Map Reference Sheet** that support Luke's idea that most of the volcanoes are located on convergent boundaries.

One piece of evidence showing that most volcanoes are located on convergent boundaries can be that map 1 shows where the convergent boundaries are and map 3 shows more volcanoes on those areas. Another piece of evidence could be that on the west side of both maps (on map 1 where the convergent boundaries are) that is where most of the volcanoes are.

The response demonstrates a limited understanding of constructing a coherent argument in support of a question, hypothesis, or prediction. The response provides one piece of evidence in support of Luke's idea, that the west side of the maps is where the convergent boundaries are and most of the volcanoes. The first statement is a description of what the maps are showing, which is not evidence supporting Luke's idea.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 0

- 4 Describe **two** pieces of evidence from Maps 1 and 3 on the **Map Reference Sheet** that support Luke's idea that most of the volcanoes are located on convergent boundaries.

Two pieces of evidence from Maps 4 and 3 that supports Luke's idea that most of the volcanoes are located on convergent areas is that the volcanoes are next to each other and explosive volcanoes occur on the sea floor at convergent boundaries.

The response is incorrect or irrelevant to the skill or concept being measured. The response repeats information from the bullet points in the passage, which is not evidence from the maps.

**NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE**

<b>Broad Area of Inquiry:</b> <b>Inquiry Construct 11:</b>	<b>Developing and Evaluating Explanations</b> Analyze data, including determining if data are relevant, artifact, irrelevant, or anomalous.
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- 5 Use information from the story on page 7 and the **Map Reference Sheet** to explain why Map 3 is missing information. Describe **two** factors that could explain the lack of evidence of volcanic activity on the ocean ridges.

**Scoring Guide**

<b>Score</b>	<b>Description</b>
<b>2</b>	The response demonstrates a general understanding of how to analyze data, including determining if data are relevant, artifact, irrelevant, or anomalous. The response uses information from the story and the Map Reference Sheet to explain why Map 3 is missing information. The response describes two factors that could explain the lack of evidence of volcanic activity on the ocean ridges.
<b>1</b>	The response demonstrates a limited understanding of how to analyze data, including determining if data are relevant, artifact, irrelevant, or anomalous. The overall response is limited.
<b>0</b>	The response is incorrect or irrelevant to the skill or concept being measured.
<b>Blank</b>	No response

A general understanding can be exemplified by any two of the following sample responses:

- Volcanoes are not always very explosive.
- Volcanoes may occur in very deep water.
- Volcanoes are located in very inaccessible areas.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 2

- 5 Use information from the story on page 7 and the **Map Reference Sheet** to explain why Map 3 is missing information. Describe **two** factors that could explain the lack of evidence of volcanic activity on the ocean ridges.

Volcanoes occur under water at divergent boundaries, but the water is so deep in some places that we can not detect the volcanoes. Also, they have less explosive force than volcanoes at convergent boundaries, so it is difficult to detect them.

The response demonstrates a general understanding of how to analyze data, including determining if data are relevant, artifact, irrelevant, or anomalous. The response uses information from the story and the Map Reference Sheet to explain that the depth and explosiveness of some volcanoes could explain why Map 3 is missing information.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 1

- 5 Use information from the story on page 7 and the **Map Reference Sheet** to explain why Map 3 is missing information. Describe **two** factors that could explain the lack of evidence of volcanic activity on the ocean ridges.

1. Sometimes volcanoes cannot be seen from the ocean's surface because of how deep the area is.
2. Its difficult to record the data when the volcano can't be seen.

The response demonstrates a limited understanding of how to analyze data, including determining if data are relevant, artifact, irrelevant, or anomalous. The response explains that deep volcanoes could be difficult to detect, but the second statement only serves to clarify the first piece of evidence.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 0

- 5 Use information from the story on page 7 and the **Map Reference Sheet** to explain why Map 3 is missing information. Describe **two** factors that could explain the lack of evidence of volcanic activity on the ocean ridges.

Map 3 could be missing information because there's a lot of plate boundaries where the volcanoes are not shown <sup>on</sup> the map.

1) there's a lot of divergent plates in the ocean where volcanoes are located.

2) there's a lot of transform plates in the ocean where volcanoes are located.

The response is totally incorrect or irrelevant to the skill or concept being measured. The statements do not adequately explain why there is missing information.

**NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE**

<b>Broad Area of Inquiry:</b> <b>Inquiry Construct 4:</b>	<b>Planning and Critiquing of Investigations</b> Identify information/evidence that needs to be collected in order to answer the question, hypothesis, prediction.
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- 6 Identify which information in Data Tables 2 and 3 is the most important to answer Ali’s research question. Explain why the information you chose is important to include in the app.

**Scoring Guide**

Score	Description
2	The response demonstrates a general understanding of how to identify information/evidence that needs to be collected in order to answer the question, hypothesis, or prediction. The response identifies which information is the most important to answer the research question, “Where are the most recent earthquakes and volcanic eruptions in eastern Africa located?” and explains why the information chosen is important to include in the app.
1	The response demonstrates a limited understanding of how to identify information/evidence that needs to be collected in order to answer the question, hypothesis, or prediction. The overall response is limited.
0	The response is incorrect or irrelevant to the skill or concept being measured.
<b>Blank</b>	No response

A general understanding can be exemplified by the following or another reasonable sample response: The data that are the most important include the year and location of earthquakes and volcanoes in eastern Africa. This information shows where and when the eruptions occurred, which is what is asked by Ali’s research question (the other information, such as volcano name, is not necessary). The app should show that volcanoes and earthquakes have occurred recently in eastern Africa.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 2

- 6 Identify which information in Data Tables 2 and 3 is the most important to answer Ali's research question. Explain why the information you chose is important to include in the app.

I think that the information Ali needs to include is the location/country and the day/month/year. This information is important to include in the app because Ali is asking "where" and "most recent". That information will answer her question perfectly.

The response demonstrates a general understanding of how to identify information/evidence that needs to be collected in order to answer the question, hypothesis, or prediction. The response identifies that the location and date of the volcanic eruptions are the most important pieces of information to answer the research question and explains why the information chosen is important to include in the app.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 1

- 6 Identify which information in Data Tables 2 and 3 is the most important to answer Ali's research question. Explain why the information you chose is important to include in the app.

The most important information on data tables 2 and 3 are the earthquake magnitude the earthquake depth and date the volcano number and the year in which the eruption started.

The response demonstrates a limited understanding of how to identify information/evidence that needs to be collected in order to answer the question. The response identifies the date, or year, as important but also includes other extraneous pieces of information.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 0

- 6 Identify which information in Data Tables 2 and 3 is the most important to answer Ali's research question. Explain why the information you chose is important to include in the app.

The information in Data tables 2 and 3 are helpful but Ali needs to observe which Earthquake was nearest to a plate boundary. Then to use that info in the App.

Another piece of information that she could look at in table 2 is what was the magnitude and Depth.

The response is incorrect or irrelevant to the skill or concept being measured. The pieces of evidence named would not be the most important to help answer Ali's research question.

**NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE**

<b>Broad Area of Inquiry:</b> <b>Inquiry Construct 13:</b>	<b>Developing and Evaluating Explanations</b> Communicate how scientific knowledge applies to explain results, propose further investigations, or construct and analyze alternative explanations.
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- 7 Use the **Map Reference Sheet** and the information from the story to support Jacob’s idea that a new plate boundary is forming in Africa. Use evidence from Data Tables 2 and 3 and Diagram 2 to support your answer.

**Scoring Guide**

<b>Score</b>	<b>Description</b>
<b>2</b>	The response demonstrates a general understanding of communicating how scientific knowledge applies to explain results, propose further investigations, or construct and analyze alternative explanations. The response uses evidence to support the idea that a new plate boundary is forming in Africa.
<b>1</b>	The response demonstrates a limited understanding of communicating how scientific knowledge applies to explain results, propose further investigations, or construct and analyze alternative explanations. The overall response is limited.
<b>0</b>	The response is incorrect or irrelevant to the skill or concept being measured.
<b>Blank</b>	No response

A general understanding can be exemplified by the following sample response:

A new plate boundary may be forming in eastern Africa. This is supported by the data that show there are many recent volcanoes and earthquakes in Africa not on plate boundaries. This supports Jacob’s idea because Maps 1, 2, and 3 show that there are volcanoes and earthquakes on plate boundaries. (Rocks and gases in this area are also the same age.)

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 2

- 7 Use the **Map Reference Sheet** and the information from the story to support Jacob's idea that a new plate boundary is forming in Africa. Use evidence from Data Tables 2 and 3 and Diagram 2 to support your answer.

A new plate boundary is forming because all the recent volcanoes and earthquakes which happened in 2011 and 2014 all happened a long one curve where there is no plate boundary. For a volcano or earthquake most likely to happen is to be a long a plate boundary. In map 1 it shows no plate boundary, so maybe there is a new one being formed.

The response demonstrates a general understanding of communicating how scientific knowledge applies to explain results, propose further investigations, or construct and analyze alternative explanations. The response uses evidence from the data tables and Diagram 2 to support the idea that a new plate boundary is forming in Africa.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 1

- 7 Use the **Map Reference Sheet** and the information from the story to support Jacob's idea that a new plate boundary is forming in Africa. Use evidence from Data Tables 2 and 3 and Diagram 2 to support your answer.

There's been a lot more earth-  
quakes and over the years  
the volcanoes are starting to  
erupt more and more.  
There's also more earth-  
quakes happening in one area.

The response demonstrates a limited understanding of communicating how scientific knowledge applies to explain results, propose further investigations, or construct and analyze alternative explanations. The response provides a broad statement that seems to be centered on the passage under Diagram 2. The response does not mention that they are not on a plate boundary on Map 1 or explain how this information supports Jacob's idea.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 0

- 7 Use the **Map Reference Sheet** and the information from the story to support Jacob's idea that a new plate boundary is forming in Africa. Use evidence from Data Tables 2 and 3 and Diagram 2 to support your answer.

A new plate boundary is coming  
because the gas and earthquakes  
and volcanic eruptions all  
point to yes.

The response is incorrect or irrelevant to the skill or concept being measured. The response does not explain how the cited pieces of evidence support Jacob's idea.

**NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE**

<b>Broad Area of Inquiry:</b> <b>Inquiry Construct 12:</b>	<b>Developing and Evaluating Explanations</b> Use evidence to support and justify interpretations and conclusions or explain how the evidence refutes the hypothesis.
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**8** Identify **three** important pieces of information that would best help someone use the app to answer the research question “How do data from scientific investigations provide evidence that Earth’s tectonic plates are moving?” Describe how each piece of information will help support the goal of the app.

**Scoring Guide**

Score	Description
<b>3</b>	The response demonstrates a thorough understanding of using evidence to support and justify interpretations and conclusions. The response identifies three important pieces of information that would best help someone use the app to answer the research question “How do data from scientific investigations provide evidence that Earth’s tectonic plates are moving?” The response describes how each piece of information will help support the goal of the app.
<b>2</b>	The response demonstrates a general understanding of using evidence to support and justify interpretations and conclusions. The overall response is general.
<b>1</b>	The response demonstrates a limited understanding of using evidence to support and justify interpretations and conclusions. The overall response is limited.
<b>0</b>	The response is incorrect or irrelevant to the skill or concept being measured.
<b>Blank</b>	No response

A thorough understanding may be exemplified by any three of the following sample responses or other reasonable responses.

- Earthquakes are located at plate boundaries. For example, the deepest earthquakes are located between the Nazca and South American Plates, which shows that plates are moving toward each other.
- The youngest rocks (2 million years old) were found along divergent plate boundaries at the Mid-Atlantic Ridge (2600 kilometers from South America), which provides evidence that tectonic plates are moving away from each other.
- Volcanoes are located at plate boundaries and are caused by moving plates; for example, there are many volcanoes at the boundary between the Eurasian and African Plates.
- A new tectonic plate may be forming in eastern Africa. Volcanoes and earthquakes in eastern Africa provide evidence that this new plate is moving.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 3

- 8 Identify **three** important pieces of information that would best help someone use the app to answer the research question “How do data from scientific investigations provide evidence that Earth’s tectonic plates are moving?” Describe how each piece of information will help support the goal of the app.

Three important pieces of information that would best help someone use the app to answer the question are data table 1, diagram 1, and data table 2 (41). Each piece of information will help the goal for the app because they all provide very different information and data that can be used to show evidence that Earth's tectonic plates are moving. Diagram 1 (88) will help because it shows where the new crust pushed the old crust (divergent). Data table 1 (39) shows the different ages of the rock because of how the divergent boundary moves the old crust. Data table 2 (41) shows the most recent earthquakes that happened in eastern Africa to answer more about the research question.

The response demonstrates a thorough understanding of using evidence to support and justify interpretations and conclusions. The response identifies three important pieces of information, using Diagram 1, Data Table 1, and Data Table 2, that would best help someone use the app to answer the research question. The response describes how each piece of information will help support the goal of the app.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 2

- 8 Identify **three** important pieces of information that would best help someone use the app to answer the research question “How do data from scientific investigations provide evidence that Earth’s tectonic plates are moving?” Describe how each piece of information will help support the goal of the app.

\* ~ Research of the Mid-Atlantic ridge shows new rocks forming from the boundaries, and old ones moving away from the ridge from the divergent boundaries.

\* ~ The 3 types of map 1 shows plate movement in divergent, transform, and convergent boundaries

\* ~ Diagram 2 / Map 2 / Map 3 shows a new plate forming on Africa. Plate movement makes this possible

The response demonstrates a general understanding of using evidence to support and justify interpretations and conclusions. The response identifies three important pieces of information, using Data Table 1, Map 1, and Diagram 2, but does not clearly make a connection between the evidence and the research question.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 1

- 8 Identify **three** important pieces of information that would best help someone use the app to answer the research question “How do data from scientific investigations provide evidence that Earth’s tectonic plates are moving?” Describe how each piece of information will help support the goal of the app.

The formations, the activity of volcanos and earthquakes and natural disasters. This information helps because it shows that somehow the earth is moving and causing these specific things.

The response demonstrates a limited understanding of using evidence to support and justify interpretations and conclusions. The response identifies vague pieces of information without a clear explanation of how the evidence would support the goal of the app.

NECAP 2016 RELEASED INQUIRY TASK  
GRADE 8 SCIENCE

SCORE POINT 0

- 8 Identify **three** important pieces of information that would best help someone use the app to answer the research question “How do data from scientific investigations provide evidence that Earth’s tectonic plates are moving?” Describe how each piece of information will help support the goal of the app.

what would best help a students  
is explain more map reference.

The response is incorrect or irrelevant to the skill or concept being measured. The response does not provide information that would support the goal of the app.