



Date: \_\_\_\_\_

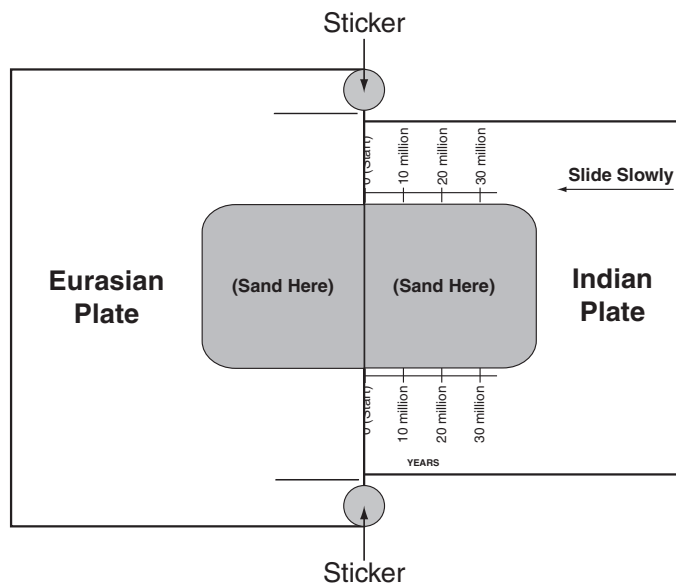
Your Name: \_\_\_\_\_

Partner's Name(s): \_\_\_\_\_

# NEW ENGLAND COMMON ASSESSMENT PROGRAM

## Task Booklet 2008

### Grade 8



## Released Science Inquiry Task

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### Colliding Plates

# Science

## Directions:

You will conduct a science investigation called **Colliding Plates**. First you will work with a partner and then you will work alone.

You will make a prediction, set up and conduct the investigation, and collect and record your data with your partner(s).

Scientists often make models of systems to guide their investigations. You will use a model to investigate a question. Please do not touch any of the materials until instructed to do so.

Follow the directions in this booklet. Please remember that in addition to working with the science materials, you must record your data in the Data Table on page 6.

In this task, you will

- make a prediction on page 4.
- share one set of materials with your partner(s).
- work together with your partner(s) to use the materials.
- record your data and observations in the Data Table on page 6.

**Note:** In the operational test, students were instructed to copy their data from the Data Table to their Student Answer Booklet.

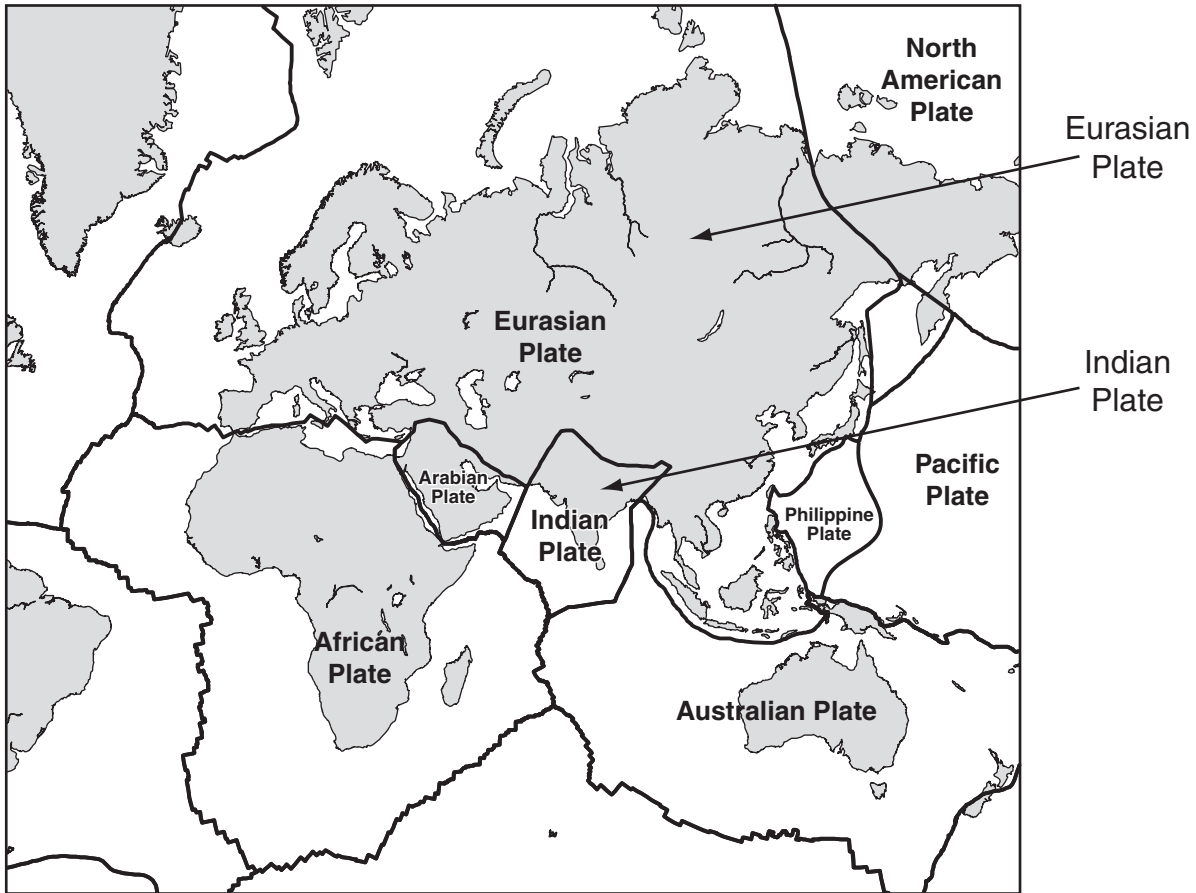
The words listed in the table below are used in this investigation.

## Word Bank

<b>Average</b>	to add the values from all three trials and then divide the total by three
<b>Boundary</b>	a line marking the edge of something
<b>Elapsed</b>	time that has passed
<b>Prediction</b>	what someone thinks will happen
<b>Trial</b>	a test

## Colliding Plates

Students in a science class are studying the geology of Earth and the landforms on Earth's surface. The students learn that Earth's surface consists of about a dozen huge plates that move toward, away from, over, under, and next to one another. The movements of these plates cause the major features of Earth's geology. Mountains, valleys, ocean trenches, and islands have formed at the boundaries of these plates. The map below shows Earth's major plates.



The teacher tells the students that they will use a model to learn more about the movements of the Eurasian and Indian Plates shown on the map. The teacher also tells the students that scientists often use models to guide their investigations. The students use a paper model and sand to see what happens when the Eurasian and Indian Plates move toward each other.

The teacher asks the students the following investigation question:

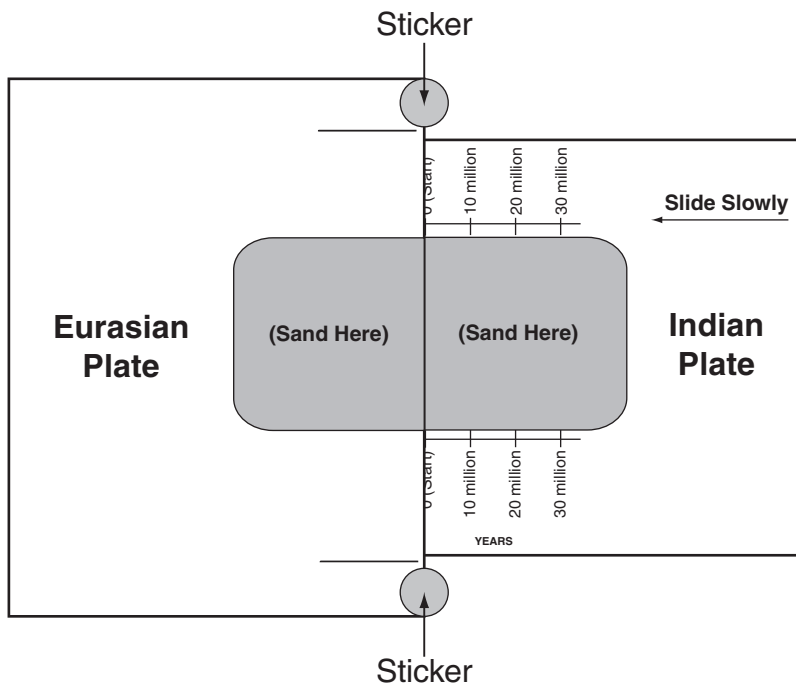
**What might happen to the sand in the model when the Eurasian and Indian Plates move toward each other?**

## Description of Model and Materials

### Materials for the Investigation:

- two models: (1) the Eurasian Plate and (2) the Indian Plate
- small jar of sand
- stickers
- metric ruler that measures in millimeters (mm)
- flat edge to smooth the sand

### Setup of Plate Model



## Making a Prediction

**What might happen to the sand in the model when the Eurasian and Indian Plates move toward each other?**

Make a prediction on your own in response to this question.

- Use the information in the passage, the diagram of the plate model setup, and your understanding of plate movements to predict what might happen to the sand in the model as you push the plates together.
- Explain your prediction.

Write your prediction in the box below.

When each member of your group is finished making a prediction, go on to the next page.

## Conducting Your Investigation

You and your partner(s) will investigate what happens when two models of plates push against each other. You will repeat the steps for a total of three trials.

### Procedure:

- Make sure the edges of the Eurasian Plate are attached to your desk or table with the stickers, as shown in the plate model diagram on page 3.
- Slide the Indian Plate under the Eurasian Plate until the 0 (Start) line meets the edge of the Eurasian Plate.
- Place all of the sand in the shaded area on your plate model. Smooth the sand into an even layer that fills the entire shaded rectangular area.

### Steps for Trial 1:

1. Use your metric ruler to measure the height of the sand on the plate boundary. Measure the height of the sand to the nearest millimeter (mm).
2. Record the height of the sand for Trial 1 under 0 years in the Data Table on page 6.
3. Slowly slide the Indian Plate toward the Eurasian Plate until the 10 million years line is even with the edge of the Eurasian Plate.
4. Use your ruler to measure the sand at its highest point on the plate boundary. Record the height of the sand for Trial 1 under 10 million in the Data Table. Measure the sand at the same place on the plate boundary as you did in step 1.
5. Slowly slide the Indian Plate toward the Eurasian Plate until the 20 million years line is even with the edge of the Eurasian Plate.
6. Use your ruler to measure the sand at its highest point on the plate boundary. Record the height of the sand for Trial 1 under 20 million in the Data Table. Measure the sand at the same place on the plate boundary as you did in step 1.
7. Slowly slide the Indian Plate toward the Eurasian Plate until the 30 million years line is even with the edge of the Eurasian Plate.
8. Use your ruler to measure the sand at its highest point on the plate boundary. Record the height of the sand for Trial 1 under 30 million in the Data Table. Measure the sand at the same place on the plate boundary as you did in step 1.
9. Move the plates back to the **0 (Start)** line.
10. Smooth the sand back into an even layer.

### Steps for Trials 2 and 3:

1. Repeat steps 1–10 for Trial 2. Enter all data in the appropriate locations in the Data Table.
2. Repeat steps 1–10 for Trial 3. Enter all data in the appropriate locations in the Data Table.
3. Move all of the sand onto the Indian Plate. Put the empty jar on the Eurasian Plate. Use the Indian Plate as a funnel to return all of the sand to the jar.
4. Remove the stickers and stack the plates on your desk or table.
5. Average the heights you recorded in the Data Table for each time period. You can round to the nearest whole number when averaging.

**Data Table: Height of Sand (mm)**

<b>Years</b>	<b>0</b>	<b>10 million</b>	<b>20 million</b>	<b>30 million</b>
<b>Trial 1</b>				
<b>Trial 2</b>				
<b>Trial 3</b>				
<b>Average</b>				

You may use the space below to perform math work and record any additional observations.

