AMERICAN HERITAGE

WORLDWIDE

CHARACTER › SCHOLARSHIP › LIBERTY

MY TECTONIC PLATE BOUNDARY TOUR

STUDENT ACTIVITY BOOK

GRADES 6–8



My Tectonic Plate Boundary Tour

AHS Worldwide · Earth Science · Unit 1 Project · Middle School

Name:		Date:	

Your Challenge

You are going to become the expert on one tectonic plate. In Steps 1–4 you research it: trace its outline, name the plates around it, work out what kind of boundary each edge is, and put real numbers on how fast it moves.

In Steps 5–8 you build one connected boundary tour out of cloth — one model for each boundary type you found — keep the models together, move them with your hands, measure the motion, and explain your plate to a real audience.

Two uploads — that is all	The project scale
• End of Step 4 — your research pages. • End of Step 8 — your model and presentation. *Everything else you simply collect and keep.*	**1 centimeter in your model = 1 kilometer on Earth** Write this scale on your worksheet in Step 4 and beside every model you build.

Choose Your Plate — 10 Approved Choices

☐ Juan de Fuca Plate	☐ Cocos Plate	☐ Caribbean Plate	☐ Nazca Plate
☐ Pacific Plate	☐ North American Plate	☐ Arabian Plate	☐ Philippine Sea Plate
☐ Scotia Plate	☐ Indian Plate		

THE ONE BIG TRAP: Trace the BOUNDARY, not the coastline. A plate edge often runs through open ocean, far from any shore — and one plate can carry a continent and a piece of seafloor at the same time.

How the Eight Steps Fit Together

Phase	Steps	What you do
Research	1–4	Trace your plate, name its neighbors, name each boundary type, and measure the motion.
Design	5	Design your connected boundary tour on paper, before you cut anything.
Build	6	Build and label every model out of cloth, and keep them together as one tour.
Test	7	Move each model three times, measure it, then improve what is hardest to see.
Present	8	Present your plate and explain the whole chain, from Earth's interior heat to the surface.

Plan about 20 minutes for each step. Every step has its own rubric in the instructions — read it before you start that step.

RESEARCH · STEP 1

Choose and Trace Your Plate

About 20 minutes

The plate I chose, and why — one sentence

My plate at a glance — check what fits		
☐ Mostly under ocean	☐ Mostly under land	☐ Both ocean and land

Where I found this out (source):	

Trace your plate's outline here — big and bold. Follow the plate boundary, not the coastline.

Think Deeper
Why is the edge of a continent sometimes in a completely different place from the edge of the plate that carries it?

RESEARCH · STEP 2

Name the Neighbors and Pick Boundaries

About 20 minutes

Number your boundary segments on the Step 1 drawing — B1, B2, B3 — then fill in one row per segment. Every plate that touches yours is a neighboring plate. Star the boundaries you will build: one for each kind of motion you found.

My Boundary Segments

Seg	Neighboring plate	How do they move? (toward / apart / past)	Color I used	Where I found it (source)	Build it? ★

My Color Key — color these boxes, then color your Step 1 drawing to match

☐ Convergent ☐ Divergent ☐ Transform

How many models will I build, and which boundaries did I star?

Think Deeper

Why does a boundary belong to two plates instead of just one?

RESEARCH · STEP 3

Name and Check Each Boundary Type

About 20 minutes

One row per starred boundary. Do not guess from the shape of the line — name the real feature that proves it: a named trench, a named ridge, a named fault or fracture zone, a named mountain range, or a pattern of earthquakes. Check every answer against a second trusted source.

My Starred Boundaries

Seg	Boundary type	My named evidence	Source 1	Source 2 agrees?

IF MY SOURCES DISAGREE: Write down both answers, say which one you used, and say why. Scientists report disagreement instead of hiding it.

When my sources disagreed — both answers, the one I used, and why

Which boundary type wins on my plate, and what does that mean about where my plate is going?

Think Deeper

If your plate is being subducted along one edge and growing along another, is it getting bigger or smaller? What evidence would settle it?

RESEARCH · STEP 4

Measure Motion and Set the Model Scale

About 20 minutes

My Plate's Motion			
How fast? (centimeters per year)		**Where did I find it? (my source)**	
Which direction?		**If my sources disagree, the one I used and why:**	

MY SCALE — write it down, then build everything to it

1 centimeter in my model = 1 kilometer on Earth

Write this on this worksheet and beside every model you build.

Relative motion and the math — one row per starred boundary. Plan to move each model 3–6 cm, change that into kilometers with the scale, then work out how many years it stands for: multiply the real distance in km by 100,000, then divide by the plate speed in cm per year.

Relative Motion and the Math

Seg	My plate moves ...	The neighbor moves ...	So the two plates are ...	Model move (cm)	Real distance (km)	Years it stands for

Direction arrows — check when done

☐ I drew one direction arrow for each plate at every boundary I starred.

STEP 4 UPLOAD — the first of only two uploads

Turn in clear photos or a PDF of your finished research pages: your traced outline, your neighbor and boundary tables, your sources, your motion math, and your direction arrows. Steps 1–3 were collect-only — they all go in together now.

DESIGN · STEP 5

Design Your Connected Boundary Tour

About 20 minutes

Design it before you build it. All your models stay together as one tour on a desk, counter, or large tray. Someone else should be able to build your tour from this page alone.

Tour layout — looking straight down at the whole tour. Draw where each boundary model sits, label both real plates in every model, and mark which way each plate will move.

My Models — one row per boundary I starred

Model	Boundary type	The two real plates it shows	What my viewer will see happen

WHAT EACH BOUNDARY TYPE SHOULD SHOW

- Divergent — the two cloth pieces open up and reveal a narrow strip of new crust between them.
- Convergent — the pieces fold upward into a ridge, or one slides down beneath the other.
- Transform — the pieces grind past each other in opposite directions, and nothing new is made.

Before I cut anything — my plan is complete when all of these are checked

- ☐ I have cloth for every plate in every model, easy to cut and move
- ☐ I made a name label for both plates in each model — names are required
- ☐ I made a measuring strip labeled “1 model cm = 1 real km”
- ☐ I know which way every plate moves, from my Step 4 arrows

Push Further

Name the part of your design most likely to mislead a viewer, and say what you will do about it.

BUILD • STEP 6

Build and Label the Whole Model

About 20 minutes

Build every model and place them together as one tour. Focus on cutting, arranging, testing, and labeling the cloth — you do not need to build hills or landscapes. Discovering that your design needs changing while you build it is normal engineering, not failure.

Build checklist

- ☐ Boundary line cut down the middle of the cloth, so the two edges still fit together
- ☐ Both plates labeled with their real names, in every model
- ☐ Every model tested by hand before the labels went on
- ☐ Measuring strip placed beside each model
- ☐ Direction arrows drawn for both plates in every model
- ☐ Photo taken from above, and a second photo from a low angle

Every Feature Is a Claim — name the evidence behind each one

Feature I added	Which model it is in	The evidence from my research that supports it

Design changes — what I changed from my Step 5 plan, and why

Think Deeper

What does your model show well, and what does it still get wrong? Name one of each.

TEST · STEP 7

Measure, Test, and Improve

About 20 minutes

Move every model three times and measure each movement. The same input should produce the same motion — that is what makes it a model instead of a lucky accident. Use the same starting and ending marks every time.

The Distance I Am Testing

Using the speed I found in Step 4 and the scale 1 model cm = 1 real km, how far does each plate move in 150,000 years?

Test Log

Model	Trial	What I did	Distance measured (cm)	Same motion as last time?	What I fixed afterward

Check the motion against my data

- ☐ Each part moves in the direction my Step 4 arrows show
- ☐ The motion matches the boundary type: toward, apart, or past
- ☐ I recorded a short video of all my models moving after I improved them

Which result is hardest to see, or easiest to misunderstand — and why?

Push Further

Every model distorts something — speed, thickness, or scale. Name the one your tour distorts most, and say how you know.

PRESENT · STEP 8

Show and Explain Your Plate

About 20 minutes

Plan your explanation in this order. Fill in one line for each link so the chain holds together when you say it out loud.

The Chain I Will Explain			
1. Energy inside Earth	**2. Plate motion**	**3. Boundary type**	**4. Change at the surface**

My opening — my plate's name, the neighbors I picked, and where each model is located

What I Will Say While I Move Each Model — name both real plates every time		
Model	**Boundary type**	**The relative motion I will say out loud while I move that pair**

One distance I measured, and the number of years it stands for	
One limitation — what my model cannot show correctly, and why. Say it yourself instead of waiting for someone to ask.	

After my presentation — two sentences: the clearest part of my boundary tour, and what I would change next time

STEP 8 UPLOAD — the second of only two uploads

Turn in your three-to-four-minute presentation video, your photos of the finished boundary tour from above and from a low angle, your test notes and improvement video from Step 7, and this completed worksheet.