

Changing Sand Stories

Use a tray model and data to connect moving sand to changing land.

S5E1.b "Develop simple interactive models to collect data that illustrate how changes in surface features are/were caused by constructive and/or destructive processes."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the model parts and actions, circle each measurement in the data table, and write D beside a destructive change and C beside a constructive change.

A Riverbank in a Tray

- ① To investigate a changing riverbank, Maya built an interactive model in a shallow tray. She pressed damp sand into a slope and placed a cup at the high end. A small hole in the cup let water flow when she lifted a finger. A ruler measured changes after each run.
- ② For each run, Maya rebuilt the same sand slope and kept the tray angle the same. She changed only the water amount, so her results could be compared fairly. Flowing water carried sand away from the slope, making a channel. When water slowed at the tray bottom, it dropped sand and built a fan-shaped deposit. Her measurements are shown below.

MAYA'S TRAY MODEL DATA

Run	Water Amount	Channel Depth	Fan Length
1	50 mL	3 mm	18 mm
2	100 mL	7 mm	29 mm
3	150 mL	11 mm	41 mm

- ③ In this model, the data show that larger water amounts made both the channel and the deposit larger. The channel is a destructive change because sand was removed. The fan is a constructive change because sand was added in a new place. A model cannot copy every part of a real river, but it can show a cause-and-effect pattern.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What did Maya change from one run to the next?

2 Which two surface features did Maya measure after each run?

3 How much deeper was the channel in Run 3 than in Run 1?

4 How did Maya's model show both a destructive process and a constructive process?

3 YOUR TURN _____ Your own words

Design a different tray model that uses a hand fan to move dry sand. In three panels, show before, during, and after; label one destructive and one constructive change, then write the new-pile length from two trials that differ in fanning time.

PART 1 • READ AND MARK

Underline the model parts and actions, circle each measurement in the data table, and write D beside a destructive change and C beside a constructive change. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What did Maya change from one run to the next?	She changed the amount of water.
2	Which two surface features did Maya measure after each run?	She measured the channel depth and the fan length.
3	How much deeper was the channel in Run 3 than in Run 1?	8 mm deeper.
4	How did Maya's model show both a destructive process and a constructive process?	Flowing water removed sand and made a channel, which was destructive. Slower water dropped sand and built a fan-shaped deposit, which was constructive.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Panel 1: A dry sand hill and ruler sit in a tray. A hand fan is 20 cm from the hill. Panel 2: The fan blows toward the hill for 10 seconds. Panel 3: The hill is lower, and a new pile has formed farther away. Destructive: sand was removed from the hill. Constructive: sand was added to the new pile. Trial 1, 10 seconds: new-pile length 12 mm. Trial 2, 20 seconds: new-pile length 24 mm.

Accept equivalent wording for erosion as a destructive process and deposition as a constructive process. For the open task, accept any workable interactive model with before, during, and after panels, correct labels, and two recorded measurements.