



## LESSON PLAN

**Subject:** Grade 5 Science

**Lesson:** Deeper Currents

**Standard Addressed:**

- Students know that local weather patterns are affected by global factors such as air and water currents like the jet stream and the gulf stream. (NC.5.E.1)

**Objectives:**

- Students will observe how currents in the atmosphere and in the Atlantic impacted historical trade.
- Students will describe how the exchange of hot and cold creates movements like the trade winds or the gulf stream and relate this phenomenon to the demonstration in the video.
- Students will apply knowledge of these factors to predict hypothetical trade routes.

**Materials Needed:**

- A device for watching the “Deeper Currents” video
- The “Deeper Currents” activity sheet
- Crayons or markers
- (Optional) A large clear bowl or tank, food coloring, a kettle, and chilled salt water

**Outline:**

- Students will watch the 10:30 minute (<https://youtu.be/OYq1eJUKaW8>) “Deeper Currents” video. Teacher may pause video at intervals to relate the topics to things learned in class.
- Teacher will review with the class how the exchange of dense cold air and water with less dense warm air and water creates a cycle that drives currents in the atmosphere and the ocean.
- Students may complete the first page of the activity individually or in pairs.
- Teacher will guide students through the second page of the activity.

**Take It Further:**

Recreate the water tank demonstration from the video by prepping salt water in advance and letting it chill in the refrigerator overnight. Color the saltwater blue. Boil some fresh water and color it red. Very slowly and gently pour the hot freshwater into one side of the bowl of cold saltwater. Let the class watch closely to see how the red slowly creeps across and the blue exchanges places with the red. Talk about how if this exchange was continuous it could create a cycle almost like a moving wheel. This is what moves currents.

**Cross-Curriculum Connection:**

Discuss with the class how the movement of the cold saltwater often goes a separate direction from warmer, freshwater currents on top. Relate this to the social themes of the video, how things often look different on the surface level than when you go deeper. Prompt students to write a paragraph response about something in their life that may appear different on the surface than when you take the time for a deeper look. Some students may share their paragraphs with the class and engage in teacher-guided discussion.

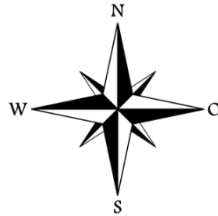




## Deeper Currents

Grade 5 Science

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



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

**Activity 1:**

In the video, we saw a demonstration of how the water separated based on cold saltwater and warm fresh water. Which one of these rose to the top?

*Circle one:*

Cold Saltwater	Warm Freshwater
----------------	-----------------

**Activity 2:**

Because warmer air and water rise, and colder air and water sink, this creates cycles and currents in both the air and in the water.

*Can you think of a famous air current or a famous ocean current that was named in the video?*

\_\_\_\_\_

**Activity 3:**

If a ship uses large sails to catch the wind and sail faster, which current would be most helpful?

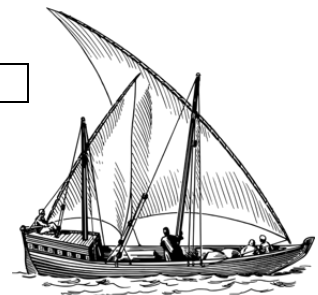
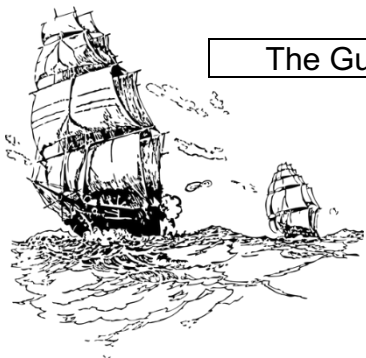
*Circle one:*

The Gulf Stream	The Trade Winds
-----------------	-----------------

If a ship does not use sails, but instead rides the waves, which current would be most helpful?

*Circle one:*

The Gulf Stream	The Jet Stream
-----------------	----------------



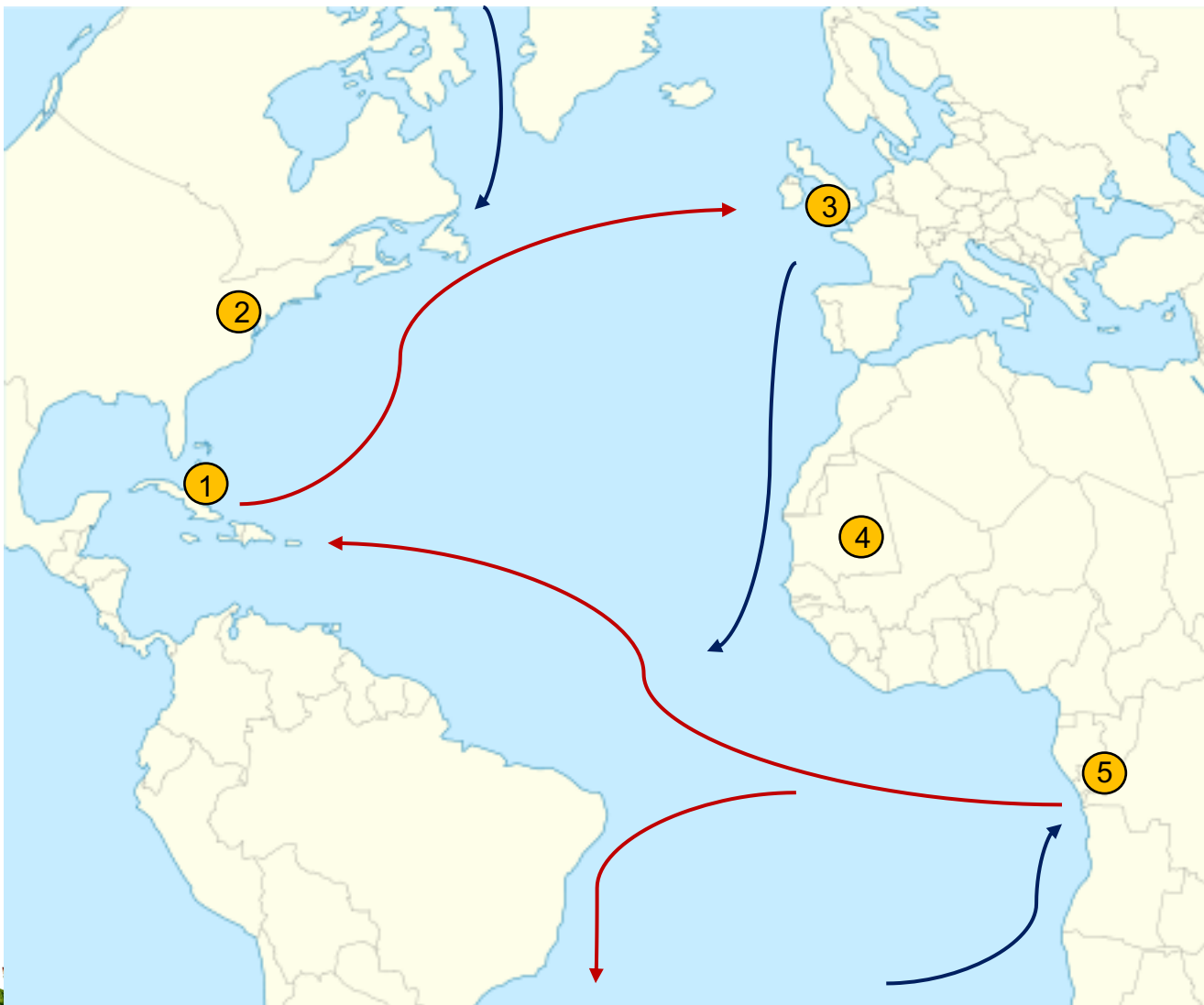


# Deeper Currents

## Activity 4:

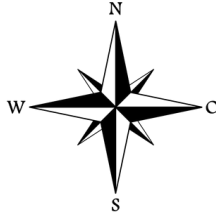
The map below shows the flow of well-known ocean currents. Use markers or crayons to draw shipping paths on the map:

- Draw an arrow for the fastest path along the currents from point 4 to point 1 in the red.
- Draw an arrow for the fastest path along the currents from point 2 to point 4 in orange.
- Draw an arrow for the fastest path along the currents to connect points 5, 2, and 3 in blue.
- Finally draw the **worst** way to connect points 3 and 5 in green.



## Deeper Currents

ANSWER KEY



**Activity 1:**

In the video, we saw a demonstration of how the water separated based on cold saltwater and warm fresh water. Which one of these rose to the top?

Circle one:

Cold Saltwater	Warm Freshwater
----------------	-----------------

**Activity 2:**

Because warmer air and water rise and colder air and water sink, this creates cycles and currents in both the air and in the water.

Can you think of a famous air current or a famous ocean current that was named in the video?

\_\_\_\_\_ *Gulf Stream, Jet Stream, Trade Winds* \_\_\_\_\_

**Activity 3:**

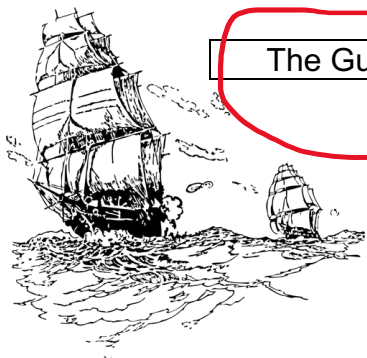
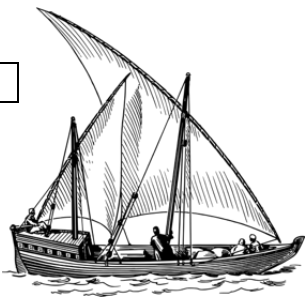
If a ship uses large sails to catch the wind and sail faster, which current would be most helpful?

Circle one:

The Gulf Stream	The Trade Winds
-----------------	-----------------

If a ship does not use sails, but instead rides the waves, which current would be most helpful?

Circle one:

	<table border="1" style="margin: auto;"> <tr> <td style="width: 50%; border: 2px solid red;">The Gulf Stream</td> <td style="width: 50%;">The Jet Stream</td> </tr> </table>	The Gulf Stream	The Jet Stream	
The Gulf Stream	The Jet Stream			

## Deeper Currents

ANSWER KEY

**Activity 4:**

The map below shows the flow of well-known ocean currents. Use markers or crayons to draw shipping paths on the map:

- Draw an arrow for the fastest path along the currents from point 4 to point 1 in the red.
- Draw an arrow for the fastest path along the currents from point 2 to point 4 in orange.
- Draw an arrow for the fastest path along the currents to connect points 5, 2, and 3 in blue.
- Finally draw the **worst** way to connect points 3 and 5 in green.

