

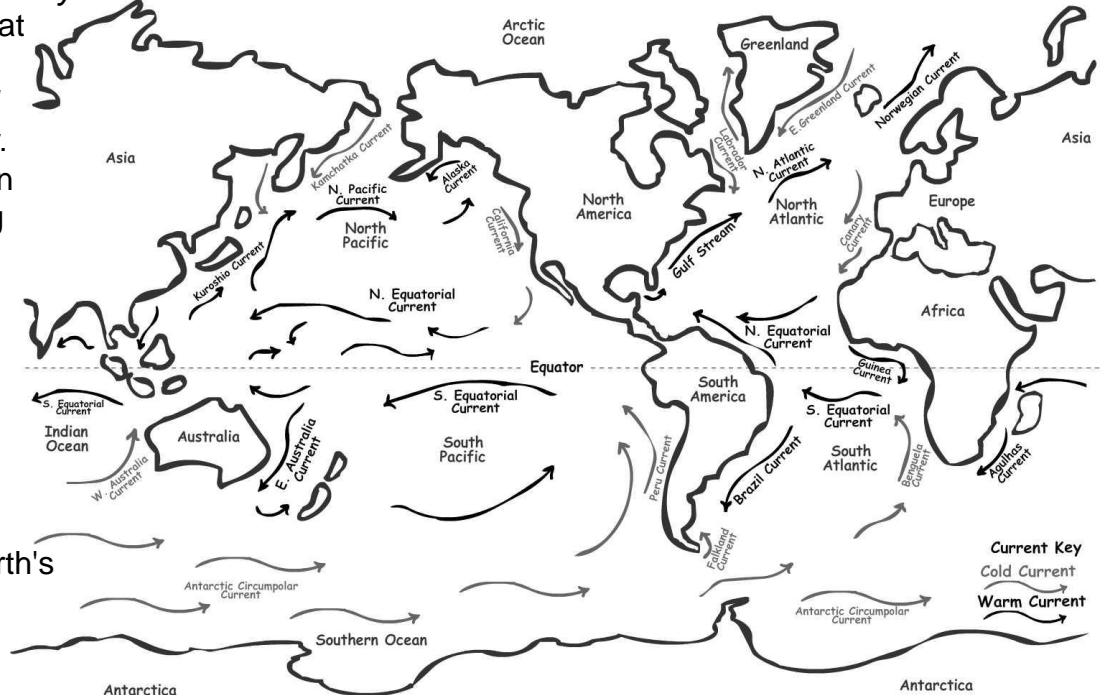
# Ocean Currents: Introduction

Name \_\_\_\_\_

Instructions: Read through the following information and diagram. Then complete the questions below.

Most of the Earth's surface, 70%, is covered by the oceans. These oceans are very important to all life on the planet. The oceans not only contain water, but also influence many parts of the Earth's climate system. Within the oceans, large and small ocean currents transport water and nutrients to all parts of the globe. Ocean currents are continuous directed movement of seawater from one part of the ocean to another. These currents are generated several ways. Atmospheric winds, the Earth's Coriolis Effect, tides, as well as *seawater density* all contribute to the formation and flow of ocean currents.

Ocean currents can flow great distances and create what oceanographers call "*Global Conveyor Belts*" of seawater. These conveyor belts play an important role in determining climate around the earth. Several major climate influencing currents include, the *Gulf Stream*, *Labrador*, *California*, *Kuroshio*, as well as several "*Equatorial*" currents that run along the Earth's equator. All oceanic currents interact with the Earth's atmosphere and biosphere. This interaction is vital to maintaining life on earth.



There are two major types of oceanic currents, *Surface Currents* and *Deep Currents*. Surface currents are driven by wind and global weather patterns. Generally the cool surface currents move from the polar regions toward the equatorial regions, while warm surface currents move in the opposite direction. Deep currents are caused by density and temperature differences in the ocean. This deep ocean circulation is also called "*Thermohaline Circulation*". Although most deep ocean currents are much slower than surface currents, they are very important for marine ecosystems. Many sea organisms rely on the deep oceanic currents to deliver nutrients, food, and to trigger migrations. Currently scientists are studying the possible effects of global warming on changes in oceanic currents. Since ocean currents play an important role in many of Earth's systems, scientists are watching for any changes to better understand currents.

Read the following statements and complete the "Fill-Ins" with information from this page.

- 1- The oceans cover \_\_\_\_\_ of the Earth's surface.
- 2- Ocean currents are generated by Winds, Tides, Coriolis Effect and \_\_\_\_\_.
- 3- Oceanographers call ocean currents \_\_\_\_\_ of sea water.
- 4- The Gulf Stream, Labrador, \_\_\_\_\_ and \_\_\_\_\_ are climate influencing currents.
- 5- All ocean currents interact with the Earth's atmosphere and \_\_\_\_\_.
- 6- The two main types of currents are \_\_\_\_\_ currents and \_\_\_\_\_ currents.
- 7- Surface currents are caused by wind and \_\_\_\_\_ weather patterns.
- 8- Another name for Deep Ocean currents is \_\_\_\_\_ Circulation.

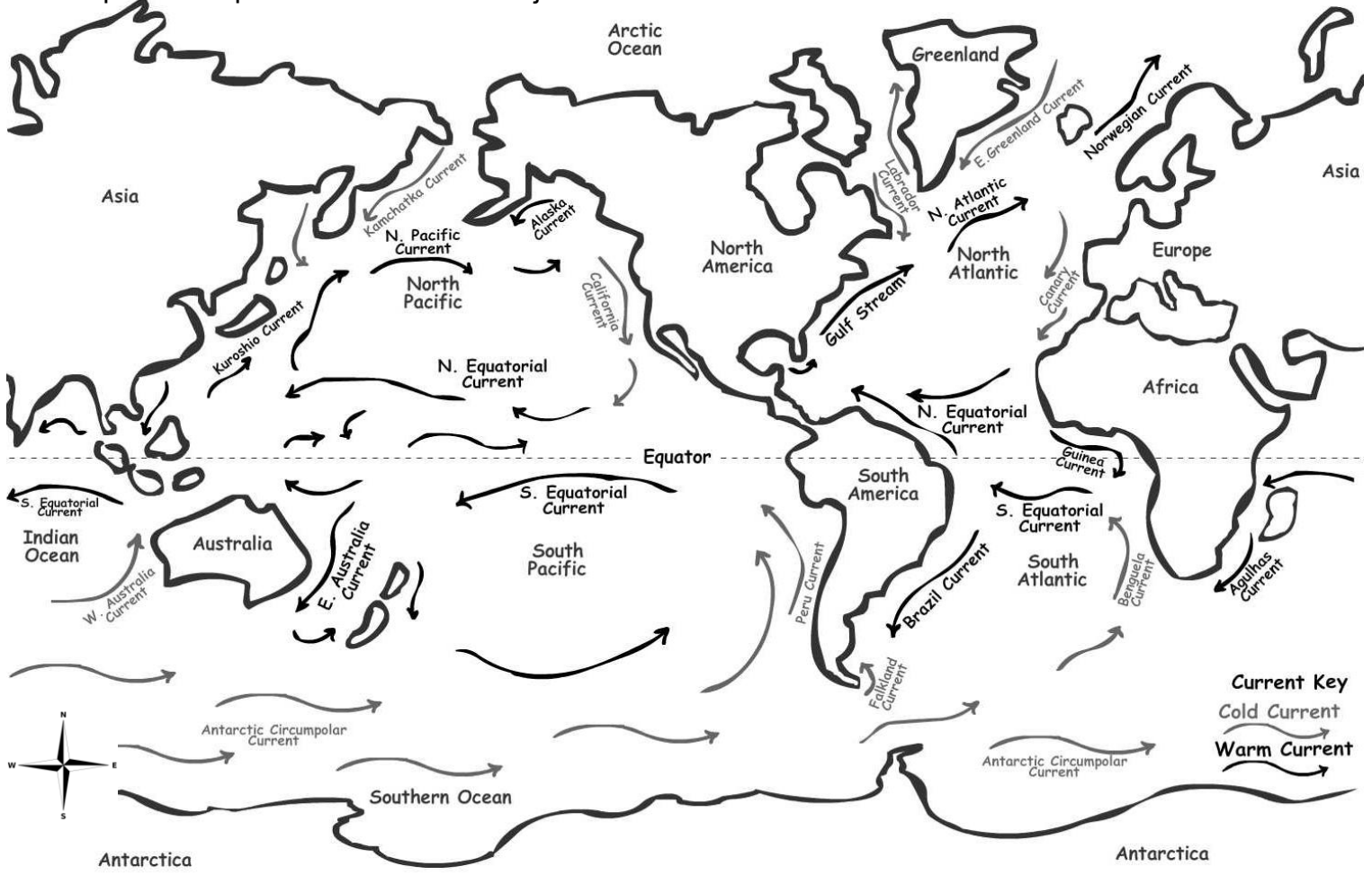
# Ocean Currents: Map Activity

Name \_\_\_\_\_

Instructions: Read through the following information and diagram. Then complete the activities below.

The Earth's oceans are an important part of the earth's climate system. Warm and Cold ocean currents help drive the world's weather and climate. *Surface* currents are caused by winds and global weather patterns, while *Deep* currents are caused by temperature and density differences.

The map below represents the earth's major oceanic currents.



Complete the following map activities.

- 1- Use a red colored pencil and shade all the Warm Ocean Current names and arrows.
- 2- Use a blue colored pencil and shade all the Cold Ocean Current names and arrows.
- 3- Which current has an effect on the east coast of North America? \_\_\_\_\_
- 4- Which current has an effect on the west coast of North America? \_\_\_\_\_
- 5- Which direction do the South Pacific currents rotate?(Circle one)      Clockwise    or    Counterclockwise
- 6- Which direction do the North Pacific currents rotate?(Circle one)      Clockwise    or    Counterclockwise
- 7- Which coast of North America would have warm water?(Circle one)      East    or    West
- 8- Which coast of Australia would have cold water?(Circle one)      East    or    West
- 9- Which coast of South America would have cold water?(Circle one)      East    or    West
- 10- Which current is the largest in all the worlds oceans? \_\_\_\_\_