

Skills Worksheet

CHAPTER 21 SECTION 1 Ocean Currents

/59 pts

Section: Ocean Currents

1. A horizontal movement of water in a well-defined pattern is called

a(n) _____.

2. What are two ways that oceanographers identify ocean currents?

2pts

3. What are the two major categories of ocean currents?

2pts

FACTORS THAT AFFECT SURFACE CURRENTS

_____ 4. Currents that are driven by winds and move horizontally on or near the ocean's surface are called

- a. air currents.
- b. high-pressure areas.
- c. surface currents.
- d. low-pressure areas.

_____ 5. Which of the following factors do NOT control surface currents?

- a. floating debris
- b. air currents
- c. location of the continents
- d. Earth's rotation

_____ 6. All surface currents are affected by

- a. glaciers.
- b. ocean pollution.
- c. winds.
- d. the equator.

7. Explain what causes winds to form.

8. How does wind make water on the ocean's surface move?

Directed Reading *continued*

2pts

- 9.** Two types of global wind belts that affect the flow of ocean surface water are called _____ and _____.
- 10.** Wind belts located just north and south of the equator are called _____.
- 11.** In the Northern Hemisphere, trade winds blow from the _____.
- 12.** In the Southern Hemisphere, trade winds blow from the _____.
- 13.** In both hemispheres, trade winds push currents _____ across the tropical latitudes of all three major oceans.
- 14.** In the Northern Hemisphere, westerlies blow from the _____.
- 15.** In the Southern Hemisphere, westerlies blow from the _____.
- 16.** In the higher latitudes of both hemispheres, westerlies push ocean currents in which direction?

- 17.** Why does a surface current get deflected and divided when it flows against a continent?

- 18.** The curving of the path of oceans and winds due to Earth's rotation is called the _____.
- 19.** Huge circles of moving water caused by wind belts and the Coriolis effect are called _____.
- 20.** In which direction does the water flow in gyres of the Northern Hemisphere?

- 21.** In which direction does the water flow in gyres of the Southern Hemisphere?

Directed Reading *continued*

MAJOR SURFACE CURRENTS

In the space provided, write the letter of the description that best matches the term or phrase.

- | | |
|--|---|
| _____ 22. North Atlantic Current | a. the world's largest current |
| _____ 23. Canary Current | b. the Pacific equivalent of the Gulf Stream |
| _____ 24. Antarctic Circumpolar Current | c. a current that keeps the coast of Norway ice-free |
| _____ 25. California Current | d. a cool, southward current that flows along the California coast |
| _____ 26. Gulf Stream | e. a cool, southward current split off from the North Atlantic Current |
| _____ 27. West Wind Drift | f. an eastward-flowing current lying between equatorial currents |
| _____ 28. Equatorial Countercurrent | g. a swift, warm current in the North Atlantic |
| _____ 29. Kuroshio Current | h. a vast, slow-moving warm current |
| _____ 30. Norway Current | i. a cold current that flows south in the North Atlantic and joins the Gulf Stream |
| _____ 31. equatorial currents | j. warm currents in the Atlantic, Pacific, and Indian Oceans that move westward |
| _____ 32. Labrador Current | k. a current also known as the Antarctic Circumpolar Current |

33. A current that is uninterrupted by any continents and crosses all three major oceans is the _____.

34. Currents in the northern Indian Ocean are governed by _____, which are winds whose directions change seasonally.

35. The Gulf Stream, the North Atlantic Current, the Canary Current, and the North Equatorial Current form the _____.

36. A vast area of calm, warm water at the center of the North Atlantic Gyre is called the _____.

Directed Reading *continued*

37. Name two things you would find floating on the surface of the Sargasso Sea.

2pts

38. The pattern of currents in the North Pacific is similar to that in the

39. The Kuroshio Current flows toward North America as the

_____, and then southward as the

DEEP CURRENTS

40. A streamlike movement of ocean water far below the surface is called

a(n) _____.

41. Deep currents move much more _____ than ocean currents.

42. What causes deep currents to form?

43. What causes the movement of polar waters?

44. Two factors that determine the density of water are temperature

and _____.

45. Explain why water in polar regions has high salinity.

46. Where is the world's densest and coldest ocean water?

Directed Reading *continued*

47. A deep current of dense, cold water that moves northward to a latitude of about 40°N is called the _____

48. Where does the deep current that moves southward under the northward-flowing Gulf Stream form?

49. What causes the salinity of water in the Mediterranean Sea to increase?

50. To where does the denser, highly saline water of the Mediterranean Sea flow?

51. A strong current caused by an underwater landslide is called a(n) _____.

52. Explain how a turbidity current forms.

53. How does the water in a turbidity current appear compared with the surrounding water?

54. Why does a turbidity current move beneath the clear water that surrounds it?

Directed Reading

SECTION: OCEAN CURRENTS

1. current
2. by studying the physical and chemical characteristics of the ocean water, and by mapping the paths of debris that is dumped or washed overboard from ships
3. ocean currents and deep currents
4. C
5. A
6. C
7. Winds are caused by the uneven heating of the atmosphere. Variations in air temperature lead to variations in air density and pressure. Colder, denser air sinks and forms high-pressure areas. The movement of air from high-pressure to lower-pressure areas causes wind.
8. Kinetic energy is transferred from the air to the ocean.
9. trade winds, westerlies
10. trade winds
11. northeast
12. southeast
13. westward
14. southwest
15. northwest
16. eastward
17. because continents act as barriers to surface currents
18. Coriolis effect
19. gyres
20. to the right, or clockwise
21. to the left, or counterclockwise
22. H
23. E
24. A
25. D
26. G
27. K
28. F
29. B
30. C
31. J
32. I
33. Antarctic Circumpolar Current
34. monsoons
35. North Atlantic Gyre
36. Sargasso Sea
37. brown seaweed and debris
38. North Atlantic

39. North Atlantic, California Current
40. deep current
41. slowly
42. Cold, dense water of the polar regions sinks and flows beneath warmer ocean water.
43. When water cools, it contracts and become denser. Warm water expands, and because it is less dense it rises above the cold water.
44. salinity
45. There is a large amount of water frozen in icebergs and sea ice in these regions. When water freezes, the salt in the water does not freeze. The high salt content in this unfrozen water makes the water denser.
46. off the coast of Antarctica
47. Antarctic Bottom Water
48. in the North Atlantic, south of Greenland
49. An increase in evaporation and a decrease in rainfall each summer cause the Mediterranean Sea's salinity to increase.
50. It sinks and flows through the strait of Gibraltar into the Atlantic.
51. turbidity current
52. A turbidity current forms when large masses of sediment that have accumulated along a continent shelf or continental slope suddenly break loose and slide downhill. The landslide mixes the nearby water with sediment.
53. The water in a turbidity current appears denser and cloudier.
54. A turbidity current moves beneath the clear water because the turbidity current contains sediment and is therefore denser.

SECTION: OCEAN WAVES

1. E
2. D
3. B
4. C
5. F
6. A
7. wave speed = wavelength ÷ wave period
8. wind
9. friction between the moving air and water