

# ESA Study Guide Year 10 Science

## Chapter 13: The hydrosphere Then and now

Questions from page 168 of *ESA Study Guide Year 10 Science*

### Understanding

1. Why is water so important? \_\_\_\_\_
2. What is an aqueduct? \_\_\_\_\_  
\_\_\_\_\_
3. Describe one method by which clouds can be made to produce rain.  
\_\_\_\_\_  
\_\_\_\_\_

### Thinking

If clouds can be made to produce rain, can they also be made to produce snow?

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### Contributing

Most of Earth's water is sea water, too salty to drink. Fresh water can be produced from salt water in a number of different ways. Research one way and draw a simple diagram to show how the method works.

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Answers (except for 'Contributing') are provided on pages 317 and 318 of *ESA Study Guide Year 10 Science*

# ESA Study Guide Year 10 Science

## Chapter 13: The hydrosphere Features of water

Questions from page 171 of *ESA Study Guide Year 10 Science*

### Understanding

1. What percentage of water on Earth is fresh water? \_\_\_\_\_
2. In what places on planet Earth will you find water as a:
  - a. gas? \_\_\_\_\_
  - b. liquid? \_\_\_\_\_
  - c. solid? \_\_\_\_\_
3. Describe what is meant by 'surface tension'.  
\_\_\_\_\_  
\_\_\_\_\_

4. Explain the statement: 'Water is a universal solvent'.  
\_\_\_\_\_  
\_\_\_\_\_

### Thinking

Why does a cup of hot black coffee take longer to cool down than a similar-sized cup of hot milk (starting at the same temperature)?

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### Contributing

Decide whether you agree or disagree with the following statement, and justify your response.

'In New Zealand, everyone should have to pay for the water they use'.

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Answers (except for 'Contributing') are provided on page 318 of *ESA Study Guide Year 10 Science*

# ESA Study Guide Year 10 Science

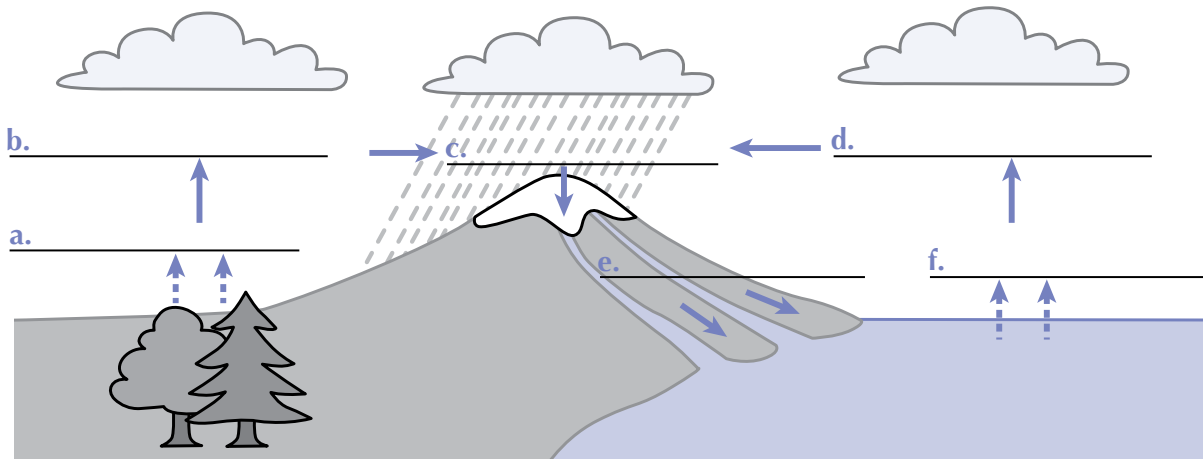
## Chapter 13: The hydrosphere The water cycle

Questions from pages 172, 173 of *ESA Study Guide Year 10 Science*

### Understanding

1. Use the word list to add the labels to the following diagram. One of the words is used twice.

condensation    evaporation    precipitation    runoff    transpiration



2. What is 'sublimation', with regard to water?

### Thinking

Why is sea water salty?

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### Contributing

1. Find out which is the saltiest sea in the world. How did it become so salty?

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2. Is it easier to float in the sea or in a lake? Give reasons.

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Answers (except for 'Contributing') are provided on page 318 of *ESA Study Guide Year 10 Science*

# ESA Study Guide Year 10 Science

## Chapter 13: The hydrosphere Ocean circulation

Questions from pages 175–177 of *ESA Study Guide Year 10 Science*

### Understanding

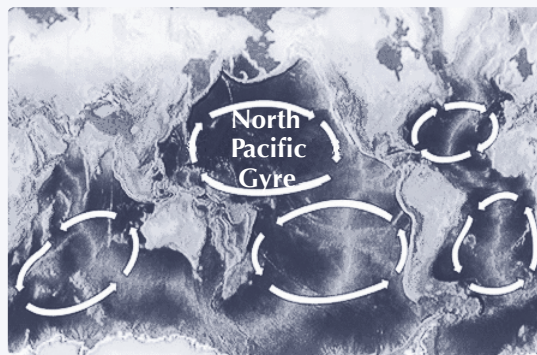
1. Why might our Earth be called 'Ocean' instead of 'Earth'? \_\_\_\_\_  
\_\_\_\_\_
2. What are the two types of ocean current?  
\_\_\_\_\_ and \_\_\_\_\_
3. How does the heating effect of the Sun form surface currents?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. What are 'gyres'?  
\_\_\_\_\_  
\_\_\_\_\_
5. a. What two factors affect the density of sea water?  
\_\_\_\_\_ and \_\_\_\_\_  
b. What type of water will sink? \_\_\_\_\_
6. Where in the Southern Hemisphere is cold dense water formed?  
\_\_\_\_\_

### Thinking

Read the following article and then answer the question that follows.

#### The Giant Rubbish Dump

There are massive floating rubbish patches in the Pacific Ocean. The rubbish is killing marine and bird life and releasing poisons that can enter the human food chain. One plastic patch is estimated to weigh over 3 million tonnes and covers an area nearly the size of Australia.



Clean-up is nearly impossible because there is too much rubbish, and the ocean is too big. The rubbish includes footballs, fridges, plastic containers, televisions, light bulbs, toys, carrier bags and much more, and it comes from ships, oil platforms and land. The rubbish collects because of the ocean currents that circle in this remote area. The regular ocean currents, called the North Pacific gyre, swirl the rubbish into the middle.

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Plastic is accountable for the deaths of more than a million seabirds and more than 100,000 marine mammals such as whales, dolphins and seals every year.

The photo shows rubbish washed up on a beach in Hawaii.



## Question

Explain how rubbish dropped from boats or washed off the land is ending up in the middle of the Pacific Ocean.

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## Contributing

Suggest the ways the amount of plastic rubbish could be reduced. What can each person do about this problem?

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