Year 13 Science: Atmospheric circulation: cells, wind belts and the westerlies

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. Find the Coriolis parameter f at 30° S.

2. Which wind belt is New Zealand in, and which direction does it blow from?

3. Which way does air circulate around a low in the Southern Hemisphere?

4. Air at 20 °C at sea level crosses a 1500 m range, with cloud forming from 500 m. Using 9.8 °C per km dry and 6.0 °C per km in cloud, find its temperature back at sea level on the other side.

5. Why are winds light in the doldrums?

Exam-style question: deserts and trade winds

Central Australia, at about 25° to 30° S, is one of the driest places on Earth, while northern Australia has a wet season of heavy tropical rain.

6. Describe where air rises and sinks in the Hadley cell.

7. Explain why the region near 30° S is so dry.

8. Explain why the surface trade winds in the Southern Hemisphere blow from the south-east.

9. Explain why northern New Zealand often has long settled spells in summer.

Fix the mistake

10. Correct this statement: "The westerlies blow towards the west."

11. Correct this statement: "In New Zealand air goes clockwise around a high."

12. Correct this statement: "Air sinks at 30° because it has reached the edge of the cell."

13. Correct this statement: "The nor'wester is hot because it comes from Australia."