Year 13 Science: Speciation and reproductive isolating mechanisms

Name: _____ Date: _____

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

Practice

1. A zebra (2n = 44) and a horse (2n = 64) produce a zorse. How many chromosomes does the zorse have?

2. Two frog species breed in the same ponds, one in early spring and the other in summer. Name the isolating mechanism.

3. Two plant species with 2n = 14 and 2n = 18 hybridise. Give the hybrid's chromosome number, and its number after doubling.

4. Rowi and tokoeka were separated by glaciers into different forest refuges. Which mode of speciation is this?

5. A mule is healthy but cannot breed. Is this a prezygotic or postzygotic mechanism, and which one?

Exam-style question: cichlids in a crater lake

Lake Apoyo in Nicaragua is a small, isolated crater lake that formed less than about 23 000 years ago. It was colonised by the Midas cichlid, a deep-bodied fish that feeds near the lake bottom. A second species, the arrow cichlid, now also lives there: it is slender, feeds in open water, and mates only with other arrow cichlids. DNA shows the arrow cichlid evolved from Midas cichlids inside the lake.

6. Define speciation and a reproductive isolating mechanism.

7. Name two isolating mechanisms that could keep the two cichlids apart, and explain how each reduces gene flow.

8. Explain why this is sympatric rather than allopatric speciation.

9. Discuss the role of natural selection in the split, and why it happened quickly.

Fix the mistake

10. Correct this statement: "The geographic barrier is the reason they are now different species."

11. Correct this statement: "A mule is an example of hybrid inviability."

12. Correct this statement: "Geographic isolation is a postzygotic mechanism because the animals never meet."

13. Correct this statement: "A polyploid plant evolves slowly over many generations."