SECTION 11.6  PATTERNS IN EVOLUTION
Study Guide

KEY CONCEPT
Evolution occurs in patterns.

VOCABULARY
- convergent evolution
- coevolution
- punctuated equilibrium
- divergent evolution
- extinction
- adaptive radiation

MAIN IDEA:  Evolution through natural selection is not random.
Fill in the Main Idea in the center of the Main Idea Web below. Then take notes based on the phrases in the surrounding boxes.

1. Main idea:

2. Natural selection has direction:

3. Its effects are cumulative:

4. Convergent evolution:

5. Divergent evolution:

MAIN IDEA:  Species can shape each other over time.
In the table below, take notes about two ways in which species can coevolve.

<table>
<thead>
<tr>
<th>Type of Coevolution</th>
<th>How It Works</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. beneficial relationship</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. evolutionary arms race</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
MAIN IDEA: Species can become extinct.

In the table below, take notes about background and mass extinctions.

<table>
<thead>
<tr>
<th>Type of Extinction</th>
<th>Possible Causes</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. background extinction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. mass extinction</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MAIN IDEA: Speciation often occurs in patterns.

10. The theory of punctuated equilibrium states that relatively brief episodes of ________________ are followed by long periods of little evolutionary ________________.

11. Adaptive radiation is a process in which one ancestral species diversifies into many ________________ species.

12. Adaptive radiation occurred after the extinction of the dinosaurs, because they left a wide range of ________________ into which mammals could diversify.

Vocabulary Check

13. Converge means “to come together” and diverge means “to branch out.” How do these meanings apply to the terms convergent and divergent evolution?

14. The prefix co- means “together.” How does this meaning apply to the term coevolution?

15. Punctuate means “to interrupt periodically.” How does this meaning apply to the term punctuated equilibrium?