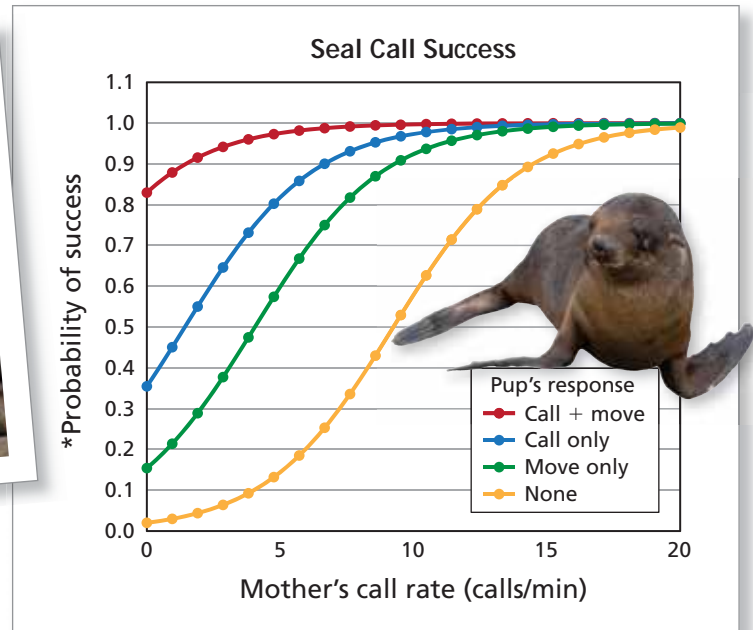


**EXAMPLE 6** Comparing Logistic Patterns

The graph shows four different strategies used by mother and baby fur seals to locate each other after the mother returns from hunting. Discuss the strategies. Which is more effective?



After a fur seal pup is born, its mother nurses it for about 4 months. During this time, the mother makes frequent trips to sea to forage for food. Each time a mother returns from hunting, she has to locate her pup in the colony, which can have thousands of baby and adult seals.



*Probability is discussed in Chapter 8.*

**SOLUTION**

Here are some general observations about the graph.

1. In each strategy, the mother has more success locating her pup when she increases her bark rate per minute.
2. As the bark rate increases, the probability of success increases logistically.
3. If the mother calls at a rate of 20 barks per minute, she is almost certain to locate her pup, regardless of the pup's response.

Here are some observations relative to the pup's response.

- **The pup calls and moves.** This is the best strategy for the pup. By calling and moving, there is a good chance that its mother will find it.
- **The pup only calls.** This is the second-best strategy for the pup. By calling, there is still a good chance that its mother can hear it through the noise of the colony.
- **The pup only moves.** This is not a good strategy for the pup. If its mother is calling at the rate of only 5 barks per minute, there is only a 60% chance that its mother will find it.
- **The pup does nothing.** This is the worst strategy for the pup. A pup who is too weak to call or move does not have a good chance of being found.

 **Checkpoint**

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The above graph applies each time the mother goes to sea for food. Explain how the pup's chance for survival changes with multiple trips by the mother.