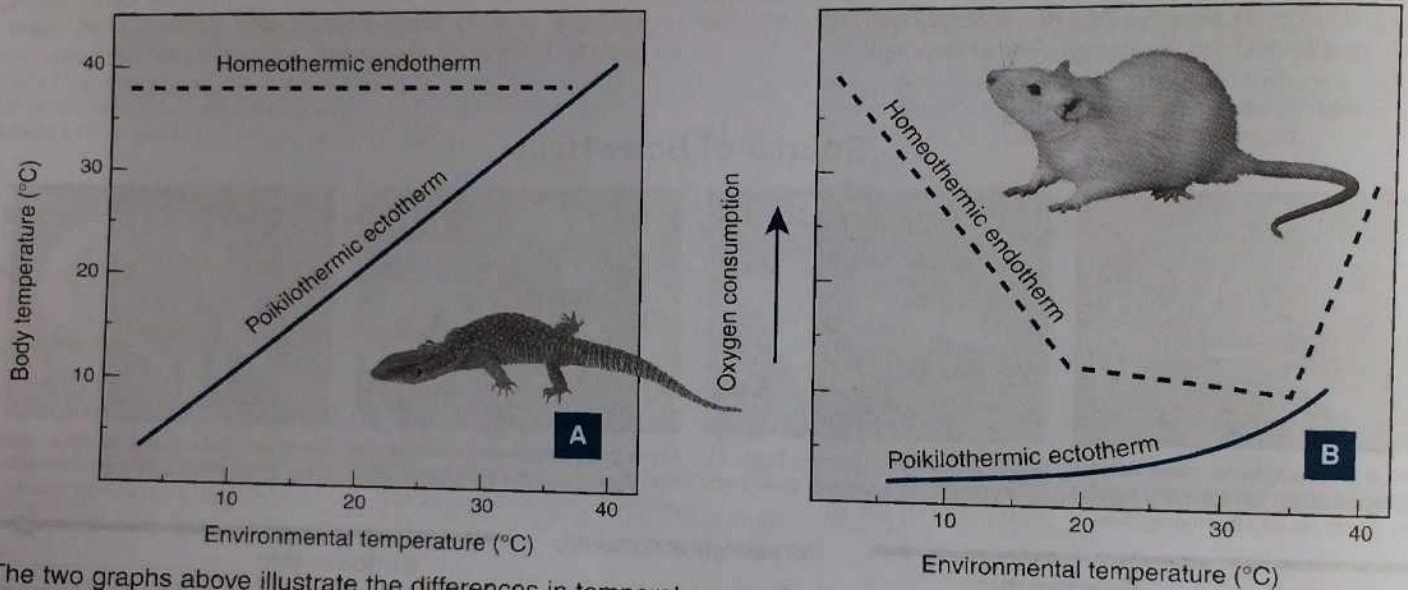


- (a) Explain what is meant by a **homeothermic endotherm**:

(b) Explain why the term **poikilotherm** is not necessarily a good term for classifying many terrestrial lizards and snakes:
- Ectotherms** will often maintain high, relatively constant body temperatures for periods in spite of environmental fluctuations, yet they also tolerate marked declines in body temperature to levels lower than are tolerated by endotherms.

(a) Describe the advantages of letting body temperature fluctuate with the environment (particularly at low temperature):

(b) Suggest why ectothermy is regarded as an adaptation to low or variable food supplies:
- Some **endotherms** do not always maintain a high body temperature. Some, such as small rodents, allow their body temperatures to fall during **hibernation**. Explain the advantage of this behavior:



- The two graphs above illustrate the differences in temperature regulation between a homeothermic endotherm and a poikilothermic ectotherm (such as a fish). Graph A shows change in body temperature with environmental temperature. Graph B shows change in oxygen consumption with environmental temperature. Use the graphs to answer the following:

(a) Explain how ectotherms and endotherms differ in their response to changes in environmental temperature (graph A):

(b) Explain why a poikilothermic ectotherm (no behavioral regulation of temperature) would be limited to environments where temperatures were below about 40°C:

(c) In graph B, state the optimum temperature range for an endotherm:

(d) For an endotherm, the energetic costs of temperature regulation (as measured by oxygen consumption) increase markedly below about 15°C and above 35°C. Explain why this is the case:

(e) For an ectotherm (Graph B), energy costs increase steadily as environmental temperature increases. Explain why: