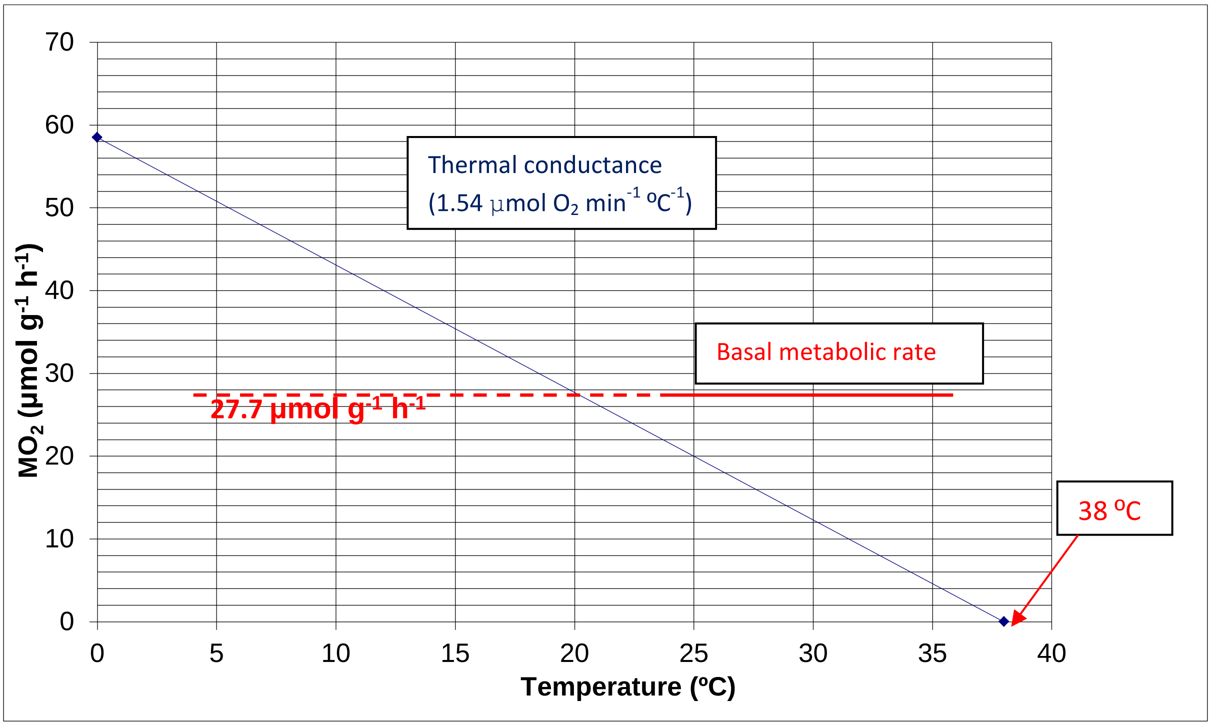
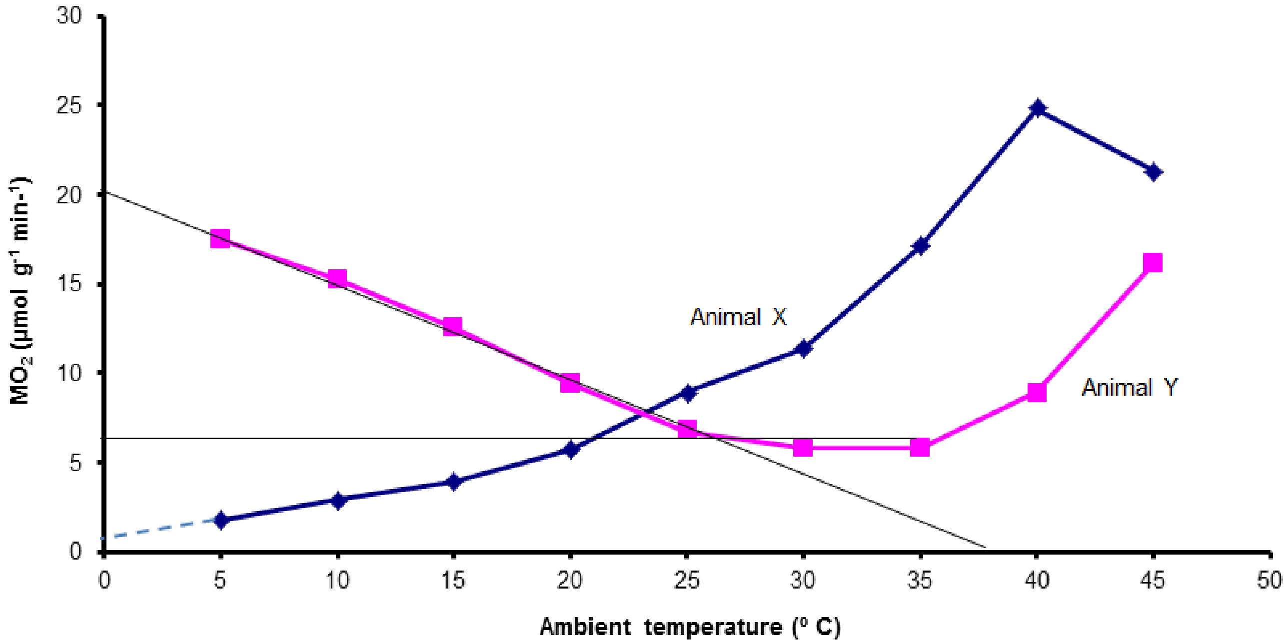
Chapter 10

Question 10.2

Draw a line with a slope of 1.54 µmol O_2 min^{-1} $^oC^{-1}$ (the thermal conductance of the animal) and meeting the *x* axis at 38 ºC (the animal's body temperature). Draw a horizontal line representing 27.7 µmol O_2 min^{-1} (the animal's basal metabolic rate). This line intersects the thermal conductance line at the animal's lower critical temperature and delimits the lower end of the thermoneutral zone. **Thus, the animal would not be in its thermoneutral zone at 13 ºC**



Question 10.3



a) Animal X is the ectotherm and Y is the endotherm

b) The lower critical temperature for animal Y is **25 ºC**, as this is where the slope of the line markedly increases

c) Body temperature of the endotherm is approximately **37.5 ºC**, as shown by the point at which the thermal conductance line intersects the *x* axis.

d) The basal metabolic rate (BMR) of the other endotherm is **lower** than that of animal Y, as shown by extrapolating the horizontal line from the thermoneutral zone.

e) Animal Y is **smaller** than the one referred to in (d)

f) Rates of oxygen uptake at 0 ºC are approximately **1 µmol g^{-1} min^{-1}** in animal X and **20 µmol g^{-1} min^{-1}** in animal Y