3.18 - land & sea have very different specific heat capacities
- assuming roughly the same rate of energy transfer in to or out of them, the sea will change temperature more slowly due to its higher specific heat capacity
- the same Q causes a smaller ΔT in water

3.19 $Q = 0.145 \times 4180 \times 80 + 0.215 \times 670 \times 80$
$= 60012\ J$
$6.00 \times 10^4\ J$

3.20 Heat lost = Heat gained
$0.8 \times \cancel{4180} \times 1 = 0.1 \times 320 \times 87$
?
$c_{soup} = 3480\ J\ kg^{-1}\ K^{-1}$

3.21 Heat lost = Heat gained
$0.185 \times 4180 \times (85 - T_f) = 0.035 \times 4180 \times (T_f - 18)$
$65730.5 - 773.3 T_f = 146.3 T_f - 2633.4$
$68363.9 = 919.6 T_f$
$T_f = 74.3°C$

3.22 $Q = 0.35 \times 10000 \times 60 \times 60 = 12600000\ J$
$m = 1300 \times 60 = 78000\ kg$
$\Delta T = \frac{12600000}{78000 \times 4180}$
$= 0.0386°C$

3.23 $Q = 0.65 \times E$

$0.65E = 5.25 \times 445 \times 84 + 1.55 \times 4180 \times 84$

$E = 1139201.538\ J$

$1.14 \times 10^6\ J$

$1.14\ MJ$

3.24 0.85 Heat lost = Heat gained

$0.85 \times m \times 4180 \times 30.3 = 40 \times 4180 \times 28.5$

$m = 44.3\ L$

$m = 44.3\ kg$