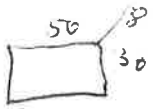
11.8, 11.9
11.11, 11.12

11.8



	1/R	Σ U_i A_i
ceiling	$(1500)(\frac{1}{30})$ =	50
floor	$(1500)(\frac{1}{5})$ =	300
window	$500(\frac{1}{3})$ =	167
wall	$800 + 480 - 500 = (780)(\frac{1}{13})$ =	60

a1) **577 BTU/°F hr**

a2) $Q/yr = (577)(8000\ \frac{dg}{y})\ \frac{24h}{d}$

$= 1.1 \times 10^8$ BTU/y

$= 1.1 \times 10^8\ \frac{\text{Therm}}{10^5 \text{BTU}}$

= 1100 therm/yr

b) Thermos

ceiling	$1500 \times \frac{1}{30}$ =	50
floor	$1500 \times \frac{1}{7}$ =	214
window	210 (0.45) =	94.5
wall (1280 − 210)	$(1070)\ \frac{1}{19}$ =	56

14% × 1500 =

b1) **415.5 BTU/°F hr**

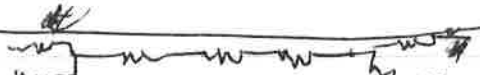
b2) $Q/y = (415.5)(8000)(24)$

$= 8 \times 10^7$ BTU

= 800 therm/yr

11.9

a)



RT .4 + 11 + 2(.45) + .4 = 12.7

= 0.4 each for the pair

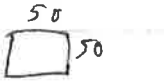
RI for Conv & Rad each.

b) $3^* \times 6.3 = 18.9$

20.2

11.11

50' wall $(4 \times 2500) = 10000 - 2000 = 8000(\frac{1}{19}) = 420$



F	2500	$(\frac{1}{10})$	250
C	2500	$(\frac{1}{30})$	81
Wind	(.16)(2500)(5) =	2000 (1) =	2000

2751 BTU/°FH

50' per Vol. $\frac{2751\ \text{BTU/°FH}}{(2500)(50)} = 0.022\ \frac{\text{BTU}}{(\text{ft}^3)\text{h °F}}$

100' wall $40{,}000 - 8000(\frac{1}{19})$

F	10,000	$(\frac{1}{10})$ = 1000
C	10,000	$(\frac{1}{30})$ = 333
Wind	(.16) 50,000 (1) =	8000

11,017 BTU/°F

100' per. Vol $= \frac{11{,}017}{10{,}000 \times 100} = 0.011\ \frac{\text{BTU}}{\text{ft}^2\text{h °F}}$

Also now get lots more Solar Gain and 100 W/person Int heat

11.12

How we "do" = (6hr)(65 - -20) = 510

12 (65) = 780

6 (65 - -10) = 450

1740 dhours

÷24 72.5 d days