EXERCISE 1

The thickness of the brick is now $32mm$

$R_{TOTAL} = Ri + Rf + Rp1 + R_{TOTAL\ PARALLEL} + Rp2 + Ro$

- $\frac{1}{R_{TOTAL\ PARALLEL}} = \frac{1}{Rpc1} + \frac{1}{Rb} + \frac{1}{Rpc2}$

- Rpc1= Rpc2= $\frac{L}{KA} = \frac{0,32}{0,22*0,015} = 96,97\ °C/W$
- Rb= $\frac{L}{KA} = \frac{0,32}{0,72*0,22} = 2,02°C/W$
- $\frac{1}{R_{TOTAL\ PARALLEL}} = \frac{1}{96,97} + \frac{1}{2,02} + \frac{1}{96,97}$

  $R_{TOTAL\ PARALLEL} = 1,94\ °C/W$

- Ri= $\frac{1}{hA}$=0,4 $°C/W$
- Rf= 4,62 ° $\frac{C}{W}$
- Rp1=Rp2= 0,36 ° $\frac{C}{W}$
- Ro= 0,1

$R_{TOTAL} = 0,4 + 4,62 + 0,36 + 1,94 + 0,36 + 0,1 = 7,78\ °C/W$

$\dot{Q} = \frac{\Delta T}{R_{Tot}} = \frac{30}{7,78} = 3,85W$

EXERCISE 2

	Wood	Insulation
outside air	0.03	0.03
wood bevel (13mm)	0.14	0.14
Plywood	0.11	0.11
Urethane Rigi Foam (90mm)	no	0.98*90/25= 3,53

Wood Stud	0.63	no
Gypsum Board	0.079	0.079
Inside air	0.12	0.12

Rwood=0,03+0.14+0,11+0,63+0,079+0,12= 1,11

Rinsulation= 0,03+0,14+0,11+3,53+0,079+0,12= 4,009