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Task 1: You should complete the modified example of simplified wall calculations that you went through in the assignment of week 3 and find the total heat transfer through wall.

	wood	insulation
Outside Air	0.03	0.03
Wood bevel lapped siding 13mm x 200 mm	0.14	0.14
Plywood 13mm	0.011	0.011
Urethane rigid foam 90 mm	NO	$0.98 \times 90 / 25 = 3.528$
Wood stud 90 mm	0.63	NO
Plaster gypsum board 13mm	0.079	0.079
Inside surface0	0.12	0.12
R value	1.01	3.9

$$U_{\text{wood}} = \frac{1}{R'_{\text{wood}}}$$

$$U_{\text{wood}} = \frac{1}{1.01} = 0.99 \frac{\text{W}}{\text{m}^2 \text{ } ^\circ\text{C}}$$

$$U_{\text{ins}} = \frac{1}{R'_{\text{ins}}}$$

$$U_{\text{ins}} = \frac{1}{3.9} = 0.256 \frac{\text{W}}{\text{m}^2 \text{ } ^\circ\text{C}}$$

$$U_{\text{tot}} = 0.25 * U_{\text{wood}} + 0.75 * U_{\text{ins}}$$

$$U_{\text{tot}} = 0.25 * 0.99 + 0.75 * 0.256$$

$$U_{\text{tot}} = 0.4395 \frac{\text{W}}{\text{m}^2 \text{ } ^\circ\text{C}}$$

$$Q_{\text{tot}} = U_{\text{tot}} * A_{\text{tot}} * \Delta T$$

$$Q_{\text{tot}} = 0.4395 * 100 * 24 = 1,054.8 \text{ W}$$

Task 2: Write a summary of what you have learned in this session about radiation and radiative heat transfer.

Radiation is the transmittion of energy in the form of waves through space.

Thermal radiation allows the heat transfer by energy transitions of molecules,

atoms and electrons. Everything which surround us emmits thermal radiation.

Light is also a form of electromagnetic radiation, which can be seen by the human eye. Light energy travels in the form of waves.

The sun is the principal light source and this electromagnetic radiation is called solar radiation.

More less the 12% of solar radiation is in the ultraviolet range. The ozone layer absorbs most of the ultraviolet radiation.

A blackbody emits the maximum amount of radiation by a surface at a given temperature. A black body is a perfect emitter and absorber of radiation.