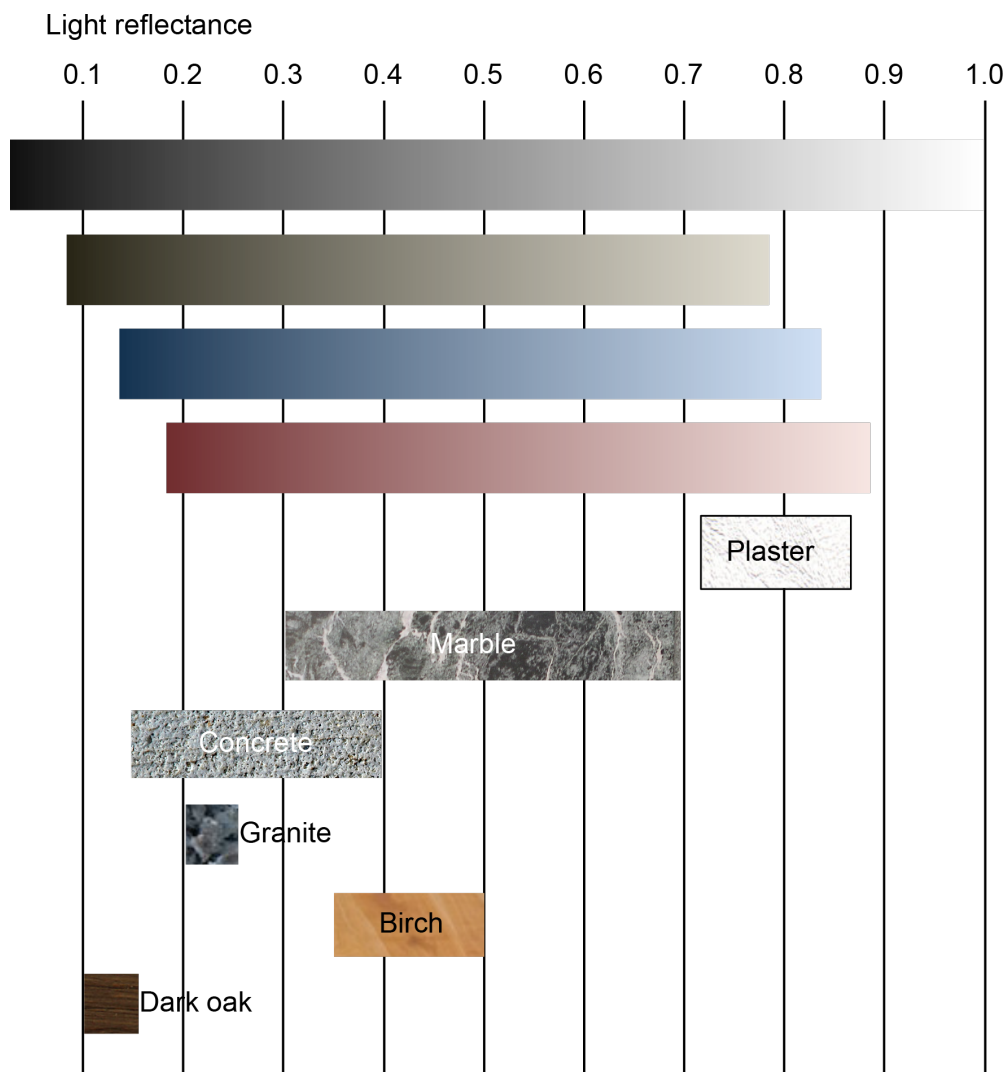


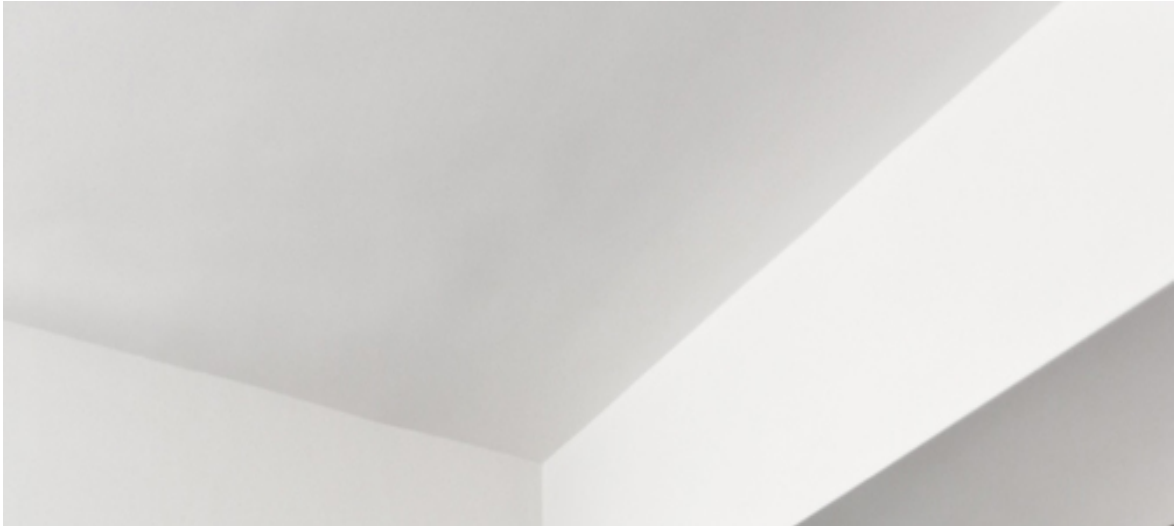
DAYLIGHT FACTOR

Task 2 – Internal reflection of light, NOT neglecting furniture

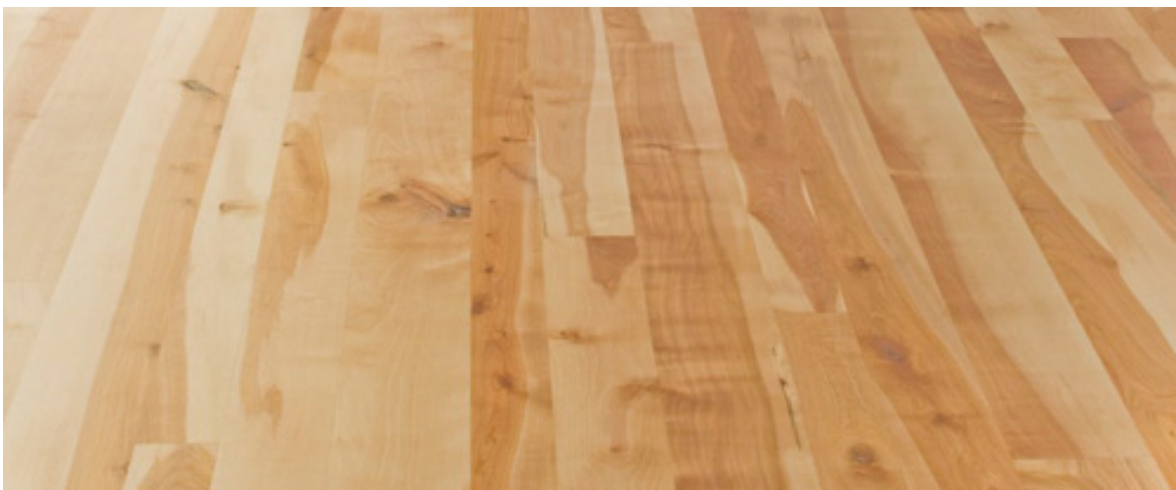
Daylight transmitted through the window reaches the internal surfaces (ceiling, floor, wall, window), and only a proportion of that is reflected back to the indoor space and lit the working plane. The amount of light being reflected depends on the light reflectance of the surface, and some typical values for different colours paint and materials are listed below:



Ceiling usually has a bright finish and the common range of reflectance is 0.7-0.8, we will assume 0.7 for the task.



A wider range of floor finishes can be found in buildings and we will select 0.5 (birch) for the task.

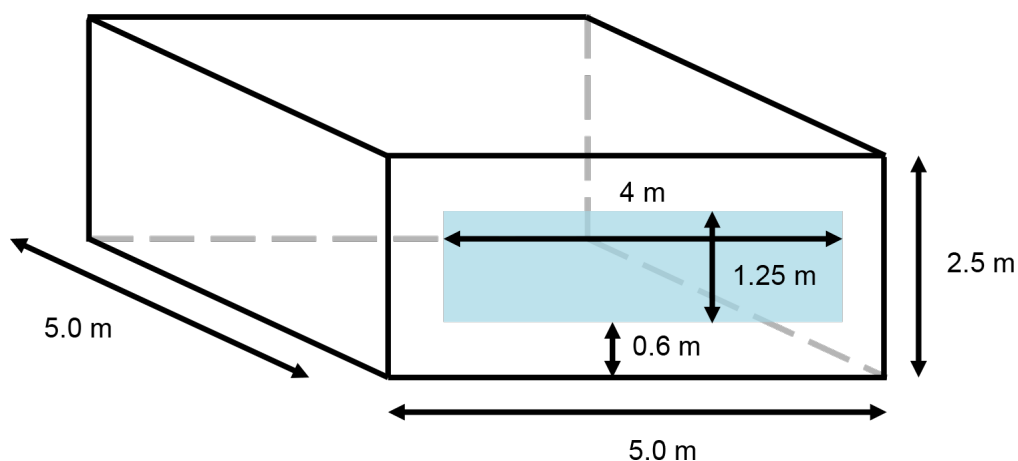


Light to and from the walls is more likely blocked by internal obstructions (e.g. furniture), and thus light reflection with the walls should consider the obstructions to more closely represent real internal environment. Assuming the obstructions have

an average reflectance of 0.5 and the percentage of wall area they block lies between 30% - 70%, the average wall reflectance with various finishes (with obstructions) can have the following values, and we will pick the highlighted range for the task.

Average wall reflectance (with obstruction)				
Percentage of area blocked by obstructions	Wall reflectance (without obstruction)			
	0.2	0.4	0.6	0.8
30%	0.29	0.43	0.57	0.71
40%	0.32	0.44	0.56	0.68
50%	0.35	0.45	0.55	0.65
60%	0.38	0.46	0.54	0.62
70%	0.41	0.47	0.53	0.59

Input the following room and window dimensions as the base case design, and note down the daylight factor with different wall reflectance,



then increase the room height and the floor area as follows and observe how daylight factor varies with wall reflectance in the two cases.

