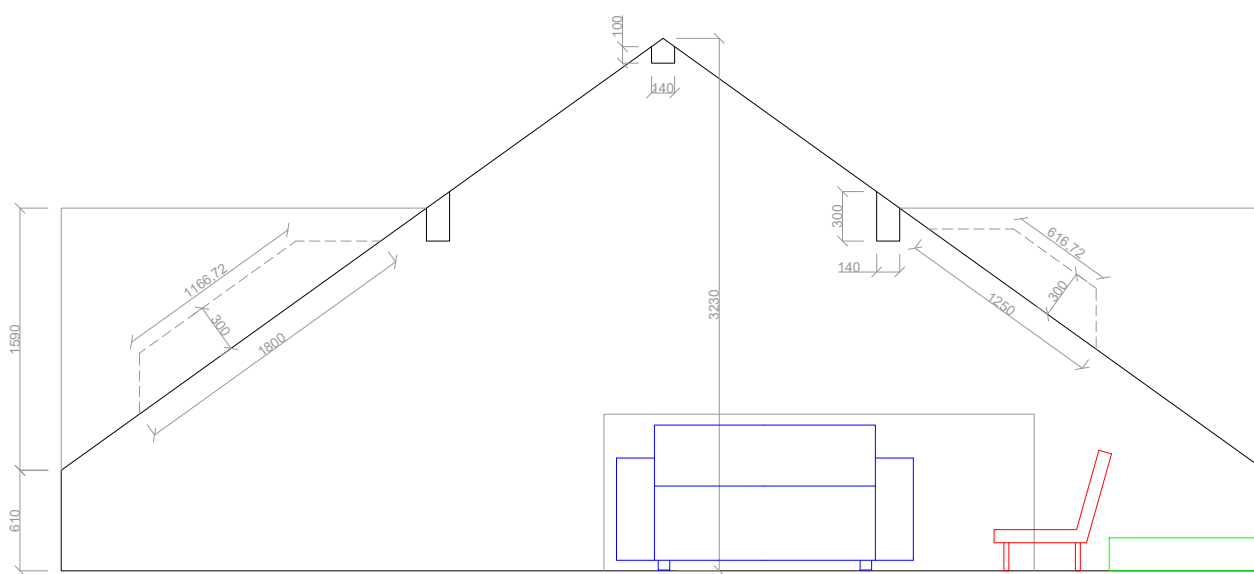
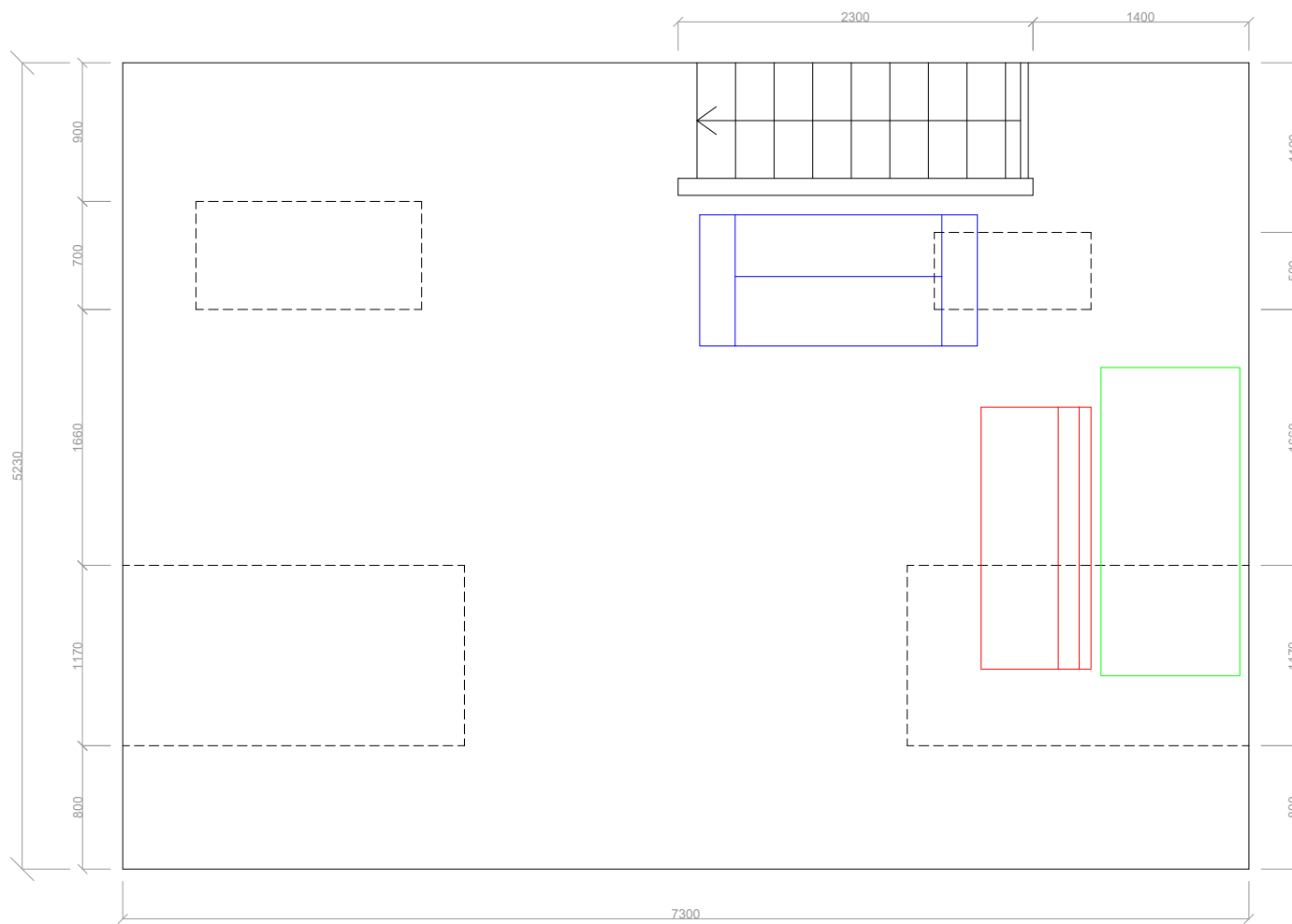
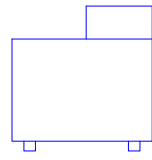
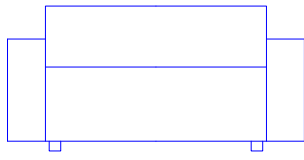


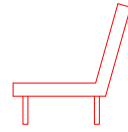
The space



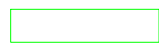
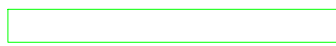
The existing absorption:



Surface area:	x	Absorption coefficient:	=	Absorption:
4,281m ²		0,41		1.755



Surface area:	x	Absorption coefficient:	=	Absorption:
3,09m ²		0,41		1,267



Surface area:	x	Absorption coefficient:	=	Absorption:
2,96m ²		0,41		1,214

Material:	Surface area:	x	Absorption coefficient:	=	Absorption:
Wooden parquet	36,3m ²		0.060		2.178
Plaster	80,34m ²		0.037		2.973
Glas	5,22m ²		0.058		0.303
Wooden beam	8,47m ²		0.100		0.847

Total existing absorption:

10.537

The missing absorption:

Equation for calculating reverberation time is:

$$TR = (0.161 \times V) / A$$

TR: Reverberation time (seconds)

V: Volume of the room (m³)

A: Total absorption in the room

The Reverberation time we like to have is: 0.5s

The Volume of the room is: 77,18m³

Total absorption in the room that is needed:

$$A = (0.161 \times V) / TR$$

$$A = (0.161 \times 77.18) / 0.5 = 24.85$$

$$\begin{aligned} \text{The missing absorption} &= \text{Needed absorption} - \text{existing absorption} \\ &= 24.85 - 10.54 \\ &= 14.31 \end{aligned}$$

The added absorbers

Material:	Surface area:	Absorption coefficient:	Absorption:
Wooden parquet	22m ²	0.40	8.8
Bookshelf	3.2m ²	0.26	0.95
Couch	6.4m ²	0.41	3.1
Acoustic panel	1.8m ²	0.9	1.62

Total added absorption:

14.47

The new reverberation time:

Equation for calculating reverberation time is:

$$TR = (0.161 \times V) / A$$

The new volume of the room: 72.46m³

The new total absorption in the room: 14.31 + 10.54 = 23.92

$$TR = (0.161 \times 72.46) / 23.92$$

$$= 0.49$$

