**Auditorium Acoustics class exercise**  Science of Acoustics

A room has height of 30 feet and floor dimensions 25 x 40 feet. The ceiling is made of acoustical board, the back (25’ wide) is covered in curtains, both sides (the 40’ sides) are plaster, the front (25’ wide) is covered in glass, and the floor is concrete. At 125 Hz, what’s the reverberation time?

Draw a diagram of the room and mark its dimensions.

Find the reverberation time, and use this to help.

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| --- | --- | --- | --- |
| Surface | Area in ft2 | Absorption coefficient at 125 Hz | Absorption area (sabins) |
| Front (glass) |  | 0.19 |  |
| Back (curtains) |  | 0.05 |  |
| Left wall (plaster) |  | 0.11 |  |
| Right wall (plaster) |  | 0.11 |  |
| Ceiling (acoustical board) |  | 0.25 |  |
| Floor (concrete) |  | 0.01 |  |

What is the total absorption area in sabins?

What is the volume of the room?

What is the reverberation time? Please include the correct units for these last three questions.

A room has height of 7 m and floor dimensions 15 x 20 meters. The ceiling is made of acoustical board, the front and back (15 m wide) are plywood, both sides (the 20 m sides) are brick, and the floor is wood. At 500 Hz, what’s the reverberation time?

Draw a diagram of the room and mark its dimensions.

Find the reverberation time, and use this to help.

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| --- | --- | --- | --- |
| Surface | Area in m2 | Absorption coefficient at 500 Hz | Absorption area (sabins) |
| Front (plywood) |  | 0.17 |  |
| Back (plywood) |  | 0.17 |  |
| Left wall (brick) |  | 0.03 |  |
| Right wall (brick) |  | 0.03 |  |
| Ceiling (acoustical board) |  | 0.99 |  |
| Floor (wood) |  | 0.10 |  |

What is the total absorption area in sabins?

What is the volume of the room?

What is the reverberation time? Please include the correct units for these last three questions.