

ARCH 4350/6350
Solar Geometry Worksheet

You are designing a passive solar house for a site that is located at 40°N latitude and need to verify the solar angles.

1. What are the solar altitude and azimuths for the following dates and times?

June 21 @ Noon

March 21 @ Noon

March 21st @ 2 PM

December 21 @ 10 AM

April 21 @ 4 PM

2. The horizontal projection over the south facing first floor windows is 2' deep and the leading edge is 6' above the window sill height which is 3' above the ground. On June 21st at noon is the sill in sunlight or shadow?

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3. For the same window configuration, is there sunlight passing through the window on December 21st at 10 AM?
4. For a southeast facing 8' wide window with a 3' sill height there is a vertical fin 2' wide along the southern edge of the window. On December 21st at 10 AM does the shadow line reach the edge of the window that is opposite the fin?
5. For a southwest facing 10' wide window with a 3' sill height, there is a 3' wide vertical fin at the southern edge of the window. On December 21st at 10 AM does the sunlight penetrate the window?

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6. What is the profile angle for the sun on the south façade at March 21st at Noon?
7. What is the profile angle for the sun on the south façade at March 21st at 2 PM?
8. From your answers for the previous two questions, what can you conclude about the profile angle on the Spring Equinox?
9. What is the surface solar azimuth angle for the west façade on April 21 @ 4PM?