

## Chalk Shadows

Objective & Overview	
-Campers will understand that the sun “moves” throughout the day	
Time Recommended:	Location:
30-45 minutes spread through the day	Outside, on a day sunny enough to see shadows.
Materials:	
-Multiple colors of chalk	-Measuring tape, if desired
Preparation:	
<ul style="list-style-type: none"> <li>-Mark an X on the ground in a spot where there is a decent amount of space in all directions, and nothing to obstruct the sun above, and label it with your camp group name.</li> <li>-OR if space allows: Mark one X for each camper on the ground.</li> </ul>	
Morning:	
<ul style="list-style-type: none"> <li>-Doing this as campers arrive is great! You can also do it when you first start your day with your whole group, but do this as early in the day as possible.</li> <li>-Have them stand on the X. Draw a line at the top of their shadow and let them write their name by the line. Repeat with each camper. Be sure to check that everyone who wanted to was marked before you head in.</li> <li>-The lines will get crowded together if all campers are standing on the same X. Try to vary colors and add names to the same line when possible.</li> </ul>	
Lunch time:	
<ul style="list-style-type: none"> <li>-Repeat the process from above.</li> <li>-Compare the difference between morning and lunch.</li> <li>-Ask for their observations. Don’t give away the answer- try to let them work it out.</li> <li>-Encourage them to predict where their shadow will be at pick up time.</li> <li>-Optional - measure the lengths of the shadows</li> </ul>	
Afternoon:	
<ul style="list-style-type: none"> <li>-Repeat one more time.</li> <li>-Ask campers for their conclusions. Ask why their shadow moved and grew/shrank. You’ll likely get responses like “the Sun moved in the sky.”</li> </ul>	

-With younger campers especially, ask them to think about what shadows are and what causes shadows. Our shadows are where our bodies block the light from the Sun. When the sun is low (morning and late afternoon), it shines directly on more of our body, so our bodies block more light and the shadow is longer. When the sun is almost directly overhead, it shines mostly on the top of our bodies, so our bodies block less light and our shadows are shorter.

-Discuss what caused these changes, and clarify that even though it looks like the sun is moving, it's really the Earth that is moving. The changes come from the rotation of the Earth.

Counselor's Notes:

(Things to consider: adaptations for varying skill levels, how to extend or shorten this lesson, how you can improve it or make it better fit your style.)