Name: Vincent Kreft
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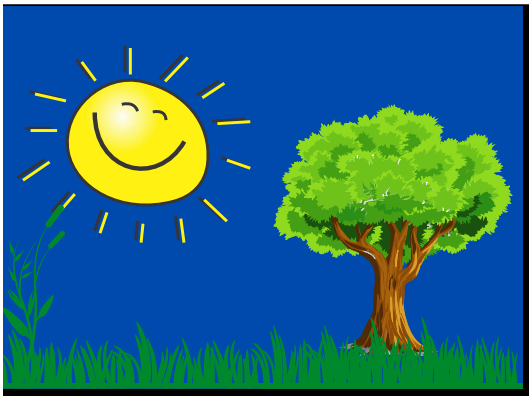
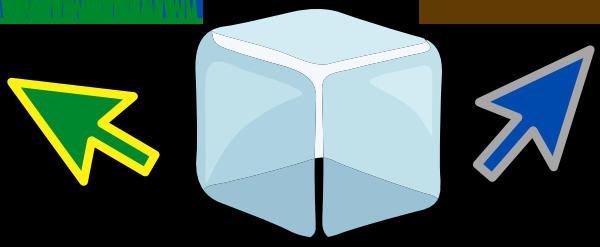
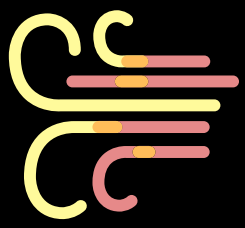
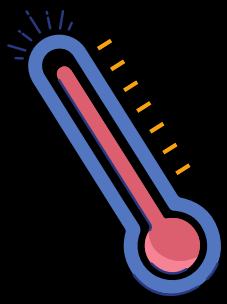




Which natural environment would this ice cube last longer in?





Instead of building ice-rinks above ground, we should look to mimic the natural year-round insulation of underground caves.

Going underground would extend the operating season of local community ice-rinks.

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Indiana has a lot of bats (we have had several get into our apartment), and I saw many flying around when I took my nature walk at dusk—their preferred time for insect hunting. This made me think of all the bat caves in the limestone hills of Indiana. This made me think of the ice caves that exist in one of my favorite video games: Terraria. This made me ask the question, why aren't hockey rinks built underground like ice caves?

Define: My local ice rink is only open five months out of the year, so I have to drive one-hour to the closest city with a year-round ice-rink in the months that Bloomington's rink is closed. I would like my design to extend the operating season of local ice-rinks.

Biologize: Does nature have "indoor" ice all year long? Is there a natural habitat that has constant cool temperature?

Discover: Ice caves naturally have temperature under zero Celsius all year long. And bedrock caves have near constant temperatures all year long. Indiana has a lot of limestone, where the caves would have constant yearly temperatures.

Abstract: The ice cave is removed from fluctuations in surface temperature and seasonal weather patterns. The cave is naturally insulated.

Emulate: Ice rinks are basically trying to re-create ice caves, but above the ground where we constantly battle surface temperature and seasonal weather changes. It takes a lot of resources to make ice and then keep ice from melting.

Evaluate: Building an ice-rink underground, where it would be naturally insulated all year, would save on operating costs of the rink, and would extend its operating season. It might just be more expensive to dig the hole upfront. But, in thinking about how long an ice rink lasts (my local rink—Frank Southern Ice Arena—was opened in 1996), the costs upfront would be worth the savings in operating costs over the decades.

When I researched ice rinks underground I was inspired to see that there are some, like this one in Norway: Gjøvik Olympic Cavern Hall, which is 120 meters underground. But also some NHL stadiums actually have the ice sheet below surface level. My favorite team, the Detroit Redwings, recently built their stadium with an ice sheet that is 40 feet below street level.

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