Tobias Brandt - MIT application (2026-27)

Duluth, MN · tobias.brandt.test@example.com · Applying to: MIT undergraduate admission, 2026-27

Fictional applicant written for this sample; the school, employers and organisations are invented.

Profile

- **School:** Western Harbor High School, Duluth, Minnesota (public, ~1,100 students), Class of 2027.
- **Family:** Father, Mark, is a welder at Arrowhead Marine Repair, a shipyard that repairs lake freighters; he finished high school. Mother, Denise, is a dental hygienist with an associate degree from Lake Superior College. Sister, Lena, is 10. I would be the first in my family at a four-year university.
- **Languages:** English (native); some German from my grandmother.

Grades and tests

- GPA 3.84 unweighted (the school does not weight grades). Rank 14 of 262.
- **Senior courses:** AP Calculus BC, AP Physics C: Mechanics, AP Chemistry, AP English Literature, US Government, Welding I.
- **Earlier AP exams:** Calculus AB (5), Computer Science Principles (5), US History (4), English Language (4), Physics 1 (3).
- Spanish II, grade 10: C+. I dropped Spanish after that year.
- **SAT:** 1490 (Math 780, Evidence-Based Reading and Writing 710), March 2026.
- **Highest math completed by senior year:** Calculus BC. Our school offers no math beyond it.

Activities

1. **Builder, Bay Ice Logger** (grades 10-12, 5 hrs/wk, 35 wks/yr). This is a homemade ice-thickness sensor: a 1.2 m PVC rod with 24 temperature sensors every 5 cm, an Arduino and a radio. It finds where the ice ends by where the temperature jumps to 0°C. I tested it first on our neighborhood rink and then, for two winters, at a fishing spot on St. Louis Bay. It posts readings every 30 minutes to a public page; about 60 ice fishers checked it on a typical weekend in winter 2026. Its readings matched hand-drilled measurements within 1.5 cm in 31 of 38 checks.
2. **Flooding crew coordinator, Harbor Heights Neighborhood Association outdoor rink** (grades 9-12, 4 hrs/wk in winter). We flood the rink by hand at night. I built the shared sign-up schedule and grew the crew from 5 regulars to 17, most of them retirees and middle schoolers. The rink opened 9 days earlier in 2025 than it did in 2023.
3. **Sales associate, Kettle & Pine Hardware** (grades 10-12, paid; 14 hrs/wk during school, 30 hrs/wk in summer). I cut keys and glass and mix paint. I run the Saturday plumbing aisle, where people bring in the broken part and I find its match.

4. **Programming lead, FIRST Tech Challenge Team Lakehead Gearheads** (grades 9-12, 8 hrs/wk in season). I wrote the autonomous code in Java. We did not advance past the regional in any season; we won the Think Award (engineering notebook) in 2026.
5. **Founder, Western Harbor Coding Club** (grades 11-12, 2 hrs/wk). Our school has no computer science course after AP CSP. Twenty-two members; we work through Python and Arduino projects at lunch on Thursdays.
6. **Cross-country skiing, school team** (grades 9-12, 10 hrs/wk in winter). Junior varsity for three years, varsity in grade 12.
7. **Family responsibilities** (grades 9-12, 6 hrs/wk). I drive my sister to school and hockey practice when my father works early shifts.

Distinctions

- AP Scholar with Distinction (2026)
- National Merit Commended Student (2026)
- FTC Minnesota Northern Regional, Think Award (2026)
- Northeast Minnesota Regional Science Fair, 2nd place in Engineering, for Bay Ice Logger (2026)

Short answers

What field of study appeals to you most right now? Mechanical Engineering (Course 2), with Earth, Atmospheric and Planetary Sciences close behind.

I like things that have to survive outside. Inside, a sensor is easy. At -28°C, with ice expanding around it and a fisherman's auger nearby, it has to be designed. I want to learn the heat transfer and materials that I have been guessing at with hardware-store parts. I also want to understand the lake itself.

Tell us about something you do simply for the pleasure of it.

Night skiing at Lester Park. The trails are lit until 10, and on weeknights in January I often have the 2.5 km loop to myself. I'm not fast; I was JV for three years. What I like is that there's nothing to fix. The snow squeaks below about -15°C and goes quiet when it warms up, and I've started guessing the temperature by the sound before I look at my watch. I'm right within three degrees about half the time. Afterward my sister and I make hot chocolate. She grades my form, harshly.

How has the world you come from shaped your dreams and aspirations?

My dad has repaired lake freighters for 22 years. When I was eleven he took me into the hull of a 1,000-foot ore boat in dry dock. He showed me a weld he had done, and a crack beside it that someone else's weld had caused. "Nobody sees this," he said, "but it's the only reason the boat floats." Duluth is like that: grain elevators, ice, ore docks, things that have to work in bad weather. At Kettle & Pine I meet people who want to fix things themselves but can't name the part. I want to design things that are honest about how they'll fail, and I want to make them understandable to the people who use them.

Describe one way you have collaborated with people who are different from you.

The rink flooding crew is the oldest and youngest people in my neighborhood, at 11 p.m., in the cold. When I took over the schedule, Mr. Halvorsen (79) kept a paper list taped to the warming house door. The middle schoolers wanted a group chat. I made a shared spreadsheet, and nobody but me used it. What worked was both: I printed the sheet every Sunday and taped it next to his list, and I texted the kids. Mr. Halvorsen taught us to flood thin coats instead of one thick one. He was right. My sensor confirmed the ice froze about twice as fast.

Tell us about a challenge or something that didn't go according to plan.

My first ice logger died on January 9, 2025, at -28°C. The lithium battery stopped delivering current, and I lost the coldest three weeks of data, which were the ones I needed. I had tested it in our freezer, which only goes to -18. The fix was boring: I insulated the battery box with closed-cell foam, added a small resistor heater that runs only when it's below -20, and borrowed my neighbor's chest freezer for a -30 test. The second failure was humbling in a different way. I trained a small neural network to predict ice thickness from air temperature. It did worse than Stefan's equation, a formula from the 1890s that uses one square root. I use the formula now.

Additional information

The C+ in Spanish II came in fall of grade 10. That was when my mother had surgery and I was handling my sister's rides; I didn't ask for help. My other grades that year held, and I chose physics over a third year of Spanish.