



FACT SHEET

IRON FURNACE MATH

The Nassawango Iron Furnace was built in 1829 and ceased operation in 1850. Originally it was a cold blast furnace, but about 1835 it was converted into a hot blast furnace. The furnace needed iron ore, flux, and a source of fuel.

Iron (bog) ore is found in the nearby swamp. Clam and oyster shells from the Chesapeake Bay were used as flux.

We need heat but have no coal. Wood is all around but it does not burn hot enough to melt the iron (bog) ore. However, if we convert wood into charcoal we have a fuel that burns at a high enough temperature to melt the iron (bog) ore.

We need one more thing—oxygen! Now we have a working iron furnace.

For those who enjoy mathematics, we would like to present five problems:
*(Figures here are based on a cold blast furnace, a hot blast furnace may have used less.
Remember 1(one) ton = 2,000 pounds)*

1. The furnace here produced 700 tons of iron in the 32 weeks of operation in 1832. This is approximately 22 tons of iron each week. It took about 2.5 tons of charcoal to make one ton of iron. How many tons of charcoal did this furnace use per week?
2. It took approximately 2 acres of trees to make 2.5 tons of charcoal. How many acres of trees did the furnace need each week?
3. The furnace could not operate in winter. In its 32 weeks of operation each year how many acres of trees did the furnace need?
4. It took about 20 years for the trees to grow back before they could be cut again to make more charcoal. How much forest land did the ironmaster need to operate his furnace for 20 years?
5. There are 640 acres in one square mile. How many square miles of forest did it take to operate the furnace for 20 years?