Demo problems in heat transfer:

A chunk of hot metal is dropped into 500 mL of water.

The metal dumps 3,000 joules of heat into the water, heating it up to 50℃.

1) What was the starting temperature of the water?
2) If the metal was brass and started at 100 ℃, how much metal was added?

1 kg of steel at 100℃ is dropped into 1 kg of water at 50℃.

1. What is the final temperature of the system?