

Given...

Mass was **20g**, the energy was **2100J**, the initial temp was **20°C**, heat capacity was **0.443 J/g°C**

I know that

$$q=mc\Delta T$$

I don't like math... so I am going to convert all the information into **J**, **g** and **°C**

(it's already done!)

Use the complete equation... for **T** final and **T** initial

$$q=mc(T_f-T_i)$$

Divide both side of the equation by **mc**

$$(T_f-T_i)= q/mc$$

Which is the same as

$$T_f-T_i= q/mc$$

Add **T_i** to both sides

$$T_f= q/mc + T_i$$

Then plug in the numbers

$$T_f = [(2100J) / 20g * 0.443 J/g°C] + 20°C$$

Cancel out the units...

$$T_f = [(2100) / 20 * 0.443 /°C] + 20°C$$

And remember 1/1/anything = anything...

$$T_f = [(2100) °C / 20 * 0.443] + 20°C$$

Next do the math...

$$T_f = 257.020316°C$$

And finally, our favorite part... Significant digits

$$T_f = 300°C$$