Resistors, Power, and Percent Efficiency Examples

A resistor of 7Ω is 3cm long.

a) The resistor is stretched to 6cm long. What is the new resistance?

b) What would be the resistance if it was stretched to 12cm?

A 10Ω resistor is 16cm long.

a) If the resistor is cut in half, what is the resistance of one half?

b) If I cut the new resistor into 4 equal pieces, what is the resistance of each new piece

A 12Ω resistor has a diameter of 1cm.

a) If the resistor is stretched to a diameter of 2cm, what is the new resistance?

b) If we stretch the resistor to a diameter of 3cm, what is the new resistance?

A 2Ω resistor has a diameter of 15mm.

a) The resistor is shaved down to 5mm. What is the new resistance?

b) The resistor is shaved down to 3mm. What is the new resistance?

I use my headphones to listen to Sabrina Carpenter's Christmas EP "Fruitcake". The EP is 15 minutes long, and my headphones have a power rating of 20W. How much energy input is required?

I watch Taylor Swift's "The Eras Tour: The Final Show". The movie is roughly 2.75 hours long. If the TV gets an energy input of 663,300J (663.3kJ). What is the power rating of my TV?

My phone screen uses 36kJ of energy to make light. If there is an energy input of 54kJ. What is the percent efficiency.

My friends challenge me to a Mariokart tournament (obviously, I will win, but I entertain anyway). My TV has a power rating of 67W and it takes me 1 hour to beat all of them. My TV uses 180,000J of energy. What is the percent efficiency of my TV?