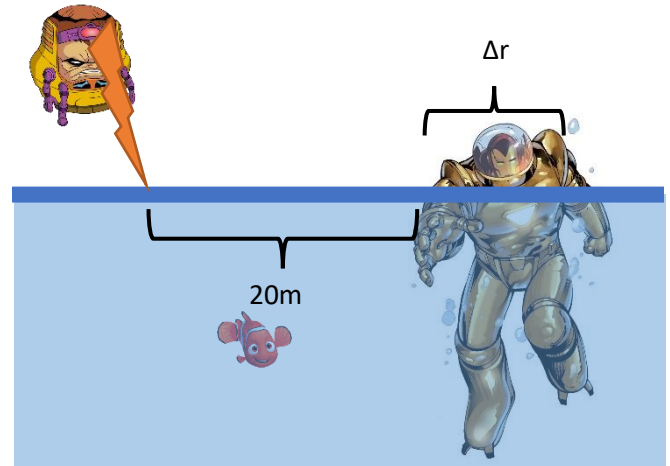


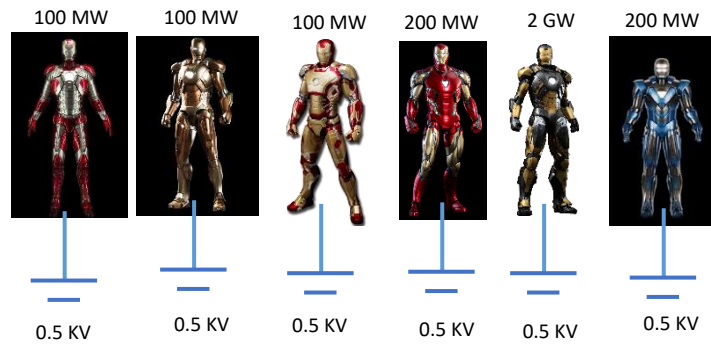
Discussion Week 5 Question 1

Iron Man is testing out his new 300Kg Deep-Sea Armor in a pool of water with a mean resistivity of $30 \Omega m$. While performing routine diagnostics, he is ambushed by MODOK who fires an electric ray of 0.1 mega-amperes towards Iron Man. MODOK misses by a distance of 20 meters, but the current from his ray spreads out in a horizontal circle on the surface of the water centered at the impact point. What is the current that travels through the 0.8 meter width of Iron Man if his armor's components have a resistance of $5k\Omega$?



Discussion Week 5 Question 2

Even superheroes have to pay an electric bill. In Iron Man's Hall of Armor, he has approximately 6 armors set up to charge in standby. Half of the armors take 100 MWatts while charging, two of them are 200MWatts, and the final armor, the Deep Space Mark 9 Armor, has a charging wattage of 2 GWatts. If the Armors are each connected to a 0.5 K V outlet and Iron Man needs to pay 5 cents per kW hour, what is Iron Man's electric bill for charging his armors for a 28-day month?



Discussion Week 5 Question 3

Iron Man's arc reactor creates a voltage of 2000 V when attached to his armor and generates current through the unibeam (which behaves like a 50-ohm resistor) in the chest plate of his armor. How much time will it take for the arc-reactor unibeam system to shoot out a 1.2 MJ of energy at the Crimson Dynamo?

