

Sums. The're Math Magic

11 -Sum Science

Please go through each slide stopping until you have understood the concept described

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Heavy Water

You have 1 litre of Heavy Water.

How much more than ordinary water does it weigh?

Hint: Search the internet.



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Heavy Water

1 litre of Heavy Water weighs 1.1059 Kg

How much more than ordinary water does it weigh?

105.9 grams per litre

Hydrogen has an atomic weight of 1 and has one proton in its nucleus and one electron. One atom weighs 1.079 AMU (Atomic Mass Units). It is sometimes called Protium or Light Hydrogen.

Heavy Hydrogen is also called Deuterium and has an additional Neutron in its nucleus so has the atomic weight of 2. One atom weighs 2.014 AMU

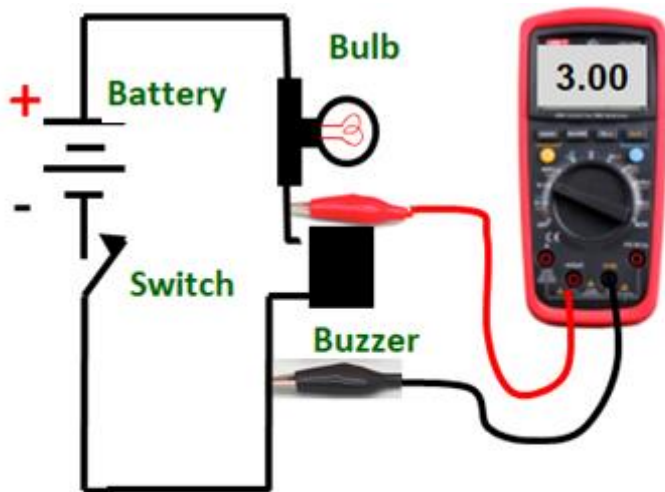
There is another Hydrogen called Tritium which has two Neutrons but it is very rare and unstable, it is “radioactive”



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Get A Buzz



If the buzzer resistance is 100Ω (ohms)
The bulb is an incandescent type.
Why does the lamp not light?

Amplimentary, my dear Watts!

Q: What was the name of the first Electricity Detective?

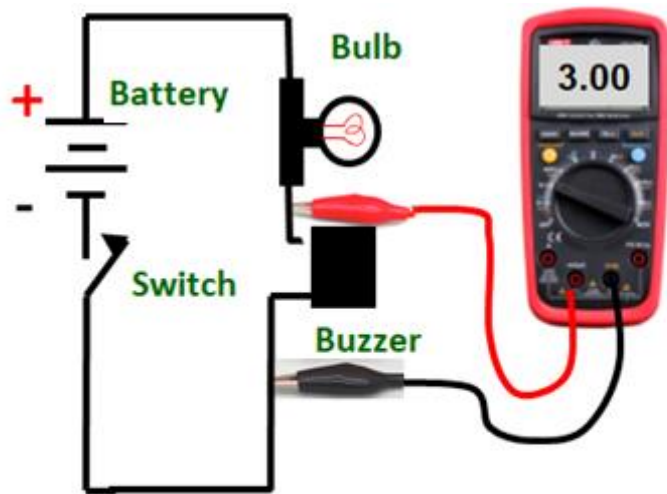
A: Sherlock Ohms.



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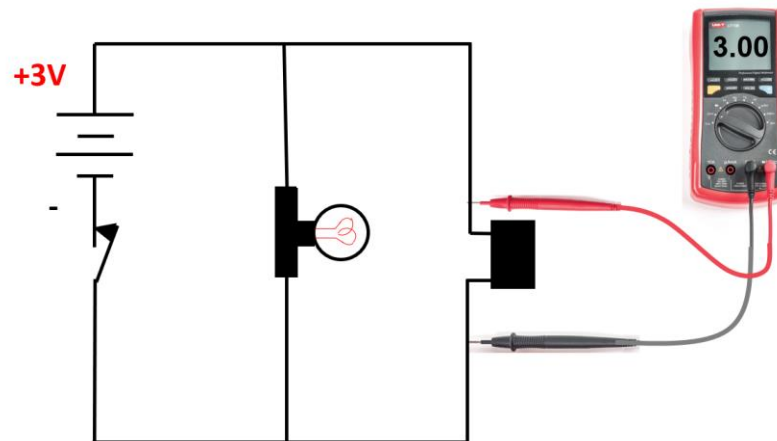
Get A Buzz



Because the buzzer resistance is 100Ω the current is 0.03A (Amps).

The resistance of the lamp when it is cold is almost zero so it will not light because the current is too low.

But if the lamp is in Parallel with the buzzer it will light.



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Moonshot



Two questions.

How long does it take the Moon to rotate around the Earth.

How long does it take for the Moon to rotate about its own axis?

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Moonshot



How long does it take the Moon to rotate around the Earth?

How long does it take for the Moon to rotate about its own axis?

The answer to both is about 28 days.

The Moon actually rotates around the Earth in 27.322 days.

It always shows the same face to the Earth so its rotation about its own axis is the same.

It is locked because of tidal locking between the Earth's oceans and the Moon.

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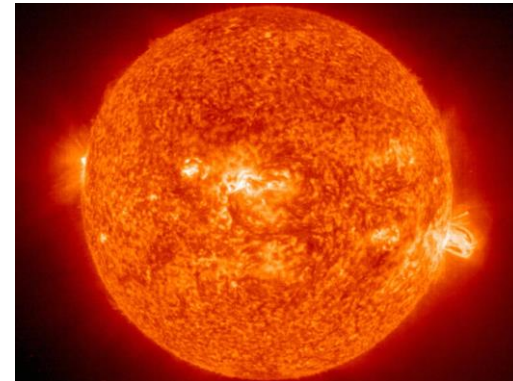
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Reach For The Sun

How long would it take a spaceship travelling at 30,000Km/hour to get from Earth to the Sun?

Use the speed of light to be 300,000Km/sec.

Also it takes 8 minutes for light to reach the Earth.



Potassium and Oxygen stepped into the ring

What was the outcome?

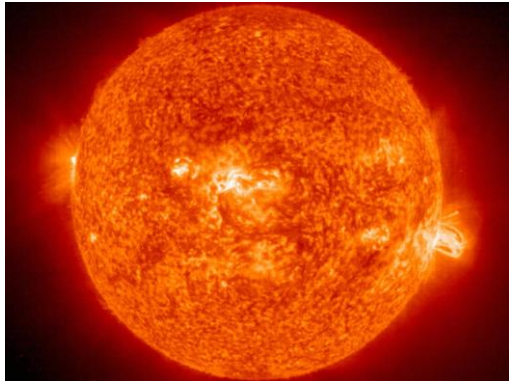
KO.

But it wasn't OK.

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Reach For The Sun



How long would it take a spaceship travelling at 30,000Km/hour to get from Earth to the Sun?

It would take about 200 days.

Light takes 8 minutes = 480 seconds

Its speed is 300,000Km/S so the distance is
144 million Km.

So it takes $144,000,000\text{Km} \div 30,000\text{Km/h}$
= 4800 hours = 200 days

Photon checks into a hotel and the receptionist asks if he needs a porter for his luggage.

He says “No, I am travelling light!”

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Please go to the next lesson.

Divisible By Numbers