Brick 'R' knowledge

Name: .....

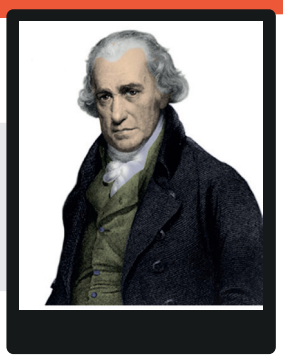
Class: .....

Date: .....

Exercise booklet - Solar

Worksheet with excercises and repetitive tasks for students and learners

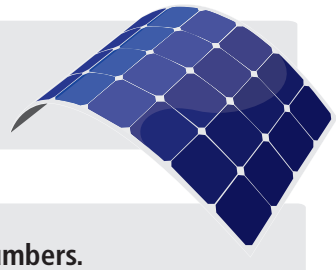
Brick 'R' knowledge



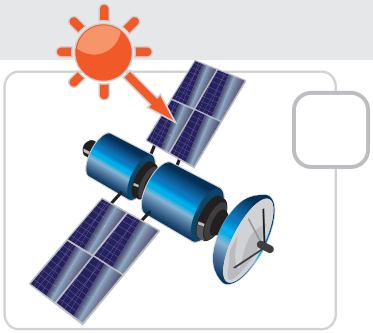
1 How is the physical unit of electical power called?

Tip: This unit was named after a scottish scientist and engineer.

2 Flexible solar modules are based on ..... .

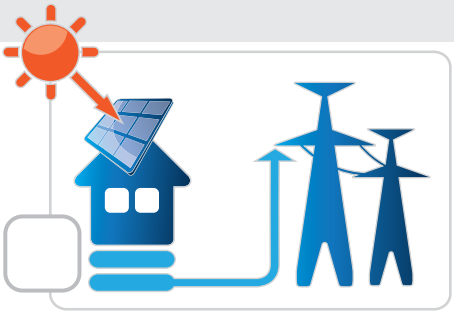


3 Connect the pictures with the correct characteristic by filling in the blanks with numbers.



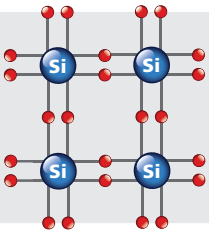
1 ON GRID

2 OFF GRID



4 Which important characteristic does silicon have for electronics.

Superconductor | Semiconductor | Isolator

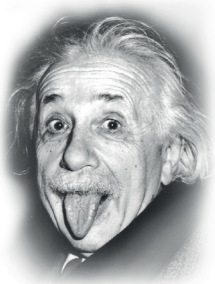


5 How is the thin layer in a solar cell called that containes neither electrons nor free holes.

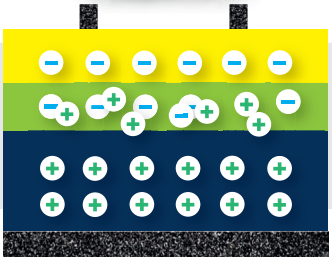
.....

6 Who did realize that sun rays consist of particles , so called photons?

.....



7 Name the individual layers of a solar cell:

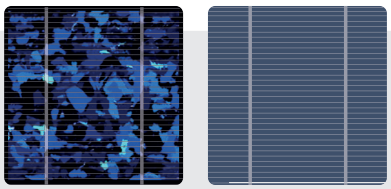


- doped

- doped

8

Match the solar modules to the correct crystal structure by filling in the blanks with the numbers.

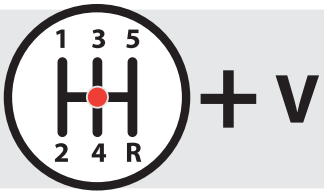


① **Monocrystalline cell** ② **Polycristalline cell**

☐ ☐

9

For which electrical property does Voc stand for?



☐ Maximum achievable power

☐ Voltage at the best possible operating point

☐ Short circuit current

☐ Short circuit current

☐ Current at the operating point with max. power

10

How high is the efficiency of a solar mudule if the electircal power is 260 watts and the incident radiation is 1300 watts?

.....

11

The age-related change of properties of semiconductors, silicon is called:

.....

12

Up to which percentage are solar cells recyclable?

☐ 55% ☐ 78% ☐ 90% ☐ 95%

13

Select the kind of cells that can be interconncted to an accumulator.

☐ Not or only limited reachargeable primary cells

☐ Rechargeable secondary cells

14

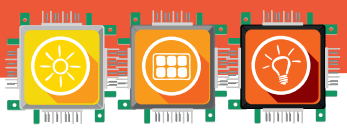
Tricky: Calculate the total energy of an accumulator in watt-hours (Wh). For this, use the following information.

Attention: Not all information are necessary.

Tip: **P=UxI**

- The accumulator has a voltage of 3.6V
- The accumulator has a capacity of 2500mAH
- The accumulator is a Lithium-ion accumulator
- The accumulator has a weight of 400 grammes

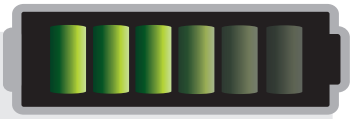
Brick 'R' knowledge



15 **Fill in the words into the right places: chemical, electrical.**

By charging a battery, ... energy is converted into ..... energy.
During the unloading process, e.g. if you connect a cunsumer to the battery, the ..... energy is again converted into ..... energy.

16 **Which kind of accumulator is the most efficient one?**



☐ Lithium-ion ☐ Nickel-metal hydride ☐ Cadmium ☐ Lead

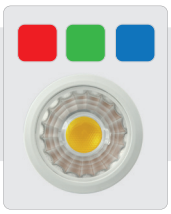
17 **Which lamp consumes less power for the same brightness?**

Light bulb ☐ LED ☐

18 **With which brick are you able to switch on a LED brick by pressing.**

.....

19 **What is special about RGB LEDs?**



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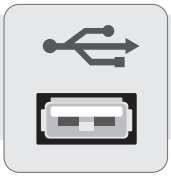
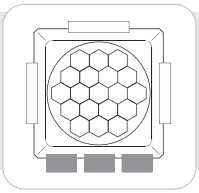
20 **How much volt does a standard USB socket provide?**



3V ☐ 5V ☐ 9V ☐

21 **Which property of a motion detector do you have to change if it should only switch during darkness?**



☐ Sensitivity ☐ Duration ☐ Light

22 **Are you able to decrypt this morse code?**

▪▪▪ ▬▬▬ ▪▬▪▪ ▪▬ ▬▪▪

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Points: ..... /22

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