

Day 4



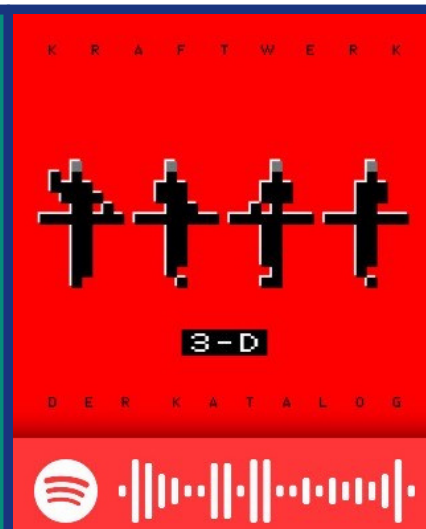
The fourth day of the festival is here! The school is full of 3D models, experiments and everybody is as busy as bees! We have the chance to meet another key-note speaker, learn new things and get prepared for our presentations tomorrow!

Our 7th, 9th and 11th grade will connect with students from Birla Public School, India and have meaningful discussions about experiments and sciences. Then, everybody will get ready for the grand science exhibition tomorrow! See you there!

Today's agenda:

The more you listen!

DATA	TIMP	ACTIVITATEA PROGRAMATĂ
JOI, 10 Februarie, 2022	8:30	Radio
	09:00	Workshop PHD Caltech Sorina Lupu (gimnaziu si liceu)
	09:00	Workshop Aeroplane DI Matei Doru clasele (I - a III-a) - 2 grupe de cate 10 copii



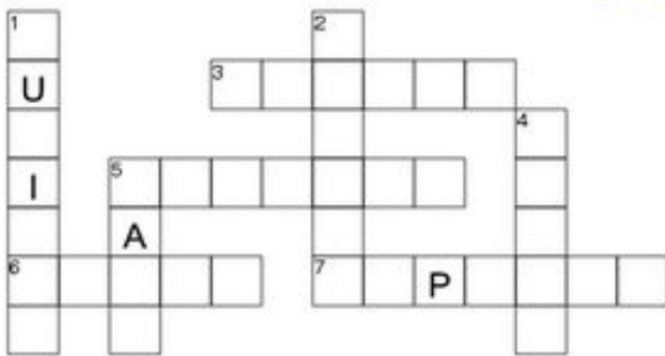
Day 4



Have fun!

PLANETS CROSSWORD

Complete the activity.

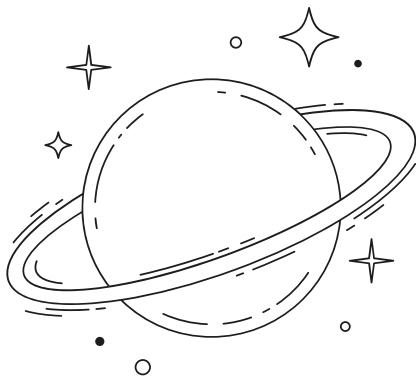


ACROSS

- This planet's blue color is the result of absorption of red light by methane in the upper atmosphere.
- The closest planet to the Sun and the eighth largest.
- The only planet whose English name does not derive from Greek/Roman mythology.
- Named after the Roman god of the sea.

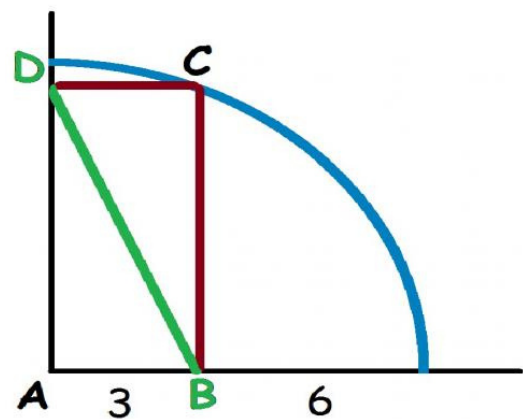
DOWN

- This planet is more than twice as massive as all the other planets combined.
- The second largest planet with many rings.
- It is the brightest object in the sky except for the Sun and the Moon.
- This planet probably got this name due to its red color and is sometimes referred to as the Red Planet.



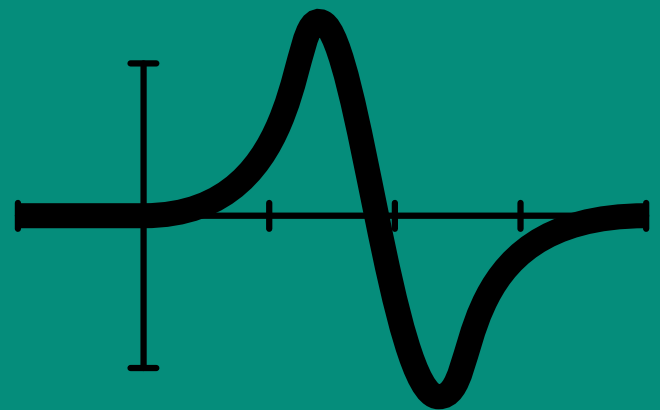
Time for a brain teaser!

Guess the diagonal!



Can you guess the length of the green line? If not, here it is, the solution:

<https://youtu.be/6PkBIlbG2HE>



Day 4



Today's Article – To what extent is space debris a global problem nowadays?



This topic peaked my interest because it is a trending subject, that would affect the whole population in the near and far future.

To begin with, space debris is mainly composed from spacecraft remnants, satellites that are out of commission and tiny flecks of paint, all of them travelling at speeds up to seven times faster than a pistol bullet around the Lower Earth Atmosphere, posing a threat to every current and future human expedition and operational satellites by being so close to the atmosphere. It has been estimated that 750.000 objects surrounding the Earth, resulting in more than 6000 tons of junk, making it the largest junk yard in the World.

Debris began to accumulate with the first launch of an artificial satellite in 1957. After that, NORAD began compiling a database of all known rocket launches and objects reaching orbit.

In 65 years that is problem has existed, more than / the 5250 launches made so far have resulted in more than 42.000 tracked objects in orbit, of which roughly 23.000 remain in space and are tracked by the US Space Surveillance Network, converting objects larger than 5-10 cm in Low Earth orbit.

Most space debris is moving very fast around the orbit, reaching speeds up to 18.000 miles per hour or circa 29.000 kilometers per hour, to put this into perspective, a bullet moves at seven times lower speed.

Due to the rate of speed and volume of debris in LEO, current and future space-based missions, services and explorations pose a safety risk to people and property in space and on Earth; some would say it renders space missions impossible to do. By being so close to our Planet's stratosphere, these objects could always enter our lower ozone layer and crash into the Planet's surface. Even though most of these objects are small and would melt by the time they arrive on the ground, some could also be of big proportions, posing a threat to people and people's home on the surface.

Since Space Junk has been a huge problem for quite some time now, it is evident that countries, especially the ones that do frequent space operations should invest more in cleaning our lower orbit from most of the junk, seeing as to how dangerous it could be for everyone's safety, and the common people should do the proper research regarding this problem and, if possible, bring this problem up to the right authorities from their countries.

Technically the junk that now floats around our planet belongs to no one and it isn't the concern of any country; it's actually the other way round, countries are doing intensive research as to how they could cleanse our orbit in the fastest ways possible.

Space junk is not one country's responsibility, but the responsibility of every spacefaring country. The problem of managing space debris is both an international challenge and an opportunity to preserve the space environment for future space exploration missions.

Not to mention that a lot of studies have been made showing that one the most effective ways to reduce creating more space junk is an international agreement to charge operators 'orbital-use fees' for every satellite put into orbit.

Currently, seeing as to how many objects are crowding low-Earth orbit, this space debris problem is the latest Tragedy of the Commons, the researchers said: "Each operator launches more and more satellites until their private collision risk equals the value of the orbiting satellite".

All in all, space debris has proven itself as being a huge and rather unknown threat to our society, being an international challenge and a chance for countries to prove themselves that they are able of not only exploring space, but also that they are capable of preserving it. Seeing as to how much research countries do and how much they strive to achieve their goals of getting rid of all of the junk that is forming a barrier around our home, I would personally say that the remedy for this issue is coming closer and closer. If the unfortunately unnamed satellite that is in the works by the ESA proves to be successful and efficient and if the space fees are implemented accordingly, the future for mankind and space exploration is looking rather bright.

So far, proposed solutions have been more focused on the technological or managerial side of things. Technological fixes include removing space debris from orbit using nets, harpoons, or lasers, sound more like ideas from a science fiction film, seeing as to how hard and impractical it would prove to be doing this kind of activities. A managerial fix would be deorbiting a satellite at the end of its life cycle.

Also, by removing huge quantities of space debris, motivation for operators to launch more satellites and spacecrafts into the outer space would be very high.

Fodor Vlad



Day 4



An interview with a special guest – Mr. Mark Midownik

Mr. Mark Midownik was our guide in a journey in the world of molecules and materials. Skillfully adapting difficult theories and examples for us to understand the concepts, Mark Midownik fascinated us with his knowledge and passion for our world and everything in it. He advised us to follow traditions, continue our amazing work with pottery and connect with the materials such as clay, the Earth symbolizing the connection to our ancestors.

Your book *Stuff Matters* has won the Royal Society Winton Prize for Science Books. I only read a few pages, and I confess that I can't wait to discover that fascinating take on the sensory and social dimension of materials, from chocolate to Samurai swords. Please tell me where your passion for materials started? Well...actually, I was a student and I got stabbed by a razor blade. An unfortunate event made me curious enough to start researching and try to understand how something as small as steel can cause so much trouble. It was not an easy job, I tried to understand what happens inside the material and had to dig deep into the atoms of the material. Every material has its secrets and it is fascinating to understand what happens inside.

What do you think is the most important quality of a scientist?

Scientists ask questions, really. They really try to understand how things work. It is not about finding the answers necessarily, it is about being curious enough. It is not about knowing chemistry or being good enough at maths – you can be a great scientist by just being curious about the world.

Please tell us what you think is the biggest challenges of material development in the modern age. I believe the greatest challenge is having a plan for those materials which can be reused and replaced. We don't have a plan for those materials – for glasses, screens and other objects. We should have a well-organized plan about how not to make anything new in the future and how to

In preparation for the meeting with you, I found out about the Institute of Making, where you are the director. Please tell us a few words about the activity of this Institute and how we can access the activities you do here.

While studying materials, we came to the conclusion that what happens inside is too fascinating to keep for ourselves – so we built this to let anyone interested access this fascinating world. Everyone needs to be involved in creating the future: they have to understand things, make things and create the future. Experiencing with materials (holding them, smelling them, taking a close look at them) is an unforgettable experience.

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Carousel of Experiments

