

NAMAZU CHALLENGE n°4 2018 - 2019



The Namazu challenge is a small, fun competition between establishments offering the opportunity to familiarize yourself with seismology and this year in particular with the planet Mars, following the exploration of Mars by the INSIGHT Mission! The challenge is aimed at students from the 8th to 10th Grade But everyone can compete.

Episode 4 – Questions issued on 14th of April 2018 ; answers due on or before the 15th of June 2019 to namazu@geoazur.unice.fr

Part I. InSight & co.

As in previous challenges, this first part will give us a better understanding of Mars and the InSight mission.

For each of the following questions, find the correct answer (s).



by correct answer

Q1. The HP3 (Heat Flow and Physical Properties Package) was beginning to bury itself in Martian soil but the drilling was interrupted. What are the possible reasons for this problem ?

- A rock of several centimeters
- A lack of electrical energy
- The soil is more compact than expected and creates cavities
- A problem in the secondary engine

Q2. In the coming weeks, scientists will discover the reasons for this stop. Following the news of Mars, you will have to tell us what was the real origin of this problem.

The reason was: <https://mars.nasa.gov/news/8445/insights-team-tries-new-strategy-to-help-the-mole/?site=insight>

Q3. What is the nickname of HP3?

- The mole
- The marmot
- The rabbit
- The meadow jumping mouse

Q4. Which country has developed the HP3.

- Brazil
- France
- Germany
- United States

Q5. At what depth in the Martian soil is currently (11/04/19) the probe?

- 1 meter
- 3 meters
- 5 meters
- 25 meters

Q6. As we will see more specifically in another exercise, InSight has a weather station that gives us the Martian weather. Since when do we have these weather reports?

- January 2019
- February 2019
- March 2019
- April 2019

Q7. What are the sensors used to tell us the Martian weather?

- Anemometer
- Thermometer
- Rain Gauge
- Barometer

Q8. To prepare for the next exercise, question: how to get a temperature in degrees Celsius from a temperature in Fahrenheit degrees?

- Subtract 32 and divide by 1.8
- Subtract 1.8 and divide by 32
- Do nothing, the units are equal to each other
- No one knows yet, it's a mystery

Q9. Which school earned the most Namazu points in Challenge 3?

- Medium School Roy d'Espagne of Marseille
- Medium School Val de Voise of Gallardon
- Medium School Louis Nucéra of Nice
- French High School of Shanghai, China

Q10. Which school is at the top of the overall Namazu competition?

- Xavier Marmier High School of Pontarlier
- French High School of Athens, Greece
- Medium School Lavandières of Bizanos
- Emilie Duclaux High School of Aurillac

Part II - Weather Comparison between your city and Elysium Planitia.

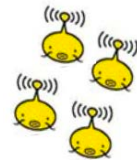
The InSight mission sends us meteorological data.

Meteorology is daily given and you can find it on <https://mars.nasa.gov/insight/weather/>

Your mission for this Part II will be to compare the meteorology of Mars to yours.

Q1. Measurement and comparison.

JUNIOR Mission.



The data studied will be: wind direction and temperature.

You will need to design a device that allows you to get your own data at your school.

You can confirm them using:

<http://www.meteofrance.com/home> for schools in France

<https://www.weather-forecast.com/> for schools abroad

You will have to compare the data for a week of your choice and put the data in tables and graphs using either a computer or your ruler (you will need to scan them in this last case)

You will send your results by email and a photograph of your device that you used to collect datas.

Mission EXPERT.

The EXPERT mission takes up the requirements of the JUNIOR mission, to which is added the measurement of the wind speed.

Below, an example of a device - that will be calibrated by you if possible.

Material:

- 1 plastic bottle
- Scissors
- Adhesive tape
- Bright colored adhesive tape
- 1 knitting needle and a broomstick
- 1 pierced stopper
- The pattern below

Method:

Make 3 cuts of 20 cm long in the central part of the plastic bottle which will form the 3 fins.

Glue the pattern on the bottle and then tape the sails on the body of the bottle

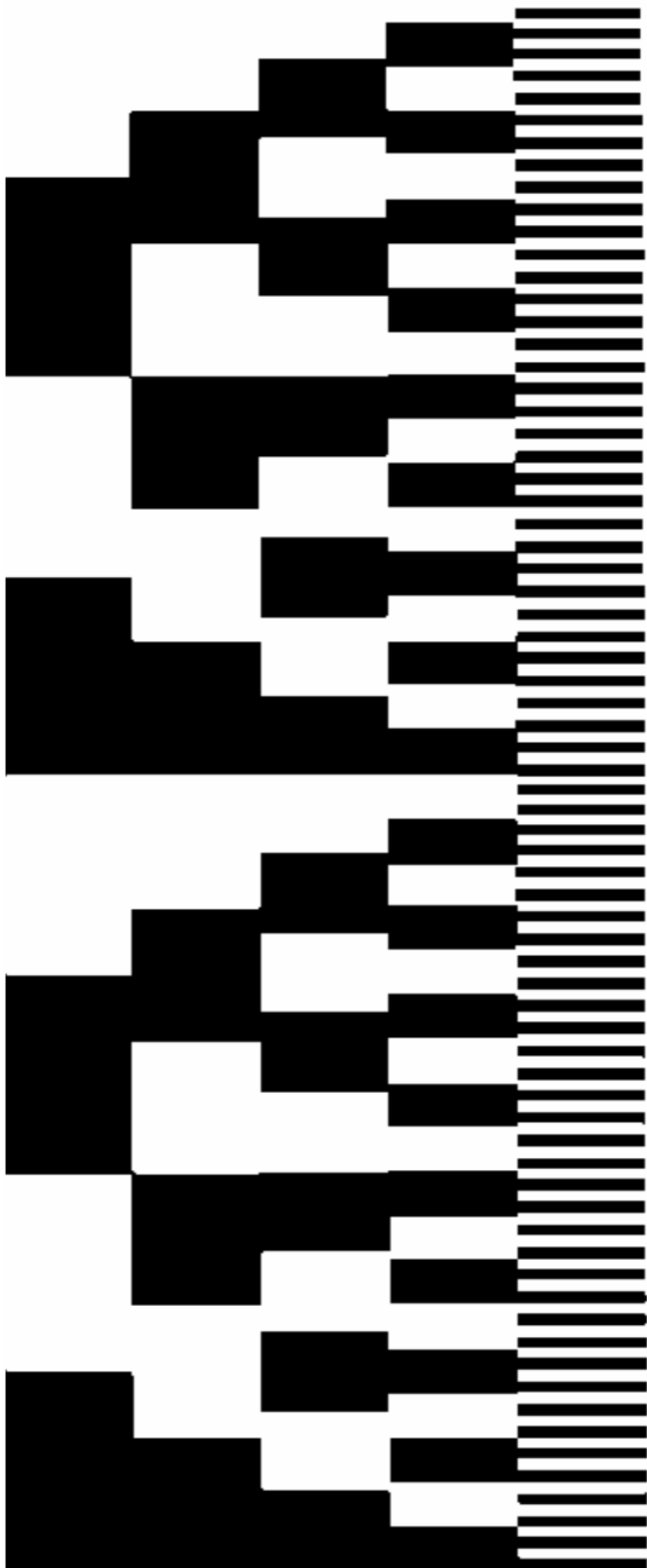
Push the broom handle to the ground and then fix the blunt end of the knitting needle above it and thread the bottle over it.

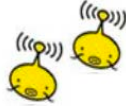
Stop the bottle by sticking a bead at the right height on the knitting needle.

To measure the wind speed, look at the strip of black and white tiles. Some lines are of uniform color. This allows you to set the wind speed. When the bottle turns under the effect of the wind, our eye perceives the gray bands, the higher the wind speed.



Pic : JL Bérenguer





Q2. Results analysis

Explain the differences of temperature between Mars and your city.

Part III - And InSight in all of this?

NASA's website mentions that scientists have fears that the Martian wind could disrupt the seismometer recordings.

It's up to you to try it in class.

Take a piezometric sensor, record and blow on it. Do you observe something?

A short video of the experiment showing the results is expected.

