

1. Watch an extract from a documentary on Mars presenting the investigation of four different people.

National Geographic: Is It Real? Life On Mars <https://www.youtube.com/watch?v=5rMXS31WcgA>

- What evidence of life on Mars do they examine?
 - a) **Richard Hoagland** (conspiracy theorist, born 1945) part 10.15-11.46
 - b) **Giovanni Schiaparelli** (astronomer 1835 – 1910) part 12.08-13.15
 - c) **Percival Lowell** (mathematician, astronomer 1855 – 1916) part 13.16-14.32
 - d) **James Garvin** (active as a scientist since 1984) part 43.25-44.56
- Who do you think applies the scientific approach and who does not? Why?
- What would you say is typical of the scientific attitude?

“It is a capital mistake to theorize before one has data. Insensibly one begins to twist the facts to suit the theories, instead of the theories to suit the facts. ”

Sherlock Holmes

2. Watch the extract once again and answer the questions.

Complete the translations

transmit	assets
surveillance	priceless
aerial photograph	canal
snapshot	channel
resolution	to compound
dissolve	rumour

- A) What does Hoagland compare the Martian structure to?
- B) What confusion was caused by the incorrect translation of the Italian word *canali*?
- C) What idea about Mars was generally held by the media at the break of the 19th/20th centuries?
- D) To what extent is the face image a priority for Dr Garvin?

expressing probability (likelihood) – use the words in your own sentences

- could, might
- must have +ed
- (e.g. must have built)

The “Face” on Mars

1. Read the article and discuss with a partner:

1. What did Viking 1 spacecraft capture?
2. How did scientists temper the surprise?
3. Why did NASA release the photo?
4. How did the public and businesses react to the image?
5. Why wasn't the sharper picture convincing for some people?
6. What proved clearly that the photo showed a mesa?



In 1976, NASA's Viking 1 spacecraft was circling Mars and snapping photos when it captured the shadowy likeness of an enormous head, two miles from end to end, located in the region of Mars called Cydonia.

The surprise among the mission controllers at NASA was quickly tempered as planetary scientists decided that the “face” was just another Martian mesa, a geological landform common in the Cydonia region. NASA released the photo to the public a few days later and believed that it would attract the public's attention to its Mars mission, and indeed it did.

The “face” on Mars became a sensation that appeared in movies, books, talk shows, websites and tabloids for years. Some people thought it was evidence for life on Mars, either at present or in the past. As for NASA's contention that the “face” was a combination of natural landform and unusual lighting conditions, howls arose from some of the public about conspiracy. Other people, with a more developed scientific attitude, accepted NASA's conclusion.

In 1998, twenty-two years later, the Mars Global Surveyor mission reached Mars, and its camera snapped a picture of the “face” ten times sharper than the 1976 Viking photo. Thousands waited for the image to appear on NASA's website. The photo revealed a natural landform and not an alien monument. However, the image was taken through wispy clouds, and some of the public were still not convinced that the object was just a plain old mesa.

It was not until 2001 that the MGS camera again passed over the object. This time, there were no clouds, and the high-resolution picture was clearly that of a mesa similar to those common in the Cydonia region and in the American west.

Why would so many books and articles be written extolling the alien origin of the “face”? Perhaps many authors were trading on the gullibility and ignorance of part of the population in order to line their own pockets or to gain attention. If so, the best way to deal with similar situations in the future would be to try to improve the standard of education among the general public and to emphasize the importance of a well-developed scientific attitude.

Adapted from J. Shipman, J. Wilson, A. Todd, An Introduction to Physical Science, Houghton Mifflin Company, 2006, p.5
picture from <http://www.abovetopsecret.com/forum/thread468075/pg1>

2. Try to guess what the highlighted phrases mean. How can you say it in your own words?

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GRAMMAR – use of tenses. Cover the original text and complete the verb forms.

1. In 1976, NASA’s Viking 1 spacecraft (*circle*) Mars and (*snap*) photos when it (*capture*) the shadowy likeness of an enormous head.
2. In 1998, the Mars Global Surveyor mission (*reach*) Mars, and its camera (*snap*) a picture of the “face” ten times sharper.
3. However, the image (*take*) through wispy clouds, and some of the public were still not convinced that the object was just a plain old mesa.

A structure to remember- translate into English.

Nejlepší způsob jak řešit podobné situace je uplatnit vědecký přístup.

STEPS IN THE SCIENTIFIC METHOD

Work in small groups and prepare a diagram or algorithm which shows what steps you go through when you apply the scientific method in solving a problem.

(You can try to think of a specific situation to demonstrate the steps.)

Vocabulary – match the terms and explanations

science	measurement	hypothesis	experiment	law	theory
	scientific method	scientific attitude		standard unit	

- a fixed value for making measurements
- having curiosity, objectivity, and rationality
- a process in which a theory of nature must be in agreement with experimental results
- an organized body of knowledge about the natural universe
- a concise statement about a fundamental relationship of nature
- a controlled observation of a natural phenomenon
- a very tentative, possible answer, an educated guess
- a quantitative observation
- a well-tested explanation

THE SENSES

- How do you rank the importance of the five senses in learning about our environment, i.e. which one is the most important?
- Can the senses be completely relied upon? Do they provide the right ideas about the reality?

1. Connecting sentences in a paragraph

Which of these connectors would you use in the gaps?

Not only *but* *therefore* *although* *thus*

The five senses – sight, hearing, touch, taste, and smell make it possible for us to know the environment.

1_____the senses are important in studying and understanding the physical world. Most information about our environment comes through sight. Hearing ranks second in supplying the brain with information about the external world.

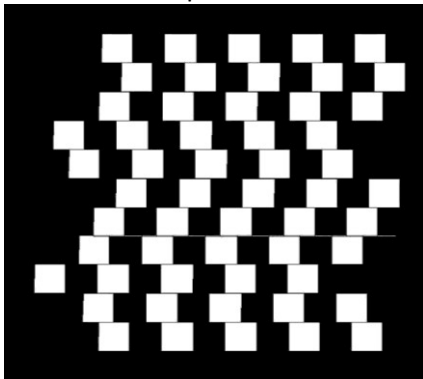
Touch, taste, and smell, 2_____ important, rank well below sight and hearing in providing information.

3 _____ the senses have limitations. For example, the unaided eye cannot see the vast majority of stars and galaxies. Or our hearing is limited to certain frequency range.

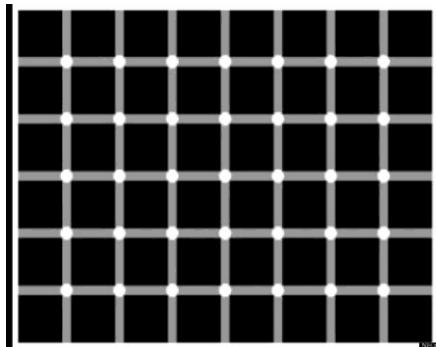
4_____the senses have limitations, they also can be deceived, 5_____ providing false information about our environment. For example, perceived sight information may not always be a true representation of the facts because the brain can be fooled.

2. Some optical illusions

Are these lines parallel or curved ?



Try and find the black dots.



How many circles do you see?



source J. Shipman, J. Wilson, A. Todd, An Introduction to Physical Science, Houghton Mifflin Company, 2006, p.6

3. Write a short text in which you use as many connectors from ex.1 as possible.