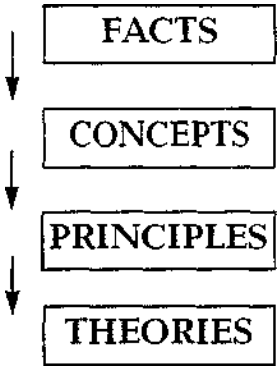
What is Science?

Read the article and divide it into logical parts.

The word science originates from the Latin word «scientia», meaning knowledge. Science is simply a way of looking at the world. It consists of asking questions, proposing answers and testing them against the available evidence.

A popular astronomer Carl Sagan wrote: «Science invites us to let the facts in, even when they don't conform to our preconceptions. It counsels us to carry alternative hypotheses in our heads and see which best match the facts». Science is a human construct and human ability.

Types of Science Products



FACTS — are specific verifiable pieces of information obtained through observation and measurement

CONCEPTS — are abstract ideas that are generalized from facts or specific relevant experience

PRINCIPLES — are more complex ideas based on several related concepts

THEORIES — consist of broadly related principles that provide an explanation for a phenomenon

The purpose of a theory is to provide the best explanation based on evidence. Theories are used to explain, relate, and predict.

Students of science major in various fields of science. They take part in R&D at their institutions. The faculty and staff at the universities and institutes will help the students as they fulfill their academic and professional goals. Research advisors —

well-known scientists will help their students with research. Graduate students spend most of their time in independent study and original research. For example, graduate studies in the USA can be divided into two phases:

Phase I leads to Master's degree and consists of lecture-type coursework. This degree is usually required in fields such as engineering, library science etc. The MBA or Master of Business Administration usually takes two years.

These degrees are considered stepping stones toward a PhD. Normally few, if any laboratory courses are offered. A thesis, calling for significant research and/or design effort may be required.

Phase II leads to doctoral degree — PhD (doctorate). Students who are enrolled in a doctoral program are known as PhD candidates. They will spend some time in class, but the most important work is spent in first-hand research. It may take three years or more to earn a PhD Degree. This degree normally requires four to six years of study beyond the Bachelor's degree, culminating in lengthy, in-depth, original research of a specific topic, which may be both theoretical and applied, or purely theoretical. Usually, doctoral studies focus very heavily on developing advanced scientific skills.

A PhD dissertation is considered a unique, original contribution to human knowledge. This paper must contain views, research or designs that have not been previously published. The best and the most suitable methods, techniques, approaches and procedures should be used.

Several research publications on issues relevant to the investigation should be prepared. Most universities awarding the PhD Degree also require doctoral candidates to have a reading knowledge of two foreign languages, to pass a qualifying examination that officially admits candidates to the PhD program, and to pass an oral examination on the same topic as the dissertation.

If the dissertation meets all the requirements it will be accepted and approved by a special board of academics after oral defense.

Most scientists spend many years studying and working in laboratories. Scientists can work individually or in a team. In many cases, scientists are devoted to their work and may find little time to do other things. Usually scientists are involved

in studying various aspects of their fields, and work on one or two major projects at one time.

A good example of a dedicated scientist and researcher is U.S. neurosurgeon Benjamin Carson. Speaking to young people around the country, Carson always concludes with the same message: «Think big!» He explains the meaning of each letter:

T — is for talent. Recognize your God-given talent.

H — is for hope. Anticipate good things and watch for them.

I — stands for insight. Learn from people who have been where you want to go. N — is for nice. Be nice to people — all people.

K — represents knowledge. Knowledge is the key to your dreams, hopes and aspirations.

B — is for books. We develop our minds by reading.

I — equals in-depth learning, where acquired knowledge becomes part of you. G — stands for God. Never drop God out of your life.

«If you can learn to think big, nothing on earth will keep you from being successful in whatever you choose to do», says Carson. And eminent American astronomer Vera Rubin has given the following piece of advice to young scientists:

«Don't give up. Remember that science is ever so vast; learn one thing very well. Doing so ... gives you great confidence, allows you to share knowledge with colleagues. It helps if you know what you really want to do. Work hard. Learn to give good talks. Be imaginative. If you are interested in science you must have a fundamental curiosity».

<u>Vocabulary work</u>

1. Give Ukrainian equivalents of the following words and word combinations: *available, evidence, to conform, preconception, to major in, R&D, research advisor, to meet the requirements, board, devoted, insight, relevant.*

2. Match the words with their meanings:

1. science	a) the desire to know or learn
2. field of science	b) a strong desire to do smth. or have smth.
3. faculty and staff	c) a title given by a university to a student who has completed a course of study
4. research	d) to direct one's attention to smth.
5. scientist	e) special ability to do smth. well
6. degree	f) a particular side of many-sided idea
7. to focus on	g) to take part, to participate
8. skill(s)	h) knowledge which can be made into a system
9. to be involved in	i) serious and detailed study of a subject
10. aspiration	j) all of teachers and other professionals
11. curiosity	k) a person who works in science
12. aspect	l) a branch of knowledge or area of activity

3. Restore the context where the following words are used in the article: *to counsel, goal, to require, to earn, in-depth, to anticipate.*

4. Give English equivalents for: *спеціалізуватися у галузі науки; науковий керівник; цілі; досягати мети; відомий науковець (вчений); самостійне дослідження; детальне вивчення; теоретичні та прикладні аспекти; навички наукової роботи; Вчена Рада; унікальний внесок; питання, що стосуються дослідження; оригінальна методика; брати участь у науково-дослідній роботі; одночасно працювати над кількома проектами; бути відданим науці; не здаватися; ділитися знаннями з колегами, бути надзвичайно допитливим.*

5. Match two columns:

1. Я не фахівець у цій галузі. 2. Яка мета вашого дослідження? 3. Вона спеціалізується у галузі прикладного мовознавства. 4. Якою галуззю науки ви цікавитесь? 5. Це питання стосується вашого дослідження. 6. Якою наукою ви займаєтесь? 7. Його дисертація відповідає усім необхідним вимогам. 8. Вони беруть участь у науково-дослідній роботі. 9. Мій науковий керівник - відомий вчений. 10. Вони дійшли цікавих висновків.	a) What field of science are you interested in? b) This issue deals with your investigation. c) His dissertation meets all the necessary requirements. d) What science are you doing? e) That's outside my field. f) She majors in linguistics. g) What is the objective of your research? h) My research advisor is a well-known scientist. i) They've arrived at interesting conclusions. j) They are involved in R&D.

6. Choose the word or phrase (a, b, c, d) that best keeps the meaning of the underlined word or phrase.

1. There are <u>obvious</u> disadvantages to this plan.

a. well-known *b. serious* *c. clear* *d. fundamental*

2. I tried to <u>anticipate</u> the kind of questions they were likely to ask me at the interview.

a. solve *b. guess* *c. remember* *d. discuss*

3. The problem would interest the <u>entire</u> community.

a. whole *b. large* *c. engineering* *d. small*

4. It is not easy to <u>predict</u> this trend.

a. cause *b. create* *c. forecast* *d. test*

5. The author discusses all <u>facets</u> of most engineering fields.

a. prospects *b. aspects* *c. issues* *d. forms*

6. <u>Eventually,</u> they have worked out the basic concepts.

a. lately *b. spontaneously* *c. finally* *d. gradually*

7. Most of our meetings were devoted to discussing scientific problems.

a. dedicated *b. confined* *c. conformed* *d. introduced*

8. The vast land stretches for hundreds of miles.

a. very small *b. narrow* *c. very large* *d. spectacular*

9. Is there any evidence for believing that?

a. proof *b. tendency* *c. opposition* *d. chance*

10. He employed the one basic technique.

a. process *b. procedure* *c. task* *d. objective*

11. She is very dedicated to her work.

a. interested in *b. committed to* *c. tired of* *d. disappointed with*

12. They devoted a lot of time for the in-depth study of botany.

a. independent *b. individual* *c. thorough* *d. careful*

13. He made no endeavor to help us.

a. effort *b. decision* *c. plan* *d. prediction*

14. Human beings are much more intelligent than animals.

a. invaluable *b. realistic* *c. curious* *d. clever*

15. Hopefully, I'll earn this degree in a year.

a. discuss *b. get* *c. contain* *d. study*

16. How is your study progressing?

a. topic *b. investigation* *c. attempt* *d. procedure*

17. The issue deals with international cooperation.

a. demands *b. touches upon* *c. anticipates* *d. allows*

7. Find the synonyms in the text to the following words: *to obey, aim, famous, study, to demand, to obtain, to take part, to expect, to permit.*

1. Comprehension check:

- What is the origin of the word “science”? What does it mean?
- Interpret Carl Sagan’s idea of “science”.
- Define the main types of science products.
- In what way are Masters / PhD candidates trained in US / Ukraine?

- What are the requirements to earn a PhD?
- Compare Ukrainian and American scientific degrees and ways they are obtained.
- Comment on Carson’s massage “Think big”.
- What does Vera Rubin advise young scientists?