# THE MEANING OF GEOMETRY

**Words to be Learned**

**Exercise 1**

*Read these words and guess their meaning.*

Babylonia [bæbi'louniә] *n,* Egypt ['i:ʤipt] *n,* pyramid ['piramid] *n*, Egyptian [i'ʤipʃәn] *a,* Greece [gri:s] *n,* Greek [gri:k] *a,* intriguing [in'tri:giɧ] *a,* mysterious [mis'tiәriәs] *a,* Euclid ['ju:klid], object [ obʤikt] *n,* 'segment *n,* fundamental [˛fʌndә'mentl] *a,* end-'point n, every' day *a.*

**Exercise 2**

*Read these words.*

|  |  |
| --- | --- |
| earth [ә:θ] земля  land земля  di'rection направление  volume ['vɔljum] объем  spread (spread) распространять (ся)  sequence ['si:kwәns] последо­вательность  improve [im'pru:v] улучшать, исправлять  letter 1. буква; 2. письмо  straight [streit] прямой  imagine [i'mӕʤin] воображать, представлять себе  ex'tend простираться  extension протяженность, рас­ширение, продолжение  com'plete *v* заканчивать; а полный, завершенный  in'clude включать  shape форма, очертание  space пространство  feel (felt) чувствовать  measurement ['mеӡәment] измерение, мера  move [mu:v] двигать(ся) | di'mension размер  sky небо  dot точка  refer (to) [ri'f ә:] ссылаться, отсылать; иметь отношение к  prove [pru:v] 1. доказывать; 2. оказываться  capital ['kӕpitәl] 1. главный, основной; 2. прописная (заглавная) буква  location [lou'keiʃәn] 1. определение местонахождения; 2. расположение  figure ['figә] 1. цифра; 2. рисунок, фигура  avoid [a'void] избегать  in'sist (on) настаивать (на)  worth [wә:θ] стоящий, заслу­живающий  pre'vent (from) мешать, пред­отвращать.  suggest [sә'ʤest] предлагать  common ['kɔmәn] общий  succeed (in) [sәk'si:d] добиться успеха  object [әb'ʤekt] возражать |

**Notes**

1. Egyptians were mostly concerned with – египтян главным образом интересовало
2. В. С. – до нашей эры (до Рождества Христова)
3. put into a logical sequence – дать в логической последовательности
4. think of a point as – представьте себе точку как
5. points are commonly referred to – обычно точки называют

**Exercise 3**

*a) Ask questions using the question words in brackets;*

*b) State the function of the Gerund;*

*c) Translate the given sentences.*

1. By applying your knowledge of geometry you can locate the point in the plane, (how). 2. In measuring the volume of an object one must be very careful, (when). 3. We discussed improving the shape of the model, (what). 4. Imagining the shape of the earth is easy. (what). 5. We cannot draw a complete picture of cosmic space without knowing the dimensions of the Sun. (why). 6. In naming; geometric objects we often use capital letters, (when). 7. Drawing a straight line in one direction gives you a one way extension, (what). 8. Instead of being moved to the right the dot is moved to the left, (where).

**Exercise 4**

*Translate the following sentences.*

1. The method is certainly worth applying. 2. I suggested measuring this object. 3. He remembered having seen her at the last conference. 4. He insisted on following the model developed by them. 5. We consider repeating their experiment. 6. You should avoid changing the direction of your further investigation. 7. He suggested exchanging information on the subject. 8. They could not avoid including him in their research group.

**Exercise 5**

*Write questions to which the sentences below could be answers.*

1. Both geometry and algebra deal with equations. 2. One can easily measure the amount of work performed. 3. Mathematical measurements have many practical uses. 4. Nowadays information spreads all over the world within a few hours, if necessary. 5. This method can be applied for measuring volumes. 6. One, two, three, four and so on make a sequence of numbers. 7. I cannot imagine how one can draw this line without using a ruler. 8. It is possible to find the location of this object in space. 9. The complete picture of the object includes both its dimensions.

**Exercise 6**

a) *Read the text to follow without consulting the dictionary to get its general idea;*

b) *After you have read the text, analyze the sentences you find difficult to understand and translate them. Pay special attention to sentences 3, 4, 13, 16, 18, 19, 20, 22, 24, 26. Consult the dictionary whenever necessary;*

c) *Read the same text again. You will have to discuss it during the lesson.*

**The Meaning of Geometry**

1. Geometry is a very old subject. 2. It probably began in Babylonia and Egypt. 3. Men needed practical ways for measuring their land, for building pyramids, and for defining volumes; 4. The Egyptians were mostly concerned with1 applying geometry to their everyday problems. 5. Yet, as the knowledge of Egyptians spread to Greece the Greeks found the ideas about geometry very intriguing and mysterious. 6. The Greeks began to ask "Why? Why is that true?" 7. In 300 B. C.2 all the known facts about Greek geometry were put into a logical sequence3 by Euclid. 8. His book, called. Elements, is one of the most famous books of mathematics. 9. In recent years men have improved on Euclid's work. 10. Today geometry includes not only the study of the shape and size of the earth and all things on it, but also the study of relations between geometric objects. 11. The most fundamental idea in the study of geometry is the idea of a point. 12. We will not try to define what a point is, but instead discuss some of its properties. 13. Think of a point as4 an exact location in space. 14. You cannot see a point, feel a point, or move a point, because it has no dimensions. 15. There are points (locations) on the earth, in the earth, in the sky, on the sun, and everywhere in space. 16. When writing about points, you represent the points by dots. 17. Remember the dot is only a picture of a point and not the point itself. 18. Points are commonly referred to5 by using capital letters. 19. The dots below mark points and are referred to as point *A,* point *B,* and point С



*Lines and Line Segments*

20. If you mark two points on your paper and, by using a ruler, draw a straight line between them, you will get a figure. 21. The figure below is a picture of a line segment.



22. Points *D* and *E* are referred to as endpoints of the line segment. 23. The line segment includes point *D,* point *E,* and all the points between them.

24. Imagine extending the segment indefinitely. 25. It is impossible to draw the complete picture of such an extension but it can be represented as follows.



26. Let us agree on using the word line to mean a straight line. 27. The figure above is a picture of line *DE* or line *ED.*

**Exercise 7**

*Write down the translation of sentences 3, 4, 13, 18, 19, 20, 22, 24, 26 from the text above.*

**Exercise 8**

*Follow the speaker as he is reading the words. Pay special attention to the stress.*

'meaning, 'measure, 'object *n,* building, 'Egypt, 'subject, *n,* 'volume, 'problem, 'knowledge, 'sequence, 'famous, 'recent, 'also, 'study, 'point, 'picture, 'common, 'paper, 'figure, 'segment, 'ruler;

e'xact, pre'sent, re'fer, be'low, in'clude, be'tween, com'plete, ex-'tend, a'gree, ap'ply, im'prove, re'late, ob'ject *v,* sub'ject *v;*

'probably, ge'ometry, 'pyramid, 'property, 'capital, 'separate, 'multiply, 'calculate, 'definite, 'transitive, mys'terious, in'definite.

**Exercise 9**

*Repeat these words after the speaker. Guess the meaning of the words in italics.*

mysterious – *mystery n*–*to mystify;* measure *n, v*–measurement– *measurable*–*measurability*–*immeasurable;* to improve–*improvement;* to imagine–*imagination*–*imaginable;* to extend–*extensive;.* complete *a*–*to complete*–*completion;* to include–*to exclude*–*inclusion;* shape *n*–*to shape*–*shapeless;* to move–*movable*–*immovable;* sun–*sunless;* to refer–*reference;* location–*to locate*–*local*–*locally,* size–*sizeless;* between–*betweenness;* demension–*demensional;* common–*commonly*–*uncommon;* indefinitely–*definite;* land–*landless.*

**Exercise 10**

*Change the following according to the model.*

Sp.: I like *to get up* early, (he)

St.: He also likes *getting up* early.

a) 1. He begins *to work* at 9 o'clock, (we). 2. I expect *to see* him. (she). 4. We expect *to go* there today. (I). 5. She continued *to translate* the text, (they).

Sp.: *Do not tell* him about it.

St.: *It's no use telling* him about it.

b) 1. *Do not go* there now. 2. *Do not begin* the experiment to morrow. 3. *Do not speak* to him. 4. *Do not attend* that seminar. 5. *Do not discuss* it with her.

Sp.: I am afraid *to go* there.

St.: Are you really afraid *of going* there?

c) I. I am afraid *to tell* him this news. 2. He is afraid *to take* his exam. 3. She is afraid *to speak* to him. 4. I am afraid *to begin* the work.

Sp.: *Was* he *able to come* in time?

St.: Yes, he *succeeded in coming* in time.

d) *Was* she *able to present* her thesis? 2. *Were* they *able to publish* that article? 3. *Were* you *able to find* the data? 4. *Will* he *be able to solve* the problem? 5. *Will* she *be able to change* the program?

Sp.: It is important *to know* these rules.

St.: Yes, *knowing* these rules is important.

e) 1. It is important *to discuss* the question today. 2. It was necessary *to produce* that information. 3. It will be interesting *to find* that result. 4. It is important to *locate* the point in space.

Sp.: He *multiplied* the numerals and found the product.

St.: He found the product *by multiplying* the numerals.

f) 1. He *drew* a straight line and *cut* the segment. 2. She *performed* the operation of subtraction and found the difference. 3. I *used* a ruler to draw a straight line.

**Exercise 11**

*Listen to the new words of the lesson and repeat them after the speaker.*

**Exercise 12**

*Follow the speaker as he is reading the text 'The Meaning of Geometry'.*

**Exercise 13**

*Listen to the questions. Write down your answers* (+ -)

1. Is geometry an old subject? 2. Did geometry begin in England? 3. Were Egyptians mostly concerned with the practical use of geometry? 4. Did the knowledge of Egyptians spread to Greece? 5. Is Euclid's book called *Elements* famous? 6. Does geometry include only the study of the shape and size of objects? 7. Is the idea of a point fundamental in geometry? 8. Can one feel, see, move or hold a point? 9. Has a point any dimensions? 10. Are points represented by dots? 11. Does a line segment include its endpoints? 12. Can you draw a straight line by using a ruler?

**Exercise 14**

*Read these words and stress them properly.*

expect, dislike, geometry, single, agree, simple, capital, indicate, about, specify, famous, fundamental, property, university, planet, contain, exist, discuss, conclude, knowledge, indefinite, refer, communication, mechanical, dissertation, academy, academic, decimal, subject *n,* subject *v,* object n, object *v.*

**Exercise 15**

*Go back to Exercise 9. Read the words and give Russian equivalents of the words in italics.*

**Exercise 16**

*Ask your class-mates questions about the sentences of Exercise 5 you have written at home.*

**Exercise 17**

*Listen to your teacher's statements and say whether they are true or false. If you think they are false, say why. Begin your statements with: 'I am afraid you are wrong', ‘As far as I know' 'I don't think so'.*