071 The coordinate plane

210

Characters:

T $Tutor

S $Strong

W $Weak

T In our today’s lesson we’ll learn new concepts, but first let us review what we already know.

T Look at the board. You see the coordinate line on the drawing.

T The line, on which the point of origin is marked, has the unit segment marked, and the positive direction is made, is called the coordinate line.

[Which things may be difficult for students to understand in this assignment? T: first : direction – positive and negative will be most important to know: recognize one number corresponds to a point:]

T In this assignment we will need to find the coordinates of points depicted on this line.

[To Sonya: Is it possible this sentence to be translated as “ each point is away from the point of origin by so many unit segments” ? S: Yes-]

T Look at the drawing, each point is removed from the point of origin by so many unit segments.

T I shall remind you that the coordinate of a point is the number designating the location of the point on the line.

T Let us find the coordinates of the point О.

T This point is the point of origin, it represents the number 0.

T It means that the coordinate of the point О will equal 0.

T This is written as follows: first we write the name of the point, i.e. the letter, and then, in the round brackets, the number, i.e. the coordinate.

T We read this notation as follows: point О with coordinate zero.

[To Sonya, Can I just understand this sentence as “ how many unit segments are away from the point of origin? S:Yes]

T Now, let us find the coordinate of the point Е. By how many unit segments is it removed from the point of origin, i.e. the point О?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T The point E is removed from the point of origin by 1 segment unit.

T Since the point E is located to the right of the point О, its coordinate will have what sign?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T С «+».

T It means that what coordinate will the point Е have?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T One

T How can we write this? I would like to hear your answer to this question.

[Which students will be answered?T: average students will do this, but it should be reminded from old lecture so it would be better for weak students to make sure this.]

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T Е(1)

T Read the notation.

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T Point Е with coordinate 1.

[How long would the teacher give students to solve this? Do you think we have to prepare different assignment for strong students? T: few seconds depending on students but it would be easy for students to answer them .]

T Please find the coordinate of the point А independently. Correct.

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T The point А has the coordinate 2.

T By how many unit segments is this point removed from the point of origin, О?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T The point А is removed by 2 unit segments.

T It is located to the right or to the left from the point О?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T To the right.

T So, it means that what sign will the coordinate have?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T The plus sign.

T Write the coordinates of the point А on the board.

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T А(2)

T Read the notation.

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T Point А with coordinate 2.

T Now find the coordinate of the point М.

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T The point М has the coordinate -5.

T Why?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T The point М is removed by 5 unit segments from the point of origin and is located to the left of the point О.

T Write the coordinate of the M point on the board.

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T М (-5)

T Read the notation. Correct.

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T Point М with coordinate minus five.

[Where the difficulty may lie in this assignment? T: there will be three types of lines, but we are targeting on third one which will be our coordinate line:]

T In the next assignment, you will need to determine visually, which of the intersecting lines are perpendicular.

T And perpendicular lines intersect at what angle?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T At the right angle.

T Now I shall check whether the lines on drawings 1 and 3 are perpendicular, and I will use a square to do that.

T I would like to bring your attention to the drawing 3.

T One of the perpendicular lines on this drawing is located horizontally, and the other one, vertically.

T Which line is located horizontally?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T Line с.

T And which one, vertically?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T Line d.

T Today in our class we shall work with this exact position of perpendicular lines.

T One more assignment. The following points are depicted on the drawing: O, M, K, P, N. Find, using the drawing, how many squares you have to go, moving first horizontally to the right, and then vertically, from the bottom up, to get from the point О to the points M, K, P, N?

T Let us find together, how many squares we will need to go from point O to point М.

T First, we shall go horizontally from left to right. We need to go 3 squares to the right. Do you agree?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T Yes

T I shall record this in the table

T And now we shall be moving from the obtained point up to the point М. How many squares shall we cover going from the bottom up to the point М?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T 5 squares

[What is the purpose of using the table this activity? T: we are preparing students to be familiar with Coordinates are not yet introduced so.. logically expanded to real coordinate notation]

T I shall record this in the table

T So, to get from point O to point M, first you need to go 3 squares to the right and then 5 squares from the bottom up.

T Now, we will find how many squares you need to go from point О to point К. First, from left to right, how many squares shall we cover?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T 4 squares

T I agree.

T And now, from this point, vertically from bottom up, how many squares do we have to cover?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T From bottom up 1 square.

T I shall record this in the table

T To get from point О to point К, we need to first go 4 squares from left to right and then 1 square from bottom up.

[Can we call a student to answer this after his/her independent work? and then do same action in the case if students fail? T: Yes it can be independent workAnd : make sure the order right: horizontally and vertically:]

T I can see that you understand how to act. Now let us find how many squares we have to cover from point О to point Р.

T From left to right, how many squares do we haveto cover?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T 1 square

T And now – upwards – how many?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T 3 squares

T So, how could we get from point О to point Р?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T To get from point О to point Р, you need to go 1 square from left to right and then 3 squares from bottom up.

T Correct. We have one point left, N. How many squares shall we cover, going from left to right?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T 5 squares

T Correct.

T And from bottom up – how many squares?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T 4 squares.

T So, how could we get from point О to point N?

[submit clicked, medium]

correct []

[level 1]

incorrect [anything else]

[go to “no response”]

no response

T To get from point O to point N, we need to go 5 squares from left to right, and then 4 squares from bottom up.

T Good job guys, you did very well on this assignment.